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The World Bank Research Program

1996

Abstracts of Current Studies

THE WORLD BANK RESEARCH PROGRAM 1996

Abstracts of Current Studies

The World Bank
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Objectives and Definition of World Bank Research

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- To broaden understanding of the development process
- To improve the Bank's capacity to give policy advice to its members
- To help develop indigenous research capacity in member countries.

Research at the Bank encompasses analytical work designed to produce results with wide applicability across countries or sectors. Bank research, in contrast to academic research, is directed toward recognized and emerging policy issues and is focused on yielding better policy advice. Although motivated by policy problems, Bank research addresses longer-term concerns rather than the immediate needs of a particular Bank lending operation or of a particular country or sector report. Activities classified as research at the Bank do not, therefore, include the economic and sector work and policy analysis carried out by Bank staff to support operations in particular countries. Economic and sector work and policy studies take the product of research and adapt it to specific projects or country settings, whereas Bank research contributes to the intellectual foundations of future lending operations and policy advice. Both activities—research and economic and sector work—are critical to the design of successful projects and effective policy.

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INTRODUCTION

The World Bank's lending program and advisory role are grounded in an understanding of the theory and practice of development. This volume, which contains abstracts of current Bank research projects, reflects the continuing contributions of Bank research to this critical knowledge. It describes research projects that address governments' policy concerns, meet the practical needs of Bank operational staff, develop research tools and methods, and construct databases (which are made available to interested researchers in and outside the Bank).

What Is the Impact of Bank Research?

The value and relevance of Bank research were confirmed by a recent assessment of the quality of the Bank's research program and of its influence in the academic and policymaking community. This assessment was part of a broader effort to determine how best to use the Bank's resources for research, driven in part by the 30 percent decline in Bank funding for research between fiscal 1992 and 1996. The results show that Bank research is broad in its coverage, influential among policymakers, and well regarded by researchers, and that published output from Bank research is widely read and heavily used as teaching material. The investigation also identified areas in which efforts need to be strengthened, the scope of research expanded, and the exposition of findings improved. The comments of evaluators participating in the assessment have led to a number of changes in the Bank's processes for designing and conducting research.

The assessment used quantitative indicators of performance (counts of bibliographic citations and use in curriculums), qualitative methods (surveys, structured interviews, and case studies), and evaluation of research products by internationally recognized experts. A survey designed to determine the reach and influence of the World Bank's publications and its broader dissemination efforts elicited responses from more than 3,400 readers in 113 countries. Among Bank publications, those stemming from research were found to be some of the most extensively distributed. The *World Development Report* continues to be the Bank's flagship publication, and the research journal the *World Bank Economic Review* is the most widely read Bank publication in developing and transition economies. World Bank publications are frequently used for further research: more than three-quarters of the government organizations responding to the survey and more than half the commercial firms use the publications for that purpose. But more than half the government agencies and nearly three-quarters of the policymakers also turn to Bank publications when formulating policy.

Another measure of the influence of publications is how often people refer to them in their own writing. Data on citations of articles in 1,400 professional journals published in 35 countries show that articles in the Bank's two research journals, the *World Bank Research Observer* and *World Bank Economic Review*, are cited more often than articles in any other development economics journal. These two journals rank in the top third of all economics journals by this measure. Authors cite the *Proceedings of the World Bank Annual Conference on Development Economics* even more often.

Findings of World Bank research also are disseminated through many non-Bank publications. Bank authors published nearly 300 articles in professional journals in each of the past two fiscal years. The quality and relevance of this work are high: journal articles by Bank authors are cited 10–50 percent more often than the average economics article. This work receives wide press coverage, further extending its influence. An average of 13 reviews of Bank research findings appeared in newspapers, magazines, and journals every month during the past two years, with the number increasing during the period.

University courses in economic development draw often on studies originating in the Bank. In a recently published collection of 25 reading lists (most for graduate courses) a sixth of the entries were by Bank authors. The Economic Development Institute draws heavily on Bank research in its courses, workshops, and seminars, reaching thousands of participants in developing and transition economies.

What Research Is Now Under Way?

This volume reports on research projects initiated, under way, or completed in fiscal 1996 (July 1, 1995, through June 30, 1996). The abstracts in the volume describe, for each project, the questions addressed, the analytical methods used, the findings to date, and their policy

implications. Each abstract also identifies the expected completion date, the research team, and any reports or publications produced. And to make it easier to obtain information and data, each abstract gives the Internet address for the research project's supervisor.

The abstracts cover about 230 research projects from throughout the Bank, grouped under nine major headings:

- Poverty and social welfare, including equity, demographics, health and nutrition, and gender and development
- Labor markets and education
- Environmentally sustainable development, including environmental economics, energy, agriculture, and natural resources
- Infrastructure and urban development
- Macroeconomics, including monetary and fiscal policy and adjustment
- International economics, including trade, finance, and debt
- Domestic finance and capital markets
- Transition economies
- Private sector development and public sector management, including industrial organization, regulation, institutions, political economy, and privatization.

An appendix to this volume lists reports and publications produced from Bank research and explains how to obtain them. Finally, the volume indexes the abstracts by the sponsoring unit.

How to Get More Information

This annual volume is the only compendium of current Bank research. Readers interested in obtaining more frequent and up-to-date information on Bank research projects and their findings may wish to subscribe to the quarterly *Policy and Research Bulletin.* Each issue includes information on recent World Bank publications and working papers, abstracts of newly initiated research projects and summaries of recent research findings, a column identifying electronic information available from the Bank, and a form for ordering reports featured in that issue. The bulletin is available free of charge. For information on how to subscribe, see the subscription request form at the back of this volume.

The bulletin, the *Abstracts of Current Studies,* abstracts of articles in the *World Bank Research Observer* and *World Bank Economic Review,* and a host of other Bank reports are available on the World Wide Web at *http://www.worldbank.org.* Research reports and information on the World Bank's research branch, the Development Economics Vice Presidency, are available at *http://www.worldbank.org/html/dec/home.html.*

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Abstracts of Current Studies

POVERTY AND SOCIAL WELFARE

The Economic Impact of Fatal Adult Illness from AIDS and Other Causes in Sub-Saharan Africa

Ref. no. 675-71C

This project addressed two broad research questions: What are the economic effects of AIDS-related illness and death among adults on households in northwest Tanzania? And what are the implications of these effects for survivor assistance programs? The research built on preparatory work for *World Development Report 1993* on the importance of adult health and on the allocation of resources among interventions to prevent and treat AIDS.

The project carried out a detailed socioeconomic survey in the Kagera Region of Tanzania, an area with a high rate of HIV infection. A sample of both "healthy" and severely affected households was followed over 18 months, at 6- to 7-month intervals. Because the longitudinal design allows the use of techniques to control for certain unobserved variables and captures the time path of household responses, the survey yields more complete estimates of the costs and effects of fatal illness than could be gleaned from a single cross-section.

The research confirmed that adult mortality and morbidity rates are extremely high in Kagera. The economic consequences for households of the high mortality can be summarized under three general themes, each with implications for policies related to AIDS and poverty alleviation in Kagera and in Tanzania.

First, some households are more vulnerable than others to an adult death. Unlike a prominent study of the Rakai District of Uganda, the project found statistically significant evidence that the average household suffering an adult death had to reduce the consumption of survivors. But the size of the reduction varied, depending on the characteristics of the household and of the deceased adult. Better-off households, through their own efforts and through assistance from private individuals and nongovernmental organizations, were able to smooth their consumption. The poorest households—those with the fewest assets—experienced the sharpest reduction in food consumption. The deaths of more mature adults and of more educated females had larger effects on food consumption than did other deaths. These findings have important implications for survivor assistance policies:

- Not all households experiencing an adult death need assistance.
- Survivor assistance should be targeted to the most vulnerable households.
- Assistance will do the most good in the months immediately before and after the adult death. It need not be permanent.

Second, household coping strategies succeed in limiting the short-term impact of an adult death only at the expense of serious longer-term consequences. For example, when prime-aged women die, malnutrition increases among their orphaned daughters under age three, and the schooling of older children is sacrificed. These results suggest that nutrition and education interventions should be targeted to children in households with fatally ill women before the women die. Young children could be enrolled in nutrition surveillance programs, and arrangements could be made to ensure that older children can continue in school. Through better targeting, existing programs might be able to address the needs of the most vulnerable survivors.

Third, adult mortality from AIDS and other causes is only one among many roots of poverty and low living standards in Kagera Region. The AIDS epidemic and its impact are superimposed on a setting in which many households live below the poverty line, many children are malnourished, and school enrollments are far below desired levels. AIDS is not the most important cause of poverty: two of the districts where the AIDS epidemic has been severe for a decade, Bukoba Urban and Muleba, had the least poverty, while a district with almost no AIDS, Ngara, had the most.

What do these findings say about the implications of the AIDS epidemic for antipoverty policy? Since analysis of the Kagera survey data shows that per capita consumption in the better-off households is not depressed by an adult death, and many poor households have had no adult death, the project results do not support the idea of targeting assistance to all Kagera households that have suffered an adult death. This criterion would lead to inefficient distribution of the scarce resources available to fight poverty.

Nevertheless, the findings suggest an important synergy between AIDS mitigation and antipoverty programs. For example, the finding that poor households are more vulnerable to the impact of an AIDS death

implies that general antipoverty policies can also be AIDS mitigation policies. If general antipoverty policies strengthened poor households, they would be able to cope with AIDS deaths at a smaller cost to the survivors.

But the finding that an adult death depresses the per capita food consumption of the poorest households by 15 percent implies that AIDS deaths in poor households exacerbate poverty. So when AIDS mitigation policies are targeted to households that were poor before an AIDS death, they are likely to prevent the households from slipping even further into misery as a result of a death. In sum, the preliminary results of the research project suggest integrating antipoverty and AIDS mitigation programs in Kagera Region.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Mead Over (Internet address mover@worldbank.org), and Poverty and Human Resources Division—Martha Ainsworth; and Africa Technical Department. With Phare Mujinja, Godlike Koda, Innocent Semali, and George Lwihula, University of Dar es Salaam; Thomas Wayman, field manager; Beatriz Godoy and Teresa Reinaga, Sistemas Integrales, Chile; and Daniel Dorsainvil, Georgetown University. The Danish International Development Agency and the U.S. Agency for International Development have provided funding for the research, and the National Academy of Science has provided office space.

Completion date: August 1996.

Report:

Ainsworth, Martha, Godlike Koda, George Lwihula, and others. 1992. *Measuring the Impact of Fatal Adult Illness in Sub-Saharan Africa: An Annotated Questionnaire.* Living Standards Measurement Study Working Paper 90. Washington, DC: World Bank.

Poverty in India, 1950–90: A Dynamic Analysis of the Determinants of the Distribution of Household Consumption

Ref. no. 677-82C

About 40 percent of the people in the developing world subsisting on less than a dollar a day live in one country—India. Crisis and adjustment have brought the country to what is arguably the most important time for the poor since its independence in 1947. Decisions made there in the next few years will matter to their well-being in both the short and the long term. This research project tried to help inform those decisions, by looking closely at the past evolution of living standards and at how they have been affected by the economy and by policy.

The project compiled a consistent time-series data set of household consumption distributions by state over 40 years for India and collated these with time-series data on the macroeconomy, factor prices, the sectoral composition of incomes, and public expenditures and revenues over the same period. The project then developed econometric models relating measures of poverty to prices, public expenditures, and relevant exogenous variables such as monsoon conditions. It used these models to test explanations of how poverty measures have evolved over time and to explain the differences that have been observed between states. The study addressed several key questions:

First, how important is economic growth to India's poor? Does the pattern of growth matter? Despite the substantial sectoral shifts in national output over the past 40 years, poverty in India is still overwhelmingly rural. Around 1991, 74 percent of the country's poor lived in rural areas. But that does not imply that urban economic growth is unimportant. The nature of intra- and intersectoral effects of growth on poverty and of rural-to-urban migration may well mean that rural economic growth is far less important than the sheer size of the rural sector would suggest.

The research shows, however, that if anything, the opposite is true: the effects of growth in each sector, and the spillover effects to the other sector, reinforced the importance of rural economic growth to national poverty reduction in India. The urban and rural poor both gained from growth in the rural sector. By contrast, urban growth had adverse distributional effects in urban areas and no discernible impact on rural poverty. Nor did the Kuznets process of growth through rural-to-urban migration matter significantly for poverty reduction in India.

Decomposing growth in national income by output-based sectors also revealed marked sectoral differences in impact on poverty. Both primary and tertiary sector growth reduced poverty nationally and in both urban and rural areas. By contrast, secondary sector growth brought no discernible gains to either the urban or the rural poor. In the historical shift from primary to secondary and tertiary sectors, it was the tertiary sector that delivered significant gains to India's poor.

The investigation points clearly to the quantitative importance of the sectoral composition of economic growth to poverty reduction in India. Despite the increasing urbanization of Indian poverty, it is likely to remain true for many years that—from the point of view of India's poor—it is the dog (the rural economy) that wags the tail (the urban sector), not the other way around. Fostering growth in the rural economy—in both the primary and the tertiary sectors—is therefore critical for poverty reduction in India.

But there is another, more subtle implication for the future. The study focused on a period in which India's

development strategy emphasized capital-intensive industrialization concentrated in the urban areas of a largely closed economy. That urban economic growth fueled by such industrialization brought negligible gains to the poor is not surprising.

So growth has reduced poverty in India, but the pattern of growth was important.

Second, in what way, and to what extent, do the rural poor benefit from agricultural growth? Does macroeconomic stability matter to them, and how? A range of absolute poverty measures responded significantly in the short run to changes in agricultural wages as well as to average farm yields. Wages also responded to farm yields, presumably through effects on labor demand, such as from multiple cropping. Higher yields thus helped reduce absolute poverty through induced wage effects as well as more direct channels, including effects on both employment and own-farm productivity. Most of the consumption gains to poor people since 1970 are attributed to the direct and indirect effects of agricultural growth. Nor were the gains confined to those near the poverty line. Higher yields also benefited those well below it. But agricultural growth was more or less distribution-neutral and thus had no discernible impact on relative poverty. In the short run inflation had a strongly adverse impact on real agricultural wages and thus on absolute poverty.

Neither the consumption-based poverty measures nor real wage rates adjusted instantaneously. Because of this stickiness in both variables, the short-run gains to poor people from agricultural productivity growth are far smaller than the long-run effects. And the short-run effects operating through the wage rate are far smaller than those operating through other channels. But in the long run the wage effects do matter, accounting for about 30–40 percent of the steady-state elasticity of absolute poverty to a yield increase. Overall elasticities in the long run are at least six times higher than the short-run values, and long-run elasticities exceed two for the incidence of poverty and four for the poverty gap indexes. Small-sample biases have probably caused underestimates of the true long-run elasticities. The process through which India's rural poor gain from agricultural growth does take time, though about half the long-run impact occurs within three years.

Third, why have some Indian states performed so much better than others in reducing poverty? Comparing the experiences of 15 Indian states over time, the research found that higher growth rates in agricultural yield, lower rates of inflation, and higher growth in state development spending all led to faster progress in both raising average consumption and reducing the incidence, depth, and severity of absolute poverty. Differences in initial economic and human resource development also played an important role. Higher initial irrigation intensity, higher initial female literacy, and lower initial infant mortality all contributed to higher rates of consumption growth and poverty reduction.

By and large, the same variables determining growth in average consumption mattered for the rate of poverty reduction. There is no suggestion of tradeoffs between growth and distributional outcomes that favor the poor.

The research results are being disseminated through a series of research papers and at Bank seminars, international conferences, and various universities.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Ravallion (Internet address mravallion@worldbank.org), Gaurav Datt, and Shaohua Chen. With Berk Özler.

Completion date: June 1996.

Reports:

Datt, Gaurav. 1996. "Poverty in India, 1951–92: Trends and Decompositions." World Bank, Policy Research Department, Washington, DC.

Datt, Gaurav, and Martin Ravallion. 1996. "Did Macroeconomic Stabilization Cause a Sharp Increase in Poverty in India?" World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Why Have Some Indian States Performed So Much Better than Others in Reducing Poverty?" Policy Research Working Paper 1594. World Bank, Policy Research Department, Washington, DC.

Ravallion, Martin, and Gaurav Datt. 1995. "Growth and Poverty in Rural India." Background paper for *World Development Report 1995*. World Bank, World Development Report Office, Washington, DC.

_____. 1996. "How Important to India's Poor Is the Sectoral Composition of Growth?" *World Bank Economic Review* 10(1):1–25.

_____. 1996. "India's Checkered History in the Fight against Poverty." World Bank, Policy Research Department, Washington, DC.

Adjustment and Poverty in Mexican Agriculture: How Farmers' Wealth Affects Supply Response

Ref. no. 679-50

Mexico's government intends to undertake extensive reforms in agriculture, eliminating virtually all controls and tariffs. It has already initiated reforms relating to virtually all important agricultural inputs—land, seeds, credit, fertilizer, machinery. The reforms promise higher incomes for those who can take advantage of new opportunities. But how well can farmers—particularly poor farmers—adjust to the changes?

A pilot study focusing on a small sample of farmers between 1991 and 1993 found interesting results. Al-

though farmers with limited access to productive assets had lower-quality land, more difficulty getting credit, and less education than better-off farmers, they fared as well as or better than other groups of farmers in the face of the reforms. Yet econometric analysis showed that farmers with access to irrigation and harvest machinery showed a significant response to changes in prices, and those without those productive assets no statistically significant response.

This study uses an expanded data set—covering more years and more farmers—to increase the reliability of the analysis and extend it in several directions. The broader data set supports a more accurate descriptive analysis of how the conditions of farmers have changed, and whether such changes are correlated with land tenure status and assets. It also allows expanded econometric analysis assessing the effects of constraints on poor farmers' ability to adjust. This analysis, based on an enhanced model of the farm household, controls for household characteristics and improves the quality of the estimates and conclusions.

The study will show whether the government's policy reforms are meeting their goals. A finding that they are not would signal a need for remedial action—for example, certain kinds of targeted assistance. Work so far has focused on cleaning the data, producing summary statistics, and estimating a production function. The next step will be to estimate supply functions for various crops.

Responsibility: International Economics Department, International Trade Division—John Nash (Internet address jnash@worldbank.org). With HIL Actuarios; Rámon López and Julie Stanton, University of Maryland; Gloria Rubio; and Isidro Soloaga.

Completion date: December 1996.

Report:

López, Rámon, John Nash, and Julie Stanton. 1995. "Adjustment and Poverty in Mexican Agriculture: How Farmers' Wealth Affects Supply Response." Policy Research Working Paper 1494. World Bank, International Economics Department, Washington, DC.

Improving the Policy Relevance of Living Standards Measurement Study Surveys

Ref. no. 679-61

The World Bank has assisted developing countries in implementing Living Standards Measurement Study (LSMS) surveys for more than 10 years. This research project draws on that work and the work of other household survey programs to synthesize the lessons of experience so that countries can incorporate them in the design of their survey programs. The research focuses on the following questions: Can LSMS surveys be modified to cover policy issues that are difficult or impossible to analyze using existing LSMS data? Can the reliability and accuracy of the data currently gathered in LSMS surveys be further improved? And can implementing LSMS surveys be made easier?

The research includes detailed analysis of all major sections (modules) of LSMS questionnaires, including those on health, education, fertility, anthropometrics, employment, agriculture, nonagricultural enterprises, credit and savings, and consumption. Data from LSMS surveys and other pertinent surveys are being analyzed for quality, literature on relevant analytical issues is being reviewed for the implications for data requirements, and field experiments have been set up for the consumption module.

The interim results of the research support a reendorsement of the original modular, multitopic approach of the LSMS surveys. Guidance will be given on how to combine modules more flexibly into different kinds of surveys with different purposes, samples, and periodicities. The largest modifications will be made to the old health and agriculture modules, options for environmental modules are being explored, and questions about how to better define the community for the community questionnaire are being addressed. For most modules, short and long versions will be suggested to help in combining them into surveys for different purposes.

The interim results were discussed at a workshop on April 17–19, 1996, in Washington, DC, attended by about 50 participants. The workshop was meant principally to bring together the authors participating in the project to agree on a vision for the final output and to detect gaps and overlaps in the work. Representatives of three client agencies in developing countries attended to ensure that the product would meet their needs. World Bank operational staff implementing surveys and policy advisers in all sectors covered in the questionnaire were also invited, to ensure that their needs too were met. A background paper was presented at the American Economics Association meetings held in January 1996 in San Francisco.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Margaret Grosh (Internet address mgrosh@worldbank.org), Paul Glewwe, Harold Alderman, Kinnon Scott, Lynn Tsoflias, and Martha Ainsworth, Public Economics Division—Jeffrey Hammer, and Environment, Infrastructure, and Agriculture Division—Maureen Cropper; West Central Africa Department, Population and Human Resources Operations Division—Indu Bhushan; and Environment Department, Social Policy and Resettlement Division—Tony Bebbington. With Kim Chung, Brown University;

Angus Deaton and Eric Edmunds, Princeton University; Elizabeth Frankenberg, Rand Corporation; Andrew Harvey and Maria Elena Taylor, Saint Mary's; Paul Gertler, Harvard University; Anjini Kochar and Julie Schaffner, Stanford University; Don Mead and Tom Reardon, Michigan State University; Andrew McKay, University of Nottingham; Juan Muñoz, Sistemas Integrales, Chile; Wim Vijverberg, University of Texas; and Dale Whittington, University of North Carolina.

Completion date: December 1997.

Reports:

Blank, Lorraine, Margaret E. Grosh, and Pauline Knight. 1996. "Building Analytic Capacity in Conjunction with LSMS Surveys: The Jamaica Story." Research Paper Series 1. World Bank, Policy Research Department, Washington, DC.

Contreras, Manuel E. 1995. "Building Analytic Capacity in Bolivia: The Social Policy Analysis Unit (UDAPSO)." Research Paper Series 2. World Bank, Policy Research Department, Washington, DC.

Drummond, Lisa B.W. 1995. "Building Analytic Capacity in Conjunction with LSMS Surveys: A Report on the Viet Nam Living Standards Survey." Research Paper Series 3. World Bank, Policy Research Department, Washington, DC.

Grosh, Margaret E., and Paul Glewwe. 1996. "Household Survey Data from Developing Countries: Progress and Prospects." *American Economic Review* 86(2):15–19.

Grosh, Margaret E., and Juan Muñoz. 1996. *Implementing the LSMS Survey: A Manual.* Living Standards Measurement Study Working Paper 126. Washington, DC: World Bank.

Oliver, Raylynn. 1995. "Building Analytic Capacity in Conjunction with LSMS Surveys: The Kyrgyz Republic." Research Paper Series 4. World Bank, Policy Research Department, Washington, DC.

Wilson, Francis, and Dudley Horner. 1996. "Lessons from the Project for Statistics on Living Standards and Development: The South African Story." Research Paper Series 5. World Bank, Policy Research Department, Washington, DC.

Income Distribution

Ref. no. 679-78C

This study tested, empirically and theoretically, two propositions about the distribution of income: First, that income distribution is relatively stable within countries. And second, that income distribution varies significantly among countries. The study strongly confirmed these propositions through its analytical model and cross-country empirical analysis.

These findings have potentially important implications for poverty. Poverty reduction will depend crucially on the rate of economic growth, and the poor will receive a smaller share of any increase in national income in inegalitarian economies than in more egalitarian economies.

An important output of this research project is the panel data set on international income distribution that it constructed. This data set satisfies minimum quality standards (it is based on microeconomic data and provides comprehensive coverage of population and income sources) and is more comprehensive than what had been available. The data make it possible to conduct empirical tests of the conclusions reached in the theoretical literature on income distribution and growth and thus to translate the findings in this literature into policy recommendations.

The study used this data set to empirically test a model that could explain the stylized fact of great intertemporal stability of income distribution within countries but great intercountry variation. It also used it in performing more rigorous empirical tests of the Kuznets hypothesis and the channels through which inequality might affect economic growth.

The research has produced two main preliminary results. First, it found no empirical support for the Kuznets hypothesis—the conjecture that inequality would first rise and then fall with economic development—once appropriate information on changes in inequality within countries, rather than cross-sectional variation between countries, was used. Second, although the data confirm the presence of an aggregate negative relationship between inequality and growth, they suggest that inequality has a more significant and consistent effect through economic markets than through political markets.

Although the research initially focused on the Gini coefficient as the main measure of income distribution, it is now complementing the data set with data on income share by population quintile. These data will be used to answer the question of whether certain policy variables—over and above their effect on aggregate growth—have differential effects on changes in the welfare of the top, bottom, and middle quintiles. This investigation will contribute to the discussion of the policy concerns (averting the potential negative equity effects of growth-oriented policies) that have driven much of the literature on the Kuznets hypothesis. It will also contribute to policy discussions with World Bank client countries.

The papers from the study have been presented in seminars at the World Bank, the Norwegian School of Business Administration, and Wuhan University (China). And the study has provided cross-country background information for the forthcoming Bank study on income inequality in China.

Responsibility: Policy Research Department, Office of the Director—Lyn Squire (Internet address lsquire

@worldbank.org) and Klaus Deininger, Public Economics Division—Heng-fu Zou, and Transition Economics Division—Martha de Melo. With Hongyi Li; Tao Zhang; Gary Fields, Cornell University; and Sailesh Jha.

Completion date: October 1995.

Reports:

Deininger, Klaus, and Lyn Squire. 1996. "Measuring Income Inequality: A New Database." World Bank, Policy Research Department, Washington, DC.

_____. 1996. "New Ways of Looking at Old Issues: Inequality and Growth." World Bank, Policy Research Department, Washington, DC.

Li, Hongyi, Lyn Squire, and Heng-fu Zou. 1996. "Explaining International and Intertemporal Variations in Income Inequality." World Bank, Policy Research Department, Washington, DC.

Fiscal Policies and Poverty: A Decomposition of the Gini Index for Romania

Ref. no. 679-82C

The goal of this research was to illustrate and further develop tools that can be used to predict the effect on distribution of change in a tax (or taxes).

It can be shown that when distributional impact is measured by the change in the Gini coefficient, it can be summarized by one parameter—the (Gini) income elasticity. Like any other income elasticity, this elasticity is the ratio of the marginal propensity to spend to the average propensity, but the marginal propensity is estimated by a regression based on the Gini coefficient's mean difference, which is semi-nonparametric.

Applying the methodology to data from Romania, the research found that:

- There is a deterioration in the progressivity of several government programs, such as child benefits.
- In Romania, unlike in other countries, taxation of gas and electricity is regressive.

The research then extended the concept of distributional impact to include the effect on income inequality, income inequality among the poor, inequality among the nonpoor, and inequality among groups. Comparison of the Gini income elasticity among the poor with between-group income elasticity can show whether a poverty reduction policy both increases the incomes of the poor and decreases inequality among them, or has contradictory effects on poverty. The research illustrated this method of analysis with data from Bulgaria.

Responsibility: Europe and Central Asia, Country Department I, Office of the Director—Ruben Lamdany, and Country Department II, Human Resources Operations Division—Mansoora Rashid (Internet address mrashid@worldbank.org). With Shlomo Yitzhaki.

Completion date: July 1995.

Reports:

Yitzhaki, Shlomo. 1995. "A Critique of Poverty Measurement." World Bank, Europe and Central Asia, Country Department I, Washington, DC.

_____. 1995. "The Effect of Marginal Changes in Prices on Inequality in Romania." World Bank, Europe and Central Asia, Country Department I, Washington, DC.

The Public-Private Mix and Equity in Health Care: An Exploratory Empirical Study

Ref. no. 679-95

In 1978 the International Conference on Primary Health Care in Alma-Ata, Kazakstan, issued a declaration proclaiming health "a fundamental human right" and asserting that inequality in health status is unacceptable. This notion that health is a human right is reflected in the stated objective of many governments to ensure that health care is available to everyone according to medical need, not by ability to pay. Laudable as this objective is, in reality, resources are scarce, and in the absence of a price mechanism other forms of rationing take over. In most developing countries doctors and hospitals are concentrated in the cities, where they are available to the urban middle class but too far away to benefit most of the rural poor.

Even when care is provided free of charge, equal access to medical care is an illusion. When government funds provide medical care, the resulting distribution of services is often regressive, with middle-income and higher-income groups benefiting disproportionately. When the poor do receive services, the quality is generally low. Lacking access to adequate public services, the poor often turn to the private sector, where they face high prices for brand-name drugs and private office visits. So the poor often spend more on health care as a share of household budgets than the rich do, even in countries where all care is supposed to be provided free of charge by the public sector.

There are few systematic studies, however, that document the incidence of publicly provided health services and the distribution of private health care expenditures. For most developing countries the total amount spent on health care is not known. This research project addresses these issues, using data from Living Standards Measurement Study (LSMS) surveys for 12 countries.

In assessing the "equity" of a country's health care system, the project uses household survey data to show the distribution of health indicators, by urban and rural households and by income level, and the distribution of the use of health care services (both public and private) for these same population groups. Data from the LSMS

surveys make it possible to calculate total private spending on health care and, when combined with government budget data from the International Monetary Fund and other sources, to obtain a reliable estimate of a country's total health care spending. A particularly important result will be estimates of the private resources spent on health care relative to public resources, even in countries where all health care spending is supposed to be public. The study is attempting to determine the relationship between the public-private mix and different measures of equity in health care.

Project findings indicate that the incidence of illness is about the same across income groups. But a slightly higher percentage of the better-off than of the poor seek medical care. The poor devote as large a share of household expenditures to health care as the better-off do. But the quality of the health care the poor receive is somewhat lower, in part because they often visit public health facilities, while the better-off rely more on private health facilities. Similarly, residents of rural areas spend as much of their income on health care as urban residents, but receive lower-quality care. For example, a smaller percentage of people who are ill visit a doctor in rural areas than in urban.

In future work this research will firmly establish the public-private mix in health expenditures, taking into account to the extent possible health spending not only by central governments, but also by provincial and local governments. To provide an overall picture of equity in health for each of the 12 countries, the study also will compute Gini coefficients based on private health expenditure, and days ill and days inactive due to illness.

The results of the study will be used to inform the growing number of health care reform efforts under way. For example, they should shed light on the role of the private sector in health care.

Responsibility: Human Development Department—Jacques van der Gaag (Internet address jvandergaag @worldbank.org). With Hailu Mekonnen.

Completion date: December 1996.

Nutrition, Health, and Labor Productivity in Kenya

Ref. no. 680-03

This project has investigated the relationships between nutritional status, morbidity patterns, time allocation, child school performance, and adult productivity using panel data for rural Kenya. In this investigation the study estimated a system of dynamic equations explaining morbidity patterns, time allocation decisions, and scores on psychometric tests. The analysis incorporated biomedical, behavioral, infrastructural, and seasonal factors. And it tested whether results in an earlier, related project in Rwanda also hold true in Kenya. In a next phase the study will examine what its findings mean for understanding the effects of different policy options on adults' health status and labor productivity.

Results have shown that poor nutritional status significantly compromises children's learning ability and school performance. The findings suggest that interventions to improve early childhood nutritional status in poor areas can bring lasting gains in schooling and future productivity.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Ravallion (Internet address mravallion@worldbank.org). With Alok Bhargava, University of Houston.

Completion date: June 1997.

Report:

Bhargava, Alok. 1996. "Econometric Analysis of Psychometric Data: A Model for Kenyan Schoolers." World Bank, Policy Research Department, Washington, DC.

Dynamics of Child Health in Indonesia

Ref. no. 680-37

Indonesia has achieved major improvements in child health since 1970. But initial analyses of census and survey data suggested that the decline in child mortality slowed in the 1980s, and in 1990 child mortality was higher than would be predicted by the country's economic indicators. This research aims to identify the factors responsible for the decline in the rate of improvement.

The research is identifying the determinants of child health in Indonesia and the relative importance of different interventions in improving child health status in an effort to explain the dynamics of child mortality decline there. It focuses on the role of health interventions relative to such socioeconomic factors as income level, female education, environment, and reproductive dynamics. The intent is to inform government and World Bank efforts to formulate and evaluate strategies for improving child health status in Indonesia and to contribute to methodologies for analysis of health sector interventions.

The study is using pooled data from the 1987, 1991, and 1994 Demographic and Health Surveys. A descriptive analysis of trends and differentials in mortality by mother's education, island group, sex, age, and household expenditure has been completed. Multivariate models are now being used to capture the effects of maternal factors, reproductive dynamics, socioeconomic status, and use of preventive and curative health services, as well as time period, which captures unmeasured factors.

Although analysis is still under way, preliminary results show that infant and child mortality rates have declined markedly since 1970—the infant mortality rate by about 50 percent and the under-five mortality rate by 60 percent. The declines appear to have been fastest in the early 1970s and since 1985 and slower from about 1975 to 1985. Differences by mother's education have been strong but appear to be narrowing. No large differences among island groups were found. The age patterns of child mortality appear to fall within standard historical patterns, and the sex patterns are consistent with those of other developing country populations with similar mortality rates.

Findings have been presented at a World Bank seminar, held on September 10, 1996, in Washington, DC, for about 40 participants, primarily World Bank staff and Indonesian health sector professionals.

Responsibility: East Asia and Pacific, Country Department III, Population and Human Resources Division—Fadia Saadah (Internet address fsaadah@worldbank.org). With Ken Hill and Steve Chapman, Johns Hopkins University.

Completion date: January 1997.

Reports:

Saadah, Fadia, Ken Hill, and Steve Chapman. Forthcoming. "Child Mortality Declines in Indonesia: Trends and Differentials, 1970 to 1995." World Bank, East Asia and Pacific, Country Department III, Washington, DC.

_____. Forthcoming. "Family Planning and Child Health—The Indonesian Experience." World Bank, East Asia and Pacific, Country Department III, Washington, DC.

_____. Forthcoming. "Measuring Socioeconomic Status of Households Using DHS Data in the Absence of Income and/or Expenditure Data." World Bank, East Asia and Pacific, Country Department III, Washington, DC.

Exploring the Impact of Autonomy on Hospital Performance

Ref. no. 680-44C

Recent years have witnessed an "epidemic" of health sector reform in developing countries, as governments struggle to contain outlays and respond to growing dissatisfaction with the quality of government-run services. Revamping the management of public hospitals is often high on the health sector reform agenda, since public hospitals are the single largest expenditure item in the government health budget in most countries (usually 40–70 percent of total public spending).

In principle granting greater autonomy to management would be an important and necessary step toward improving the performance of what is perceived to be the inefficient and bureaucratic management of public hospitals. But in practice many questions about the potential effects of autonomy on hospital performance remain open. *World Development Report 1993: Investing in Health* advocated moving government-run health facilities away from inefficient, centralized bureaucratic control and toward a more flexible arrangement of semiautonomous management.

This study addressed the concerns of government decisionmakers contemplating shifting the public hospital system from direct public management to a more autonomous form of management. It provides an analytical tool for decisionmakers and for Bank operational staff to examine the range of options implied by autonomy and to evaluate their potential impact on different aspects of hospital performance.

The study developed an analytical framework based on current economic and organizational management literature. It expanded the analysis to include empirical data from several industrial and developing countries that have introduced varying degrees of autonomy into their public hospital systems—Chile, the Republic of Korea, Spain, and the United Kingdom. The study undertook an exploratory analysis of the correlation between the degree of autonomy introduced in the hospital system (choice variable) and hospital performance (outcome variable), as measured by efficiency, access, and quality of service.

Although many countries have taken initial steps toward hospital autonomy, it is too early to tell what the outcome of these reforms will be. It has taken more than a decade for the public hospital systems in industrial countries to move from centralized to contract-based management, and the process of change is still far from complete. These experiences only hint at the variety of options and the complexity of the task at hand, providing no clear menu of reform measures to be taken.

Public hospitals in developing countries face fundamental problems that are unlikely to be solved by managerial autonomy—such as misalignment between the capital structure (physical plant, technology) of a hospital and the services it provides. Nonetheless, some benefits can be gained through an incremental introduction of autonomy in public hospitals—at the very least moving the system away from the centralized control of a bureaucratic administration and toward a more flexible and responsive management. As hospital managers gain in skills and experience, more opportunities for reform are likely to emerge.

A Bank seminar was organized in May 1996 to critically review and synthesize the major findings and recommendations of the study.

Responsibility: Human Development Department—Xavier Coll (Internet address xcoll@worldbank.org). With Akiko Maeda; Miriam Wiley, Economics and So-

cial Research Institute, Dublin; Pere Ibern, Universidad Pompeu Fabra, Barcelona; Seung-Hum Yu, Yonsei University, Seoul; and Ricardo Bitrán, Bitrán y Asociados, Santiago.

Completion date: June 1996.

Reports:

Bitrán, Ricardo. "Assessing the Feasibility of Hospital Autonomy in the Latin American Context: Chilean Experience."

Ibern, Pere. "Hospital Reorganization in Catalonia, Spain."

Maeda, Akiko. 1995. "Exploring the Impact of Autonomy on Hospital Performance: An Empirical Study." World Bank, Human Development Department, Washington, DC.

Wiley, Miriam. "Hospital Reform in Europe: Initial Lessons from European Experience in the Creation of an Internal Market."

Yu, Seung-Hum. "Corporatization of Government Hospitals in Korea."

The Impact of AIDS Mortality on Fertility: Evidence from Tanzania

Ref. no. 680-46C

Projections of the demographic impact of the AIDS epidemic assume no interaction between heightened mortality due to AIDS and fertility behavior. But theory suggests that increased mortality of children due to AIDS would lead to higher fertility. The fertility response to higher adult mortality might be either positive or negative. This research reviewed the channels through which increased adult and child mortality due to AIDS will affect individuals' demand for children and estimated the relationship between adult mortality and the fertility of surviving women.

The research explored the channels through which mortality and fertility might be related using data sets from three household surveys in Tanzania: the 1991–93 Kagera Health and Development Survey, the 1993 Tanzania Human Resources Development Survey, and the 1994 Tanzania Knowledge, Attitudes, and Practices (TKAP) survey. The first is a longitudinal study carried out in the Kagera Region, a region hit particularly hard by the AIDS epidemic, and the last two are both cross-sectional, nationally representative surveys.

The research estimated the determinants of the recent fertility of surviving women as well as the determinants of three variables that might be good predictors of fertility but were measured over a shorter period for both women and men: desire for another child, frequency of sexual intercourse in the past four weeks, and for the sample aged 15–19, whether the respondent had ever had sexual intercourse. The basic set of determinants included in the analysis were age, education, characteristics of the household, and characteristics of the community in which the household is located. Measures of household- and community-level mortality were added to this basic set of variables.

The death of an adult female household member and the death of a sibling or a husband were found to be associated with lower recent fertility for surviving women. The reasons that surviving women have lower fertility in areas of high adult mortality might include reduced long-run economic benefits of higher demand for women's time; lower income following an adult death; and the need to absorb orphaned children, which might reduce a household's own demand for children. Elevated community child death rates were associated with higher recent fertility, as expected, whereas higher community adult death rates were associated with lower recent fertility. The results for the three proximate measures of fertility intentions from the TKAP survey supported the finding of a reduction in recent fertility in response to higher adult mortality.

Since AIDS will affect adult mortality proportionately more than child mortality, the research concluded that the likely net impact on fertility of heightened mortality due to the AIDS epidemic will be negative.

The results from this research were disseminated at a workshop, the Link between Child Mortality and Fertility, in Washington, DC, sponsored by the National Academy of Sciences (NAS), and will be presented in a chapter of a book to be published by the NAS. The results also were presented at a workshop in Brussels, AIDS and Development: The Role of Government, cosponsored by the World Bank, the European Commission, and UNAIDS, and at the annual Population Association of America meetings in New Orleans.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martha Ainsworth (Internet address mainsworth@worldbank.org) and Deon Filmer. With Innocent Semali, University of Dar es Salaam.

Completion date: June 1996.

Report:

Ainsworth, Martha, Deon Filmer, and Innocent Semali. 1996. "The Impact of AIDS Mortality on Fertility: Evidence from Tanzania." World Bank, Policy Research Department, Washington, DC.

Social Analysis in World Bank–Financed Projects

Ref. no. 680-67

Social analysis in project planning and design has been hypothesized to contribute significantly to the effectiveness of development projects. While many case studies have demonstrated the value of social assess-

ment, there has been little systematic analysis of its impact on project quality. This study provides the empirical test of the hypothesis.

The objectives of the study are to ascertain the state of the art of social analysis in planning and designing Bank projects, to assess the impact of social analysis on the quality of projects at appraisal, implementation, and completion, to explore whether the presence or absence of social analysis during preparation of a project is a good predictor of its success or failure, and to propose improved methods for social analysis. The study will identify the sectors and types of projects that benefit most from social analysis, the intensity of social analysis that is appropriate, the types of social analysis that are most useful, and the best use of social analysis in improving project preparation and performance.

The study focuses on projects with project completion and performance audit reports (PCRs and PARs) written during fiscal 1993–95. A sample of 123 project staff appraisal reports (SARs), selected to reflect regional and sectoral distribution, is the main source of data. A second sample of 45 SARs from fiscal 1991, drawn from an Operations Evaluation Department (OED) study of economic analysis in 89 SARs, is used to explore the relationship between economic and social analysis. A third, much smaller sample of fiscal 1995–97 SARs is used to ascertain the state of the art of social analysis.

The research subjects matched sets of SARs and PCR/PARs for these 123 projects to a nearly 100-item, seven-page code sheet, or questionnaire. Each of the items represents an input or output variable and is scored on a three- or four-point scale. Input variables include the extent of the analysis of the social status quo, social implementation strategy, use of participatory methods, the sociocultural appropriateness of the project, and social objectives. Output variables include the economic rate of return, supervision ratings, OED outcome ratings, and scores on the achievement of social objectives.

Since each project is scored for each item, the research can explore relationships between variables using various forms of statistical analysis. It also statistically analyzes indices constructed with multiple variables. It supplements the analysis through case study analysis, including interviews with task managers and other managers (such as division chiefs).

Preliminary statistical analysis of the data from the 123 completed projects appears to confirm the hypothesis. The data reveal strong relationships between the quality of social analysis and OED outcome scores. Further analysis will explore whether these relationships vary by sector, type of project, region, or other attributes. The relationship between social analysis and project outcomes is weakened by cases where social analysis is less relevant or cannot overcome other obstacles not related to social analysis. The underlying relationship may therefore be even stronger than the data suggest.

The sample groups of projects show that the quality of social analysis has improved since the early 1980s, but is far from adequate and varies significantly among projects. The comparison of economic and social analysis in the sample of fiscal 1991 projects revealed that social analysis was best in agricultural and urban projects and least adequate in energy and transport projects.

Responsibility: Environment Department, Office of the Director—Michael M. Cernea (Internet address mcernea@worldbank.org) and Warren A. Van Wicklin III. With Conrad Kottak, University of Michigan.

Completion date: December 1996.

Rural Poverty in Latin America

Ref. no. 680-75

This study will provide a profile of rural poverty and carry out a quantitative analysis of the determinants of income differentials among the rural poor in Chile, Colombia, El Salvador, Honduras, and Paraguay. The poverty profile will be based on recent cross-sectional household surveys in the five countries. And the analysis of the determinants of income differentials will use econometric estimation of income functions. Drawing on available studies, the project will also prepare issue papers on the links between rural poverty and land tenure, rural finance, the rural labor market, gender and ethnicity, off-farm income opportunities, and natural resource degradation.

The research will address the following questions:

- What is the relationship between schooling and poverty for farmers, for landless workers in agriculture, and for landless workers in rural nonagricultural activities? What would be the effect of an additional year of schooling on per capita household income?
- Are the landless worse off than small farmers, after differences in such factors as age, gender, and schooling are adjusted for?
- What is the role of farm size in rural poverty? What is the potential of increasing rural households' access to land as a mechanism for raising income? How much land redistribution would be required to raise the income of an average poor farmer above the poverty line?
- What is the importance of regional factors associated with rural poverty?
- What is the coverage of such basic social services as health care, education, and sanitation among the poor?
- What is the effect of migration on household income, adjusted for differences in age, gender, and schooling?

The study will then synthesize the findings of the five case studies and the issue papers and review their policy implications. The findings are expected to contribute to the design and implementation of a World Bank strategy to alleviate rural poverty in Latin America.

Responsibility: Agriculture and Natural Resources Department, Office of the Director—Alberto Valdés (Internet address avaldes@worldbank.org); Latin America and the Caribbean, Technical Department (until April 1996) and Sector Leadership Group—Rodrigo Chavez; Policy Research Department, Poverty and Human Resources Division—Peter Lanjouw; and Poverty and Social Policy Department—Alejandra Cox-Edwards. With Ramón López, Patricio Korzeniewicz, and Claudia Romano, University of Maryland; Ed Barbier, University of York; and Michael Carter, University of Wisconsin. The Italian Trust Fund is contributing funding for the research.

Completion date: September 1996.

AIDS and Development: The Role of Government

Ref. no. 680-80 and 680-97

At the end of 1994, the World Health Organization has estimated, 17 million adults worldwide were infected with the human immunodeficiency virus (HIV), the virus that causes AIDS. Two-thirds of all infections were in Africa, and more than 90 percent in developing countries.

There are two extremes of opinion on what the response to the AIDS epidemic in developing countries should be. Many of those close to the epidemic predict that the economic and social impact of AIDS on developing countries will be catastrophic. They argue that funding for AIDS prevention and mitigation programs should receive priority in the portfolio of government programs in all sectors. But many policymakers outside the health sector believe that there is little that the government can or should do. This debate is complicated by the fact that policy responses to the AIDS epidemic compete with other development programs for resources.

This research project supports background studies for a proposed World Bank Policy Research Report that will attempt to clarify the role of public policy in preventing HIV/AIDS and mitigating the impact of the epidemic in developing countries, as seen through the lens of an economist. The report will place the AIDS epidemic in the context of development problems and priorities in countries at different income levels and different stages of the epidemic.

The background studies will address several key themes of the report: the public economics of the AIDS epidemic, the economic determinants and impact of HIV/AIDS morbidity and mortality, public and donor spending on HIV/AIDS interventions, the cost-effectiveness of alternative interventions, and priorities for public policy. The studies will involve literature reviews, reanalysis of existing data sets (such as the Demographic and Health Surveys), and, in a few cases, original data collection and research.

The proposed report will provide developing country managers and donors with advice that relates AIDS programs to other development policies. In particular, it will identify priority government actions to prevent AIDS and mitigate its impact and point out activities that can be undertaken by private individuals and organizations. It also will provide guidance to the World Bank's lending program. The Bank is now the single largest source of external finance for HIV/AIDS programs in developing countries, with $700 million in commitments for such programs in 1996.

Responsibility: Policy Research Department, Office of the Director—Lyn Squire (Internet address lsquire @worldbank.org), Poverty and Human Resources Division—Martha Ainsworth, and Environment, Infrastructure, and Agriculture Division—Mead Over. With David Bloom, Harvard Institute for International Development; Julia Dayton, Yale University; Jean-Claude Deheneffe, ICP; Deon Filmer; King Holmes, University of Washington; Roberto Iunes, University of São Paolo; José Antonio Izazola-Licea, Fundaçion Mexicana para la Salud; Wattana Janjareon, Chulalongkorg University, Thailand; Tiékoura Kone, University of Abidjan; Sukhontha Kongsin, Mahidol University, Thailand; Michael Kremer, Massachusetts Institute of Technology; Allechi M'Bet, University of Abidjan; Ajay Mahal, Barnard College; Rekha Menon, Hnin Hnin Pyne, and Maria Wawer, Johns Hopkins University; Anne Mills, London School of Hygiene and Tropical Medicine; Martina Morris, Pennsylvania State University; Kara Riehman, Florida State University; Manju K. Shah; Donald Shepard, Brandeis University; Burton Singer, Princeton University; John Stover, Futures Group; and Paula Tibandebage, University of Dar es Salaam. The study is cosponsored by UNAIDS and financed in part by the European Commission and the governments of Australia and Switzerland.

Completion date: August 1996.

Reports:

Ainsworth, Martha, and Innocent Semali. Forthcoming. "Socioeconomic Correlates of Adult Deaths in Kagera, Tanzania."

Bloom, David, and Paul Gertler. Forthcoming. "Economics of the Commercial Sex Industry."

Dayton, Julia. Forthcoming. "World Bank Support of AIDS Interventions."

Deheneffe, Jean-Claude, Michel Caraël, and Amadou Noumbissi. Forthcoming. "Socioeconomic Determinants of Sexual Behavior and Condom Use: Analysis of the WHO/GPA Sexual Behavior Surveys."
Filmer, Deon. Forthcoming. "Socioeconomic Correlates of Risky Behavior: Results from the Demographic and Health Surveys."
Holmes, King, and Burton Singer. Forthcoming. "How Should AIDS Interventions Be Targeted?"
Janjareon, Wattana, and others. Forthcoming. "The Economic Impact of AIDS on Households in Thailand."
Kremer, Michael. Forthcoming. "The Public Economics of HIV/AIDS."
Mahal, Ajay, and David Bloom. Forthcoming. "Societal Determinants of HIV Infection: A Cross-National Study."
M'bet, Allechi, and Christine Jones. Forthcoming. "The Impact of Macroeconomic Reforms on the Spread of HIV in Developing Countries."
Menon, Rekha, Maria Wawer, and others. Forthcoming. "Economic Determinants and Impact of HIV Infection in Rakai, Uganda."
Mills, Anne, and Charlotte Watts. Forthcoming. "The Cost-Effectiveness of HIV Prevention and the Role of Government."
Morris, Martina. Forthcoming. "Sexual Networks: What Is Their Relevance to Modeling the Spread of HIV?"
Perriens, Joseph, and Lewis Schrager. Forthcoming. "The Natural History of HIV/AIDS."
Prescott, Nicholas, J. Perriens, and Ken Hill. Forthcoming. "The Cost-Effectiveness of Anti-Retroviral Therapies in Thailand."
Pyne, Hnin Hnin. Forthcoming. "The Government Response to the HIV/AIDS Epidemic."
Riehman, Kara. Forthcoming. "Drug Use and AIDS in Developing Countries."
Shah, Manju, and Tyler Biggs. Forthcoming. "The Impact of AIDS on African Firms."
Shepard, Donald, J. Izazola, R. Iunes, S. Kongsin, T. Kone, P. Tibandebage, and others. Forthcoming. "Levels and Determinants of Public Expenditures on the Treatment and Prevention of HIV/AIDS: Five Case Studies."
Stover, John. Forthcoming. "The Demographic Impact of the HIV/AIDS Epidemic: An Update."

Assessing the Economic Impact of Non-Ocular Onchocerciasis in Ethiopia

Ref. no. 680-81

Onchocerciasis remains a serious public health problem in Africa. An estimated 18 million people are infected with the disease. Of these, about 50 percent are infected with non-ocular onchocerciasis, which causes severe itching and onchodermatitis and results in sleeplessness, fatigue, and weakness. There is no onchocerciasis control program in the areas where the largely non-ocular manifestation of the infection is prevalent, in part because its public health importance has not been researched in a coherent manner.

This research will assess the economic impact of non-ocular onchocerciasis, focusing on the plantation community in Ethiopia. The analysis will look at both direct costs—the costs of treatment and prevention borne by households and communities and the opportunity cost of time spent seeking treatment—and indirect costs—the losses in output, income, and productivity caused by onchocerciasis-related debility in workers and the need to care for household members stricken with the disease. The study also will try to estimate the healthy days of life lost because of the disease among plantation workers.

The study will collect basic socioeconomic data (including demographic and employment information) through surveys of plantation workers following clinical examinations. To assess the economic impact of onchocerciasis, it will compare the reported economic and general well-being of those infected with the disease with that of those not infected.

Responsibility: Western Africa Department, Population and Human Resources Division—Aehyung Kim (Internet address akim@worldbank.org). With consultants from Addis Ababa University.

Completion date: February 1997.

Maternal and Child Overweight and Obesity: A Global Comparison

Ref. no. 680-83

As developing countries become richer, overweight and obesity are emerging as important global public health problems. But lack of nationally representative and internationally comparable data has impeded documentation of the extent of the problem of overweight in developing countries, its geographical and social class distribution in each country, and its global patterns.

This research will examine the extent of maternal and child overweight and obesity using the data sets from 16 national Demographic and Health Surveys from Africa, Asia, and Latin America and the Caribbean. As indicators of nutritional status, the research will use height, weight, and body mass index relative to those of the reference populations of the U.S. National Center for Health Statistics.

The results will assist in efforts to evaluate the importance of the problem of overweight relative to undernutrition and contribute to the formulation of health policies at the international, national, and local levels.

Responsibility: Human Development Department—Peter Heywood (Internet address pheywood @worldbank.org); and East Asia and Pacific, Country Department III, Population and Human Resources Operations Division. With Laura Khan, Emory University.

Completion date: April 1997.

Valuing Mortality Reductions in India: A Study of Compensating Wage Differentials

Ref. no. 680-84

Conducting cost-benefit analyses of health and safety regulations requires putting a dollar value on reductions in health risks, including the risk of death. In the United States a widely accepted method of valuing changes in risk of death is to estimate compensating wage differentials using observed labor market data. These estimates measure the additional wages workers would require to accept an increased risk of dying on the job.

Although there is an extensive literature on compensating wage differentials in the United States, no such studies exist in developing countries. In the absence of these studies policymakers often value improvements in life expectancy using the human capital approach, in which a person's additional earnings over a longer life span are said to equal the value of the risk reduction. But this approach tends to understate what people would be willing to pay for small changes in risk.

The purpose of this research is to provide estimates of compensating wage differentials for risk of death using data from India. Using multivariate regression techniques, the study will estimate hedonic wage equations explaining variation in wages—by occupation and industry—as a function of the risk of fatal and nonfatal injury. The study will use data that have been collected and published by the Indian Labor Bureau in the Occupation Wage Survey reports and the *Hand Book of Labour Statistics.*

The resulting estimates will provide values of improvements in life expectancy that can be used to evaluate the benefits of health and safety programs. These estimates will be used in a related study (Measuring the Health Effects of Air Pollution in Developing Countries, ref. no. 679-96) to value mortality risks associated with ambient air pollution, but they also could easily be used to value improvements in industrial safety risks.

Responsibility: Policy Research Department, Environment, Agriculture, and Infrastructure Division—Maureen L. Cropper (Internet address mcropper @worldbank.org) and Nathalie B. Simon. With Anna Alberini, University of Colorado, Boulder; and Seema Arora, Vanderbilt University.

Completion date: February 1997.

Gender and the Rural Economy: Evidence from Mexico

Ref. no. 680-95

Little gender-disaggregated information exists for Mexico, particularly in the rural sector. Studies have collected and analyzed household data based on the household as a single unit, without considering the conditions, preferences, and roles of individual members. The 1994–95 Mexico Rural Financial Markets Study (RFMS) is an exception. In each of the 1,963 households surveyed, the RFMS interviewed all male and female members engaged in entrepreneurial activity. Because it interviewed individuals rather than the conventional household head, the RFMS captured important gender-disaggregated information on credit and entrepreneurship patterns, property and land ownership, household characteristics, educational attainment, and employment patterns (including gender roles in agricultural production). The RFMS also conducted case studies of nonbank lenders in selected rural areas in the states of Guanajuato, Puebla, and Veracruz.

Using the RFMS data, this research will assess the influence of gender on rural economic activities in Mexico. Preliminary analysis of the data reveals differences in the types of enterprises formed by men and women and in their access to credit, with women paying on average 35 percent higher monthly interest rates than men. Following on these initial findings, the research will analyze labor force participation rates and labor market segregation by gender, gender differences in entrepreneurship and borrowing patterns, and the impact of educational attainment and family size on entrepreneurship and labor force participation.

The study will review the literature on gender as it relates to labor and credit markets in Mexico and other Latin American countries. It will estimate limited dependent variable models to analyze occupational segregation by gender, gender differences in labor force participation, gender discrimination in credit markets (interest rates and loan amounts), and men's and women's access to financial services (credit and savings). The results of these estimations will be used to identify gender differences in the rural economy and the implications of these differences for economic development.

The study's findings will have a bearing on Bank-supported rural finance activities in Mexico and elsewhere in the region. And with the Mexico RFMS methodology likely to be replicated in similar studies in Argentina, Bolivia, Brazil, Colombia, Paraguay, and Peru, this research will set a precedent for carrying out similar investigations in those countries.

The results of the research will be presented to Mexican government officials and regional policy analysts in

a seminar in Mexico. They also will be published in a departmental technical report.

Responsibility: Latin America and the Caribbean, Sector Leadership Group—Maria Correia (Internet address mcorreia@worldbank.org), Susana Sanchez, and Rodrigo Chaves.

Completion date: May 1997.

Decentralizing Safety Nets: Community Choices and Their Impact on Households

Ref. no. 680-98

A number of countries in Eastern Europe and North Africa have begun to expand their cash-based safety nets. A key obstacle to improving means-tested or indicator targeting of safety nets is the cost of obtaining accurate information on incomes and need. In the ideal, decentralizing the finance and administration of safety nets through block grants could alleviate this problem—based on the presumption that local authorities can monitor poverty and need more accurately than can more distant administrators. But the potential advantages of block grants may be overstated, and even their real advantages may not be realized because of inherent drawbacks. So there is a need for further information on their performance in practice.

This research will derive lessons on the institutional framework of poverty alleviation, contributing to the design of more effective programs. It will use three related approaches to study efforts to decentralize safety nets in Eastern Europe by means of block grants to local governments. First, it will study the range of targeting rules used for distribution by analyzing the budgetary decisions of communities. Data on these decisions will also be used to study what determines the types of investments made with the block grants. Second, the research will use household data to indicate the levels and incidence of social assistance under alternative distribution mechanisms that have delivered the same level of funding, providing a perspective on the effects of the mechanisms themselves. Third, it will use qualitative research techniques to study the community decisionmaking processes, to indicate whether they are participatory or exclusive.

All three approaches will be used to study decentralization in Albania, which legislated the use of block grants to urban and rural communities in October 1995. This reform continues the reorganization of the country's network of social assistance and insurance initiated with the assistance of technical support funded through a World Bank credit. A parallel study combining the first and second approaches will be conducted in Hungary. This study will use data collected between 1992 and 1995, straddling a major reform of social assistance initiated in 1993.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Harold Alderman (Internet address halderman@worldbank.org) and Carlo del Ninno; and Europe and Central Asia, Country Department II, Human Resources Operations Division—Sandor Sipos and Christine Allison. With Rafaelli Ninetti, University of Illinois; Robert Leonardi, London School of Economics; Artan Agolli; Ann Case, Princeton University; and Maria Zam, United Way.

Completion date: November 1997.

Impact of Targeted Credit Programs on Consumption Smoothing and Nutrition in Bangladesh

Ref. no. 681-09

Targeted credit programs of Grameen Bank, the Bangladesh Rural Advancement Committee (BRAC), and a number of other organizations in Bangladesh provide production credit and other services to the poor who lack access to formal credit institutions. The purpose is to generate income and employment for the poor and thus reduce poverty. In recent years government and nongovernmental organizations in many low-income countries have introduced similar programs.

A recent World Bank study (Credit Programs for the Poor: Household and Intrahousehold Impacts and Program Sustainability, ref. no. 676-59) showed that the targeted credit programs of Grameen Bank, BRAC, and the Bangladesh Rural Development Board (BRDB) have boosted per capita consumption in participating households. But that research did not address the question of whether women—often the primary target of such programs—and children benefit from the increased per capita consumption. Nor did it address the question of whether program participation affects the seasonality of consumption, an important issue in Bangladesh's predominantly agricultural rural economy.

This research addresses these two issues, asking the following questions: Does program participation enhance the nutritional status of children? Does program participation affect the seasonality of consumption and labor supply? And does the gender of program participants matter in the effects of participation on nutrition and on the seasonality of consumption and labor supply?

The research will examine these issues using household survey data from Bangladesh collected in the earlier study. This survey, a multipurpose, quasi-experimental household survey, was conducted in 1991–92 in 87 villages in 29 *thanas* (subdistricts) of rural Bangladesh.

The 29 *thanas* were randomly drawn from 391 *thanas*, and of these *thanas*, 24 had one or more of the three credit programs under study (Grameen, BRAC, and BRDB RD-12), while 5 *thanas* had none.

Responsibility: Poverty and Social Policy Department—Shahidur Khandker (Internet address skhandker @worldbank.org). With Mark M. Pitt, Brown University.

Completion date: December 1996.

Welfare Impacts of Alternative Ways of Providing Rural Infrastructure

Ref. no. 681-13

Many World Bank rural roads projects have as their primary objective raising the living standards of the rural poor. Yet despite a general consensus on the importance of rural roads and other infrastructure for promoting economic development and reducing poverty, there is little hard evidence on the size and nature of the benefits. And little attention has been paid to the effect of the mechanism through which the infrastructure is provided. Yet project design—such as the degree of competition, participation, and decentralization used in planning and executing road works—is largely about that mechanism.

This research will study the effect of rural roads on living standards, allowing for the organizational and institutional arrangements used in providing the roads. Its empirical investigation will focus on Vietnam, where physical infrastructure is poor and poverty levels are high, and the World Bank is financing and helping to implement a large-scale rural roads project designed to reduce poverty. The research will test the assumption that basic infrastructure investments will reduce poverty in Vietnam.

The research will investigate three aspects of rural roads provision:

- The kind of organizational structures used to provide rural roads, including the degree of participation by rural communities and others, competition in execution, and devolution of decisionmaking, financing, execution, or maintenance to local governments and rural communities
- The institutional factors determining the type of provision mechanism adopted in a particular setting
- The impact of the provision mechanism on infrastructure outcomes and the living standards of the rural poor.

The project will first construct a baseline survey of initial conditions in all areas where interventions are to be assessed and in appropriate control areas. It will then collect a detailed time-series data set covering project characteristics, regional fixed and time-varying characteristics, and household-level socioeconomic characteristics, to provide the basis for a rigorous impact evaluation.

Responsibility: Policy Research Department, Public Economics Division—Dominique van de Walle (Internet address dvandewalle@worldbank.org), and Environment, Infrastructure, and Agriculture Division—Frannie Humplick. The Canadian International Development Agency is providing funding for the research.

Completion date: March 1997.

What Are the Economic Benefits of Investing in Nutrition in Uganda?

Nutrition and health problems remain prevalent in Uganda despite economic improvements, increased availability of food, and the widespread practice of breastfeeding. Life expectancy at birth remains low at 47 years. Malnutrition remains a serious problem, with the prevalence of stunting among children under five above 40 percent since the late 1980s. And a significant percentage of Ugandan children and mothers suffer from micronutrient deficiencies and disorders, especially those resulting from inadequate dietary intakes of iron, iodine, and vitamin A.

Evidence suggests that the economic and social benefits of early health and nutrition interventions may be substantial. Nutritional deprivation increases children's risk of dying from infectious diseases. For children who survive such deprivation, stunting and wasting are believed to be associated with lower adult productivity and wages. Malnutrition also makes children more vulnerable to infections. And evidence has linked nutritional deficiencies with impaired cognitive skills, which hinder children's learning performance and mental development.

This study used PROFILES, an interactive microcomputer-based package, to calculate the costs of specific nutrition problems to Uganda's society and the government. Using data from Uganda's 1992–93 Integrated Household Survey and other relevant surveys and nutrition studies, the analysis focused on three major consequences of malnutrition: child mortality, reduced intelligence, and lower productivity. It computed the present and future benefits from improving nutritional status, and estimated the costs of proposed interventions. Projections were made for 1998–2003, the period in which the proposed comprehensive Nutrition and Child Development Project will operate in Uganda.

Summing all the potential productivity gains over the six years of the project from reducing iodine and iron deficiency and stunting, the analysis showed that Uganda would benefit from $54 million (on a present

value basis) in productivity gains. With the cost of implementing the program $39.1 million, the benefit-cost ratio would be 1.4 to 1. But in addition to the gains in worker productivity, over the six years the project's benefits would include 237,000 lives saved; higher IQs for 210,000 newborn infants, resulting in fewer grade repeaters and lower education costs; and healthier children, resulting in lower health expenditures.

The study's findings were presented at a seminar in September 1995, as well as at the client consultation workshop for the Uganda Nutrition and Child Development Project in Kampala in February 1995, sponsored by the World Bank, the Uganda Ministry of Finance, and UNICEF.

Responsibility: Eastern Africa Department, Population and Human Resources Division—Marito Garcia (Internet address mgarcia1@worldbank.org). With Jay Ross, Academy for Educational Development, and Christine Peña.

Completion date: September 1995.

Report:

Ross, Jay, and Christine Peña. 1995. "Economic Analysis of Nutrition and Early Childhood Development Interventions: Methods, Assumptions, and Data Sources." World Bank, Eastern Africa Department, Washington, DC.

Targeting and Transfers

A question that frequently arises is how to improve the targeting of public expenditures so that poverty reduction can be achieved with a fixed budget. Since income typically is unobservable in poor countries, this targeting is often done by channeling expenditures to identifiable groups that are more likely to be poor. But the assumption that the degree of indicator targeting (or tagging) can be chosen without affecting the size of the budget may well be false.

This research built an analytical model in which a well-meaning policymaker chooses a degree of indicator targeting, while three groups of the voting public—the poor, the middle class, and the rich—vote on the budget after observing the level of targeting. The striking result: under some conditions the poor themselves would prefer no tagging. So even if the policymaker were trying to maximize the welfare of only the poor, he would choose a universal transfer rather than any targeting. This is because any attempt by the policymaker to increase targeting causes sufficiently large falls in the budget available for transfers that the poor end up worse off, with a larger share of a smaller pie. Thus a finding that poverty rates differ across groups is not a sufficient case for using this information to target public expenditures.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Lant Pritchett (lpritchett@worldbank.org). With Jonah Gelbach, Massachusetts Institute of Technology.

Completion date: October 1995.

Report:

Gelbach, Jonah, and Lant Pritchett. 1995. "Does More for the Poor Mean Less for the Poor? The Politics of Tagging." Policy Research Working Paper 1523. World Bank, Policy Research Department, Washington, DC.

Urban Poverty and Social Policy in the Context of Adjustment

This research project was a comparative study of four poor urban communities in countries experiencing economic difficulties during the 1980s: Chawama, in Lusaka, Zambia; Cisne Dos, in Guayaquil, Ecuador; Commonwealth, in Metro Manila, the Philippines; and Angyalföld, in Budapest, Hungary. The study explored how poor households respond to deteriorating economic circumstances and labor market conditions, what strategies they adopt to limit the impact of shocks and generate additional resources, and what constraints impede their actions. The results show that the four communities cope in remarkably similar (and dissimilar) ways.

Three features distinguished the study from other poverty studies: a micro-level approach combining households and communities as the main units of analysis, an unusually long period of observation for some communities and households, and a comparative framework offering four cases with very different economic development levels and institutional contexts.

The study used income measures to identify poverty and inequality in the four urban communities. To capture the many aspects of changing socioeconomic well-being, it also incorporated the concept of vulnerability: the insecurity of the well-being of individuals, households, or communities in the face of a changing environment.

Since vulnerability is closely linked to asset ownership, the study developed a simple classification of assets, both tangible and intangible: labor, human capital, productive assets (an important one for the poor is housing), household relations, and social capital. The study mapped out factors that can affect each of the assets on an asset vulnerability matrix to identify indicators of increasing and decreasing vulnerability.

About 60 researchers from women's research teams and local nongovernmental organizations were involved in this collaborative project, which encompassed consultation through preparatory and final workshops in Washington, DC, mid-term workshops in the field, and

capacity-building components. Research results have contributed to World Bank operations through the integration of empirical results into poverty assessments (Ecuador, Hungary, the Philippines, and Zambia); through the use of the asset vulnerability framework in poverty-focused policy recommendations (Ecuador, the Philippines); and through social fund and poverty sector work (Belize, Jamaica). The results have been disseminated at a special event at Habitat II in Istanbul; at the UNDP-UNCHS Poverty Preparatory Committee sessions in Recife, Brazil; and at numerous academic meetings.

Responsibility: Transportation, Water, and Urban Development Department, Urban Development Division—Caroline Moser (Internet address cmoser@worldbank.org). The Ministry of Development Cooperation of the Netherlands, UNICEF, and the UNDP-UNCHS–World Bank Urban Management Program provided funding for this research.

Completion date: June 1996.

Reports:

Garcia, Mauricio, and Alicia Herbert. 1993. "Ecuador in the 1980s: A Historical Review of Social Policy and Urban-Level Interventions." TWURD Working Paper 6. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Kalinda, Beatrice, and Maria Floro. 1992. "Zambia in the 1980s: A Review of National and Urban-Level Economic Reforms." TWURD Working Paper 18. World Bank, Infrastructure and Urban Development Department, Washington, DC.

Medel-Anonuevo, Carolyn, Roselle Rivera, and Alicia Herbert. 1993. "The Philippines in the 1980s: A Historical Review of Social Policy and Urban-Level Interventions." TWURD Working Paper 8. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Moser, Caroline O. 1993. "Urban Social Policy and Poverty Reduction." TWURD Working Paper 10. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

_____. 1996. *Confronting Crisis: A Comparative Study of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities.* Environmentally Sustainable Development Studies and Monographs Series 8. Washington, DC: World Bank.

_____. 1996. *Confronting Crisis: A Summary of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities.* Environmentally Sustainable Development Studies and Monographs Series 7. Washington, DC: World Bank. (Also published in French and Spanish.)

Moser, Caroline O., Alicia J. Herbert, and Roza E. Makonnen. 1992. "Urban Poverty in the Context of Structural Adjustment: Recent Evidence and Policy Reform." TWURD Discussion Paper 4. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Salamin, Judit, and Maria Floro. 1993. "Hungary in the 1980s: A Review of National and Urban-Level Economic Reforms." TWURD Working Paper 2. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Siamwiza, Robie, Anne Sikwebele, and Roza Makonnen. 1993. "Zambia in the 1980s: A Historical Review of Social Policy and Urban-Level Interventions." TWURD Working Paper 9. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Solon, Orville J., and Maria S. Floro. 1993. "The Philippines in the 1980s: A Review of National and Urban-Level Economic Reforms." TWURD Working Paper 1. World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Impact of Growth on Poverty

Many African countries have made important changes in their policies, particularly macroeconomic policies, in the context of adjustment programs over the past decade. The question of how these policy changes have affected poverty has been a contentious one. The question has remained unsettled in part because of a lack of time-series data. This research project examined how poverty has changed over time in Côte d'Ivoire and Ghana—two countries for which relatively good time-series data are available—and related the pattern of change to changes in the policy framework. It focused on policies that affect agriculture, the sector in which the majority of the poor work.

The work attempted to explain the reduction in poverty in Ghana between 1988 and 1992 and the increase in poverty in Côte d'Ivoire between 1993 and 1995. As more work was done with the data sets for both countries, it became evident that there were serious problems of comparability over time. In Ghana changes in the survey design have tended to introduce upward bias in the last year of the survey data, so that the survey results show a larger reduction in poverty than would otherwise be the case. In Côte d'Ivoire the opposite appears to hold: the increase in poverty is exaggerated, perhaps because of sampling problems. In the savanna regions of both countries the survey data suggest that there was a large reduction in poverty, but this does not appear to be borne out by other data. In both countries, too, agricultural sector data are at some variance with the survey data. The problems in determining whether the survey results are broadly comparable over time suggest that more attention needs to be paid to hese issues when designing the surveys if they are to be of use in assessing the impact of policy reforms on poverty.

This research was done as background work to the Côte d'Ivoire and Ghana poverty assessments.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Christine Jones (Internet address cjones4@worldbank.org). With Xiao Ye.

Completion date: July 1996.

Reports:

Jones, Christine, and Xiao Ye. 1995. "Accounting for the Reduction in Rural Poverty in Ghana, 1988–92." PSP Discussion Paper 84. World Bank, Poverty and Social Policy Department, Washington, DC.

_____. 1996. "The Impact of the 1994 Devaluation on Poverty in Côte d'Ivoire." World Bank, Policy Research Department, Washington, DC. Draft.

Public Expenditures and Poverty

Public expenditure programs play an important role in poverty reduction, income redistribution, and safety net provision in many countries. The past 10 years have seen tremendous advances in the use of household-level data sets to explore a vast array of issues relating to public expenditures as access to good data has markedly improved, at least for some countries.

This research aims to develop and use econometric techniques on household-level data sets to learn more about the wide range of factors underlying the incidence of public expenditures and, where feasible, about dynamic issues in incidence and social income provision. The research also aims to improve on the standard methodology for public expenditures incidence work. And the research will explore the closely related issue of fiscal federalism and countries' revenue-collecting and other constraints—constraints that can have consequences for poverty and inequality.

The project has recently finished a study on dynamic issues in incidence using new panel data on consumption and social incomes from the Hungarian Household Budget Surveys of 1987 and 1989. The study reviews Hungary's social safety net and the changes that occurred during the period of study. It tries to throw light on such questions as, How have the reforms instituted so far performed? How has the incidence of social spending been affected? What are the implications for future reform?

The study has found that while social incomes in Hungary are redistributive—accounting for higher shares in the consumption of the poor than in that of the rich—they are not well targeted. In both survey years the richest group received more than twice the social income of the poorest. Disaggregating social incomes shows that targeting performance differs between components: family allowance receipts decrease sharply as the standard of living increases; the opposite is true for pensions.

The study also tries to distinguish policy impacts on persistent poverty from transient poverty. To do so it uses a new approach in which consumption changes over time are simulated with and without policy changes, allowing for behavioral responses. Poverty increased over the period, and would have increased even more if not for the gains in social income that protected many households from poverty. Almost all the safety net's ability to protect the poor is found to be because of higher average outlays rather than improved targeting.

The project also includes a case study on Vietnam's spending on physical infrastructure, focusing on its effects on rural living standards. In particular, it asks how physical infrastructure constraints affect households' participation in the emerging market economy. The study uses the newly available data from the Vietnam Living Standards Measurement Study survey.

A workshop on the research on the Hungarian social safety net was held in July 1993 in Budapest, with participants from universities and government ministries. The Vietnam infrastructure and poverty work was presented at the International Economics Association Congress in Tunis in December 1995.

Responsibility: Policy Research Department, Public Economics Division—Dominique van de Walle (Internet address dvandewalle@worldbank.org).

Completion date: October 1996.

Reports:

Ravallion, Martin, Dominique van de Walle, and Madhur Gautam. 1995. "Testing a Social Safety Net." *Journal of Public Economics* 57(2).

van de Walle, Dominique. 1995. "Infrastructure and Poverty in Vietnam." World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Rural Poverty in an Emerging Market Economy: Is Diversification into Non-Farm Activities in Rural Vietnam the Solution?" World Bank, Policy Research Department, Washington, DC.

_____. 1996. *Infrastructure and Poverty in Vietnam.* Living Standards Measurement Study Working Paper 121. Washington, DC: World Bank.

van de Walle, Dominique, Martin Ravallion, and Madhur Gautam. 1994. *How Well Does the Social Safety Net Work? The Incidence of Cash Benefits in Hungary, 1987–89.* Living Standards Measurement Study Working Paper 102. Washington, DC: World Bank.

_____. 1994. "Poverty and Social Spending in Hungary." World Bank, Policy Research Department, Washington, DC.

A Volume on Subsidies Research

Despite general, impressive progress in reducing poverty over the past 30 years, widespread poverty and

its correlates continue to present a challenge to governments and development institutions. As budget constraints have tightened in recent years, the need for cost-effective strategies for poverty reduction has taken on special urgency. Interest in the concept of targeting government spending toward the poor has grown. There is heightened interest, too, in the distributional effect of government spending and in the effect of public programs on the welfare of the poor (health, consumption, and so on).

This project responds to the widespread and growing interest in these topics and the importance of understanding these issues for effective poverty reduction. The research, which comprises both theoretical and empirical studies, investigates public expenditure benefit incidence, the effectiveness of public spending in reducing poverty, and the role and scope for better targeting of public spending toward the poor. Some of the studies use primary data, particularly from household surveys, and others survey the literature. Some of the empirical studies use econometric estimation; others use noneconometric techniques, such as benefit incidence analysis, to explore the distribution of government subsidies and other issues.

The research highlights the following points: Measuring the distributional effect of the benefits from public spending and determining the effectiveness of targeted programs and their targeting mechanisms in reducing poverty are extremely complex. The desirability of alternative instruments must be decided case by case. In particular, the usefulness of targeting must be evaluated in the context of each policy environment, ideally on the basis of the relevant counterfactual. The behavioral responses of participants and others must be taken into account when designing and evaluating antipoverty programs; a number of the studies show that these responses can have a large effect on the potential of a scheme to reduce poverty.

Findings of the research were presented at a World Bank conference in June 1992.

Responsibility: Policy Research Department, Public Economics Division—Dominique van de Walle (Internet address dvandewalle@worldbank.org). With Kimberly Nead. The Ministry for Development Cooperation, the Netherlands, is contributing funding for the research.

Completion date: December 1996.

Reports:

van de Walle, Dominique. 1995. "Public Spending and the Poor: What We Know, What We Need to Know." Policy Research Working Paper 1476. World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Assessing Distributional Impacts of Public Spending." World Bank, Policy Research Department, Washington, DC.

van de Walle, Dominique, and Kimberly Nead, eds. 1995. *Public Spending and the Poor: Theory and Evidence.* Baltimore and London: Johns Hopkins University Press.

The Methodology of Poverty Assessments

Policies to fight poverty rely increasingly on data about the living conditions of the poor, as reflected in a poverty profile. But constructing a poverty profile that can be relied on to guide policy choices is often difficult. And the data and methods used can matter greatly to the policies chosen. At their worst, poorly devised poverty profiles can misdirect poverty reduction efforts—for example, by channeling scarce resources to cities when poverty is worse in rural areas, or vice versa.

What methods are available for constructing poverty profiles? What are their strengths and weaknesses? This project seeks to answer those questions by investigating the theoretical and empirical foundations of the methods used in constructing poverty profiles. Typically, too little work goes into assessing the robustness of poverty comparisons as the underlying measurement assumptions change. Many of the data routinely used in poverty analysis are full of errors—a situation that is unlikely to change. There also are unavoidable value judgments underlying measurement practices. The quality of Bank policy assessments and prescriptions may or may not depend on these errors and assumptions. An important task is to find out just how confident analysts can be in forming poverty comparisons.

The project is examining the properties of the measures used for assessing individual welfare, including the practices used in comparing the welfare of different demographic groups (such as large households compared with small ones). It also is investigating the different methods used for setting poverty lines and how much they matter to the policy conclusions drawn. And it is studying ways of making better use of such nonincome indicators of welfare as health and education indicators.

The research has been tailored to the problems faced by World Bank staff undertaking poverty assessments, and the project includes an active program of training and dissemination of research results.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Ravallion (Internet address mravallion@worldbank.org), Peter Lanjouw, Gaurav Datt, and Benu Bidani.

Completion date: June 1997.

Reports:

Chaudhuri, Shubham, and Martin Ravallion. 1994. "How Well Do Static Indicators Identify the Chronically Poor?" *Journal of Public Economics* 53(March):367–94.

Lanjouw, J.O., and Peter Lanjouw. 1996. "Aggregation Consistent Poverty Comparisons: Theory and Illustrations." World Bank, Policy Research Department, Washington, DC.

Lanjouw, Peter, and Martin Ravallion. 1994. "Poverty and Household Size." *Economic Journal* 105(November). (Also published as Policy Research Working Paper 1332, World Bank, Policy Research Department, Washington, DC, 1994.)

Ravallion, Martin. 1994. "A Better Way to Set Poverty Lines." Outreach 15. World Bank, Policy Research Department, Washington, DC.

_____. 1994. *Fundamentals of Pure and Applied Economics.* Vol. 56, *Poverty Comparisons.* Chur, Switzerland: Harwood Academic Publishers.

_____. 1994. "Poverty Rankings Using Noisy Data on Living Standards." *Economics Letters* 45:481–85.

_____. 1996. "How Well Can Method Substitute for Data? Five Experiments in Poverty Analysis." *World Bank Research Observer* 11(2):199–221.

Ravallion, Martin, and Benu Bidani. 1994. "How Robust Is a Poverty Profile?" *World Bank Economic Review* 8(1):75–102.

Ravallion, Martin, and Shankar Subramanian. 1996. "Welfare Measurement with and without Substitution." World Bank, Policy Research Department, Washington, DC.

World Poverty Monitoring

Is poverty increasing in the developing world? This question is surprisingly difficult to address convincingly using existing data sources because little effort has gone into compiling and analyzing the available distributional data on a reasonably comparable basis. Yet there is a clear need to do so—to help monitor progress in reducing poverty and as a first step toward understanding the causes and effects of changing distribution. This project aims to monitor progress in reducing aggregate poverty using a consistent compilation of distributional data from household surveys.

Estimates of various poverty measures are available from numerous studies of individual countries, but their use for monitoring world poverty is questionable because of comparability problems. Past work at the country level has used poverty lines appropriate to each country. But there is a marked tendency for the real value of local poverty lines to increase with the average income of a country. This fact clouds attempts to compare and aggregate across countries using the poverty data available in standard (secondary) sources. The use of official exchange rates also biases international poverty comparisons. This project therefore turns to the primary data sources and reestimates all poverty measures on a consistent basis. It converts local currencies to constant purchasing power parity. The project also is taking care to test the robustness of comparisons across regions and over time to measurement assumptions. The data set it has constructed contains 60 countries, 40 of which have data at two or more points in time over the period 1981–94.

The estimates indicate that around 1993, 1.3 billion people—roughly one in three—were living on less than a dollar a day at 1985 prices. The incidence of absolute poverty in the developing world as a whole fell slightly over 1987–93. The number of poor—by any consumption standard for defining *poor*—has been growing at about the same rate as the population of the developing world, about 2 percent a year. But there is marked variation between regions and countries, with generally rising poverty incidence in Africa, Europe and Central Asia, and Latin America and the Caribbean and generally falling incidence in Asia.

Results of this research were used in the World Bank's *Poverty Reduction and the World Bank: Progress and Challenges in the 1990s* (Washington, DC, 1996). Results have also been used in recent *World Development Reports.*

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Ravallion (Internet address mravallion@worldbank.org), Gaurav Datt, Shaohua Chen, and Benu Bidani.

Completion date: June 1997.

Reports:

Anand, S., and Martin Ravallion. 1993. "Human Development in Poor Countries: On the Role of Private Incomes versus Public Services." *Journal of Economic Perspectives* (winter).

Bidani, Benu, and Martin Ravallion. Forthcoming. "Decomposing Social Indicators Using Distributional Data." *Journal of Econometrics.*

Ravallion, Martin. 1994. "Measuring Social Welfare with and without Poverty Lines." *American Economic Review* (May).

Ravallion, Martin, and Shaohua Chen. 1996. "What Can New Survey Data Tell Us about Recent Changes in Living Standards in Developing and Transitional Economies?" Background paper to World Bank, *Poverty Reduction and the World Bank: Progress and Challenges in the 1990s.* Washington, DC, 1996.

Ravallion, Martin, Gaurav Datt, and Dominique van de Walle. 1991. "Quantifying Absolute Poverty in the Developing World." *Review of Income and Wealth* 40(December):359–76.

Gender, Land Rights, and Agricultural Productivity

In many countries, particularly in Africa, women have some degree of autonomy in decisionmaking in agriculture. But because they frequently lack control over productive resources, such as land, credit, or other inputs, women may be unable to make important decisions about technology or cropping patterns. Thus their

lack of control over productive resources may have serious implications for increasing productivity in agriculture.

This research focuses on the links between gender, access to and control over land, and agricultural productivity. The primary objective is to better understand how gender differentials in land rights influence productive efficiency in agriculture. The first stage of the research has focused on generating preliminary empirical evidence, using existing data from Burkina Faso. Later stages will focus on new data collection and more comprehensive empirical analysis.

The analysis brings together anthropological and economic evidence, drawing heavily on ethnographic information in developing econometrically testable hypotheses. The econometric work uses plot-level production data collected over a two-year period by the International Crop Research Institute for the Semi-Arid Tropics, and a model that controls for household, crop, and year fixed effects.

The econometric results indicate that when year, household characteristics, plot quality, and crop are controlled for, women in Burkina Faso produce 30 percent less than men. And women apply substantially less manure per hectare. This gender gap is *not* explained by the fact that women's plots are farther from the household or have been used more intensively in the past. Nor is there evidence that women's plots are less productive because they farm land whose tenure is less secure in the *interhousehold* sense (that is, land borrowed by the household from other households). But there is evidence suggesting that women produce less because of *intrahousehold* insecurity of access to land. Although the finding is not conclusive, it argues strongly for deeper investigation of the relationship between gender, land rights, and agricultural productivity. The results also indicate that women's status in the household affects agricultural productivity.

Responsibility: Poverty and Social Policy Department—Shahidur R. Khandker (Internet address skhandker@worldbank.org), Andrew D. Mason, and Jacqueline Baptist. With Tara Vishwanath; Anand V. Swamy, University of Maryland; Michael Kevane, Santa Clara University; Christopher Udry, Northwestern University; Peter Hazell, International Food Policy Research Institute; and Bina Agarwal, University of New Delhi.

Completion date: June 1998.

Report:

Vishwanath, Tara, Shahidur R. Khandker, Andrew D. Mason, and Anand V. Swamy. 1996. "Gender, Land Rights, and Agricultural Productivity: A Survey of Issues and a Case Study of Burkina Faso." World Bank, Poverty and Social Policy Department, Washington, DC.

Labor Markets and Education

Public Policy, Private Response, and Education Outcomes in India

Ref. no. 678-60C

The initial objective of this study was to analyze how government education policies and private sector response affect enrollments—particularly rural and female enrollments—at the primary and secondary levels, using Tamil Nadu, India, as an example. Following a field visit to India in 1994, a second question was added, on the possible tradeoff between the quantity and the quality of education as enrollments expand. The study investigated the degree to which this tradeoff has been exacerbated by past and present government policies that limit the reallocation of resources across schools and districts, prohibit private contributions to public schools, and keep teacher salaries in public schools well above competitive levels.

The study addressed the first question through multivariate regression analysis using data collected in 1986–87 by India's National Sample Survey Organization, including data on village and household characteristics, access to schools, and educational attainment. It analyzed the second question using panel data provided by Tamil Nadu's Department of School Education on enrollments, education resources, and quality across the 15 districts in the state. Both data sets were augmented by qualitative information garnered during the visit to Tamil Nadu in fiscal 1994, in which Bank staff met with education officers and visited 26 urban and rural schools, including public, aided, and fee-financed primary and secondary schools.

The study found that Tamil Nadu has an impressive record of raising enrollment and literacy among both boys and girls. Most children complete primary school, the majority complete middle school, and many continue on to high school. The government of Tamil Nadu has undertaken a wide array of initiatives and made schools accessible and attractive to families.

But resources have not kept up with enrollments and have not always been efficiently used. Most notably, the student-teacher ratio has risen dramatically over the past decade. And while new schools have been started, many of them have no buildings or only meager buildings. The quality of education—as measured by the pass rate on the statewide tenth-grade examination—has suffered as a result. The study shows that the rise in the student-teacher ratio, and the consequent slowing of the growth rate in examination passes, have been greatest in districts with the fastest growth in enrollment—evidence of a quantity-quality tradeoff. Districts with a high proportion of privately managed schools perform better. The study analyzed policy changes—including greater use of private management, greater discretion for publicly managed schools, and increasing private finance—that might improve quality.

The findings of this study provide relevant lessons for other developing countries. They alert policymakers to the pitfalls of a system that relies too heavily on public finance and regulation to support expansion of enrollments. Under such circumstances enrollments are likely to increase at the cost of a fall in learning outcomes.

The findings of the research were disseminated to policymakers in India through a seminar at the University of Madras in fiscal 1996.

Responsibility: Human Development Department—Jee-Peng Tan (Internet address jptan@worldbank.org); and Policy Research Department, Poverty and Human Resources Division—Estelle James. With Paul Duraisamy, University of Madras; and Julia Lane, American University.

Completion date: June 1996.

Report:

Duraisamy, Paul, Estelle James, Julia Lane, and Jee-Peng Tan. 1996. "Is There a Quantity-Quality Tradeoff in Education? Evidence from Tamil Nadu, India." World Bank, Human Development Department, Washington, DC.

Putting Inputs to Work in Primary Schools: Four Experiments in the Philippines

Ref. no. 679-01

Education in the Philippines appears relatively well developed at first sight. The gross primary enrollment rate is 112 percent, well above the 87 percent rate for Asian countries with comparable per capita GNP. But not all is well. Although most Filipino children enter first grade, 30 percent drop out before finishing the cycle. Of those, 60 percent drop out in the first two grades, when still too young for many tasks at home, on the farm, and in the family business. That suggests that

poor progress at school is an important reason for parents' decision to terminate a child's schooling.

The government recognizes the need to improve student achievement and has invested heavily to do so, in part with assistance from the World Bank. Under the Second Elementary Education Project, four experiments addressed the problem of dropouts in low-income communities: school feeding programs, use of multilevel learning materials, school feeding programs with parent participation, and use of multilevel learning materials with parent participation.

This research is evaluating the cost-effectiveness of the four interventions in enhancing student achievement and lowering dropout rates. The results are expected to provide guidance for future investments in elementary education.

The research uses data from a survey of students in 30 schools that received the interventions and in 10 control schools that received no intervention. The survey tracked the students in the sample for attendance and test scores over the course of two years, the first being the base year before the interventions were put in place. The survey also generated information about the students' family backgrounds and their schooling environments.

As part of a collaborative arrangement to enhance local analytical capacity, the Bureau of Elementary Education, Philippine Department of Education, has overseen the computerization of the data. The data are now being cleaned. Early results suggest that students drop out mostly between school years rather than during the school year and that academic performance is an important factor in dropout behavior.

Responsibility: Human Development Department—Jee-Peng Tan (Internet address jptan@worldbank.org). With Julia Lane and David Brat, American University.

Completion date: September 1996.

Impact Evaluation of Education Projects: Decentralization and Privatization Issues

Ref. no. 679-18

There is a growing awareness in many developing countries that central governments are limited in their ability to address local needs and to use local capacity to meet those needs. In the education sector this awareness has led to such policies as transferring decisionmaking from central to local governments, increasing autonomy for schools, introducing voucher schemes, and offering incentives for private school providers. Will these initiatives improve the delivery of services and thus the quality of education?

This research has been implementing impact evaluation strategies as part of five World Bank–funded education projects supporting these types of reform. Through benchmarking, monitoring, and comparisons of program and nonprogram schools, the study is assessing the effect on education outcomes of changes in the way central governments devolve financial planning, resource mobilization, and education decisionmaking to local governments, communities, and schools. It seeks to benefit World Bank operations and client countries by providing rigorously derived lessons from interventions that are becoming more popular but that have not been subjected to sufficient empirical inquiry. The research initially included Bank-funded projects in Colombia, Pakistan, Peru, and Tanzania. It dropped the assessment of the decentralization pilot in Peru when the pilot was postponed, but added evaluations of school autonomy reforms in El Salvador and Nicaragua.

The first two years of the project were spent designing evaluation strategies, developing survey instruments and sampling designs, collecting the baseline data, and monitoring the implementation of the reforms. The research has doubled its efforts to measure school indicators often missing from survey data—daily attendance rates of teachers and students, grade repetition, and achievement test scores. And in Nicaragua it is applying an instrument for process evaluation to supplement data from the school-household survey with results from focus group meetings of local stakeholders and from classroom observation. The baseline data are now being processed and analyzed, and preparations for follow-up data collection are under way. All these tasks have been undertaken with substantial participation by government staff and local consultants. Besides building local capacity in impact evaluation, this collaboration ensures more effective dissemination of the research results within the countries.

Initial examination of the databases indicates that the study—and ultimately, policymakers—will benefit from the wealth of information that the study has collected. The study will relate how schools operate and how students learn in a decentralized setting to detailed information on schools and their principals, teachers, and school councils, and to characteristics of students and their parents and families. And it will draw lessons on how effective the nongovernmental sector can be in increasing enrollment among targeted groups such as girls and the poor.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Elizabeth King (Internet address eking@worldbank.org), Harold Alderman, and Emmanuel Jimenez; South Asia, Country Department I, Population and Human Resources Operations Division—Guilherme Sedlacek; Human Development Department—Jee-Peng Tan; and Latin America and the Caribbean Technical Department,

Advisory Group—Donald Winkler. With Laura Rawlings; Diane Steele; Berk Ozler; Peter Orazem and E. Paterno, Iowa State University; Bruce Fuller, Harvard University; Julia Lane, American University; K. Rust, Westat; R. M. Rakotomalala, IREDU; P. P. Gandye; S. A. Sumra; A. Bryk, University of Chicago; F. Akbar; and local evaluation teams in Colombia, El Salvador, Nicaragua, Pakistan, and Tanzania.

Completion date: June 1997.

Dynamic Implications of "Return Migration" for Labor Markets

Ref. no. 679-21

This research analyzes the dynamic adjustment process generated by return migration. It emphasizes unemployment, real wages, and investment in the home, or receiving, country. It also considers policies that can be helpful during the adjustment process by encouraging investment and job creation—for example, expanding public infrastructure and subsidizing private investment and new employment.

The research integrates lessons from past episodes of return migration and assesses the extent of potential return migration. The study is preparing an analytical paper and carrying out two case studies. One case study addresses the effects of the immigration of Soviet Jews on the Israeli economy, which represents almost a laboratory experiment of return migration. The other looks at Russia. Because of data limitations, the Russian case has received less in-depth analysis.

Theory suggests that if the return migration is not too large, the economy converges over time to a low-unemployment steady state. A large shock may destabilize the economy, however, and the unemployment rate may then continue to increase.

The Israel case study provides an analysis of the largely successful absorption of a massive influx of immigrants from the former Soviet Union to Israel in 1990–93. The study focuses on the policies adopted—subsidizing employment expansion and undertaking a massive infrastructure investment program—and their effect on employment and unemployment. The study has found that the employment subsidy and infrastructure construction program together accounted for more than half the employment expansion. Further, it has found that the cost of the subsidy is higher when it is accompanied by other (effective) policy measures—suggesting a need to evaluate policy programs by considering not only their direct effect but also the relationships between them.

The risk of a destabilizing shock is potentially more relevant for Russia, which is facing at least the possibility of large return migration. For Russia, then, the policy implications of return migration concern mostly the scope and speed of the restructuring of the country's redundant state-owned enterprises. In designing policy reform, it would be helpful to consider the relationship between immigration (in its effects on unemployment dynamics) and restructuring.

Responsibility: East Asia and Pacific Regional Office, Office of the Regional Vice President—Michael Walton (Internet address mwalton@worldbank.org); and Policy Research Department, Poverty and Human Resources Division—Emmanuel Jimenez. With Anat Levy, Bank of Israel; Zvi Hercowitz, Tel-Aviv University; Flora Tsui, Johns Hopkins University; Sumana Dhar; and Karnit Flug.

Completion date: October 1996.

Reports:

Flug, Karnit, Zvi Hercowitz, and Anat Levy. 1994. "'Return' Migration: The Influx from the Former Soviet Union to Israel." World Bank, Policy Research Department, Washington, DC.

Hercowitz, Zvi, and Anat Levy. 1995. "Mass Immigration and the Dynamics of Unemployment." World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Mass Immigration—The Potential Case of Russia." World Bank, Policy Research Department, Washington, DC.

Vocational Training Incentives and Foreign Direct Investment

Ref. no. 679-25

In recent years developing countries have come to recognize the important role that foreign direct investment can play in their economies, not only by bringing debt-free capital, but also by contributing to technological and managerial development. This study seeks to answer two related questions: Do training incentives offered to potential investors make a difference in a country's ability to attract foreign direct investment? And if the incentives do make a difference, how should governments design them for maximum benefit?

The research will analyze in depth the types of training incentives used in a set of countries that have performed well in attracting foreign investment. For each type of training incentive, the research will evaluate the importance of the incentive in the location decisions of foreign firms, assess the effectiveness of the vocational training provided under the incentive, and estimate the cost to the government of granting the incentive per trained worker produced.

The countries selected for the research are Ireland, Malaysia, and Singapore, along with the state program of North Carolina in the United States. While the train-

ing incentives in these places are structured somewhat differently, governments generally reimburse firms for the actual cost of training their workers at the start of operations.

Extensive interviews have been conducted with foreign firms that have received a training incentive. Although the results are still being analyzed, early findings suggest that the incentive has a positive effect on a firm's choice of investment location. The incentive does not have an effect because of its cash value, however, which in most countries is small compared with the total cost of the investment or with other forms of incentives, such as tax holidays or cash grants. Instead, it has an effect by lowering firms' uncertainty about their ability to find manpower with suitable skills in an unfamiliar labor market. So, unlike most incentives, which raise expected rewards by adding to profitability, training incentives work by lowering perceived risks. This can be especially important for firms making an initial investment in a new host country.

Responsibility: International Finance Corporation, Foreign Investment Advisory Services—Wayne Edisis (Internet address wedisis@ifc.org). With Adrian Ziderman, Bar-Ilan University; Fernan Ibañez, PROFINDE; Padraic White; and Neil Hood, University of Strathclyde.

Completion date: January 1997.

National and International Wage Differentials: Effects of Trade, Growth, and Education

Ref. no. 679-26

The relationship between patterns of development, international interactions, and wage differentials has prompted rising interest and concern. This relationship has been intensively analyzed and debated for the OECD countries. Most observers agree that there has been a demand shift against unskilled labor in these countries and that this explains the rising wage inequality in the United States and the persistent, high unemployment disproportionately affecting the unskilled in Europe. Most also agree that changes in wages and employment reflect the joint effects of three factors: changes in the relative supply of skilled labor, the effects of international trade, and the effects of the growth process, including technological change. But differences remain about the importance of each of these factors.

Until recently little attention had been paid to the relationship between trade, technological change, and wage differentials in low-income and middle-income countries. Conventional wisdom suggests that opening to trade would narrow the wage gap between skilled and unskilled workers in developing countries, a result consistent with the relative abundance of unskilled labor. But the experience of such countries has varied, with a narrowing of wage differentials in some, such as the Republic of Korea, but, more recently, a widening of differentials in others, especially in Latin America (including Argentina, Chile, and Mexico). The objective of this research project is to expand the empirical and analytical basis for interpreting these developments in selected countries.

The project is performing country studies of changes in wage differentials using microeconomic data sets from household surveys in Argentina, Colombia, Costa Rica, and Malaysia and an enterprise survey in Mexico. The household survey analysis is designed to differentiate between supply and demand determinants of changes in differentials, using data on the educational characteristics of workers. The enterprise survey analysis uses information on technology spending by firms to distinguish between trade and technology influences as causes of widening differentials. This work is complemented by a compilation of data on wages by skill category from a multicountry source (the International Labour Organisation's October survey) and by a survey of the theoretical and empirical work.

Initial results of the research confirm that there has been a widening of wage differentials in the countries studied and that this widening has resulted from demand shifts. Supply shifts have favored unskilled workers because educational expansion has increased the relative abundance of skilled workers.

The empirical work on the sources of demand shift represents a first round of analysis in this complex area. Within the scope of this project it was not feasible to fully resolve the sources of shifts. But there is at least suggestive evidence that trade is a source of widening differentials in Chile and perhaps in Colombia, while technological change may have played a role in Mexico. The broader review of the theory and evidence documents the various channels of change in differentials and shows how increasing inequality in middle-income countries can be consistent with increasing international integration through trade.

Responsibility: East Asia and Pacific Regional Office, Office of the Regional Vice President—Michael Walton (Internet address mwalton@worldbank.org). With Richard Freeman and Donald Robbins, Harvard University; Adrian Wood, University of Sussex; and Gordon Hanson, University of Texas.

Completion date: September 1996.

Reports:

Gindling, T.H., and Donald Robbins. "Earnings Inequality, Structural Adjustment, and Trade Liberalization in Costa Rica." World Bank, Washington, DC.

Hanson, Gordon, and Ann Harrison. "Trade, Technology, and Wage Inequality: Evidence from Mexico." World Bank, Washington, DC.

Robbins, Donald. "Summary of Preliminary Analysis of Malaysia's Wage Structure and Its Causes, 1973–89." World Bank, Washington, DC.

_____. "Wage Dispersion and Trade in Colombia: An Analysis of Greater Bogotá, 1976–89." World Bank, Washington, DC.

Wood, Adrian. "Openness and Wage Inequality in Developing Countries: The Latin American Challenge to East Asian Conventional Wisdom." World Bank, Washington, DC, and Institute of Development Studies, Sussex, U.K.

Public Sector Retrenchment and Efficient Compensation Schemes

Ref. no. 679-51

Economic reforms often include shrinking the public sector, which in turn sometimes requires massive layoffs. But what are the best mechanisms for shedding redundant public sector workers? If severance pay packages are offered to induce voluntary departures, how should they be designed to minimize the total cost? And are there ways to prevent the most valuable workers from leaving the public sector, and the least productive from staying? These questions became even more pressing after February 1996, when the Operations Policy Committee of the World Bank authorized lending for severance pay.

This study investigates the design of severance pay packages when there is imperfect information on the "rent" individual workers attach to their public sector jobs. Some components of this rent, related to wages and nonwage benefits in the public sector, are easy to measure. Others, like potential earnings in the private sector, the value attached to job security and low effort in the public sector, or possibilities for moonlighting and bribing, are clearly unobservable. Moreover, the importance of these components is likely to vary among workers.

The study uses three different methods to estimate these rents based on the observable characteristics of public sector workers. In Argentina it compares the workers who accepted a severance pay offer with those who rejected it. In Ecuador and Turkey it surveys displaced workers a year and a half after separation to evaluate their employment status and earnings and their subjective assessment of their net gain or loss. And in Egypt it compares the earnings of private and public sector workers and "calibrates" the earnings function of the public sector workers based on the assumption that no one would remain in the public sector if his or her rent was negative. A comparison of the findings from the three methods is expected to lead to practical rules for designing severance pay packages.

The study also evaluates different ways of dealing with massive labor redundancy, comparing the cost per redundant job and highlighting the underlying political economy mechanisms. Spain carried out a program of industrial restructuring relying on unemployment insurance for more than a decade. Algeria recently introduced a similar scheme. In India, by contrast, mandated job security led to the emergence of "sick" industries. While this alternative has obvious benefits for incumbent workers, it also takes a toll on economic efficiency. In Kazakstan and other transition economies, where one-company towns are prevalent, a company's retrenchment decisions affect wages and employment opportunities for the whole town.

Finally, the study surveys retrenchment experiences across countries, collecting and analyzing data from 50 retrenchment programs in which the Bank was involved (though not through direct lending). The survey collects data on such characteristics as the shares of voluntary and involuntary job separations, the amounts of severance offered, and the use of other support mechanisms, such as training and placement services. The study then relates the success or failure of these programs, as measured by such factors as their cost and the percentage of displaced workers later rehired, to the programs' characteristics.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Rama (Internet address mrama@worldbank.org) and Kinnon Scott; and Middle East and North Africa, Country Department I, Country Operations Division—Elizabeth Ruppert. With Ragui Assad, University of Minnesota; Kaushik Basu and Gary Fields, Cornell University; Jose M. Campa, New York University; John Haltiwanger and Manisha Singh, University of Maryland; Anat Levy, Bank of Israel; Donna MacIsaac; Richard McLean, Rutgers University; Donald Robbins, Harvard University; and Aysit Tansel, Middle East Technical University.

Completion date: December 1996.

The Impact of Child Health and Nutrition on Education Outcomes in Cebu, Philippines

Ref. no. 679-57

Episodes of malnutrition during early childhood are often thought to have serious implications for a child's school performance later in life. But research on this issue has been ambiguous, in part because of a lack of high-quality data with which to address the issue. This research project will use new data collected in Cebu, Philippines, to assess the impact of early childhood

nutrition on subsequent school performance. These are data collected in the 1980s for 3,000 children during the first two years of life, supplemented by current school performance data for about 2,000 of the children. The research will assess schooling outcomes on the basis of such indicators as enrollment, attainment, attendance, and cognitive skills (mathematics, English, and Cebuano). It also will examine other determinants of school progress, such as family background and school and teacher characteristics.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Paul Glewwe (Internet address pglewwe@worldbank.org) and Elizabeth King. With Hanan Jacoby, University of Rochester; Linda Adair, University of North Carolina; and the Office of Population Studies, University of San Carlos, Cebu, Philippines. The Asian Development Bank is contributing funding for this research.

Completion date: October 1997.

How Does Schooling of Mothers Improve Child Health? Evidence from Morocco

Ref. no. 679-84C

Many studies from developing countries have found that mothers' education has a positive effect on child health. This effect could come about for several reasons. First, basic health knowledge may be acquired in school. Second, basic literacy and numeracy skills that are acquired in school may prepare girls to acquire more health knowledge after they leave school, and may also have an independent effect after controlling for health knowledge. And third, schooling may change attitudes about the usefulness of traditional and modern health practices.

A better understanding of how schooling helps mothers provide for their children's health would have clear policy implications for the curriculum of primary and secondary schools. This study investigated the issue using data from Morocco on child health (height for age) and different kinds of maternal knowledge (health knowledge, literacy in French, literacy in Arabic, oral mathematics, and written mathematics). The data are from the 1990–91 Enquête nationale sur les niveaux de vie des ménages.

The results strongly suggest that mothers' health knowledge is by far the most important route through which mothers' education improves child health. In Morocco health knowledge is not acquired directly in school. Instead, mothers acquire health knowledge using the literacy and numeracy skills learned in school. Direct teaching of health knowledge in primary schools may make schooling more effective in improving child health.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Paul Glewwe (Internet address pglewwe@worldbank.org) and Nauman Ilias.

Completion date: June 1996.

Report:

Glewwe, Paul. Forthcoming. *How Does Schooling of Mothers Improve Child Health? Evidence from Morocco.* Living Standards Measurement Study Working Paper. Washington, DC: World Bank.

Early Childhood Development Programs in China, Indonesia, Nigeria, and Thailand

Ref. no. 679-88C

The evidence available on early childhood development programs suggests that these programs can contribute a great deal to children's welfare in adulthood by helping to prepare them for primary education. This early preparation can do much to enhance their school performance, economic productivity, social responsibility, and quality of life. Much of the evidence in this area comes from programs in industrial countries, however, primarily the United States. Analysis of early childhood development programs that have proved most effective in developing countries has been hampered by a lack of appropriate, complete, and comparable data.

To help fill this gap, this research project has collected descriptive information about education and care-oriented programs for young children in China, Indonesia, Nigeria, and Thailand. The study used comprehensive, comparable surveys of the programs in the four countries, including data collected through observation of early childhood settings. The project also gathered information on children's development, the qualifications and experience of teachers, and the expectations and priorities of parents and teachers with regard to early childhood development.

The initial data analyses focused on the expectations and priorities of parents and teachers and the characteristics of teachers and settings. In general across the four countries, teachers considered the development of self-sufficiency skills and language skills of highest priority, while parents assigned the highest priority to preacademic and language skills. In China and Indonesia 100 percent of the lead teachers were female, while in Nigeria and Thailand 63 percent and 96 percent were female. Across the four countries, lead teachers averaged 11–13 years of full-time education and had an average of 4–6 years of experience. The average adult-child ratio ranged from 1 to 17 for Indonesia to 1 to 28 for Thailand, but in all four countries several settings had ratios of between 1 to 40 and 1 to 70.

These initial findings, along with findings to be reported later from the observations and on child development, are expected to contribute to work in early childhood development by revealing which inputs determine the quality of programs and thus which should receive priority.

Responsibility: Human Development Department—Mary Eming Young (Internet address myoung3@worldbank.org). With Patricia Olmsted.

Completion date: February 1996.

Costs and Effectiveness of In-Service Primary Teacher Education at a Distance: A Comparative Study

Ref. no. 679-93

The low direct and opportunity costs of nonresident training programs for in-service teachers have encouraged support for such programs since the 1960s. Evaluations of the approach have generally shown that it works and is cost-effective. But studies have not investigated what methods have been effective in achieving specific objectives in specific environments. This study compared the cost and effectiveness of a distance education mode of teacher training in Uganda with those of the conventional alternative, a teachers college. The study also will provide a model for the cost and effectiveness analysis of a planned cross-country study of distance education programs.

As Uganda emerges from a long period of civil strife, it faces the huge task of training teachers with limited resources. The Mubende Integrated Teacher Education Project (MITEP) was established in 1992 to provide training for 1,000 underqualified teachers in two districts. MITEP used a combination of self-study materials, residential courses, and supervision to upgrade teachers' skills. Completed in 1995, MITEP offered a rare opportunity to examine the methods, outcomes, and costs of a distance education program and to compare them with those of the conventional teachers colleges in the same districts.

The research has attempted to answer two main questions: Did MITEP produce teachers who are as effective as those trained in conventional ways? And did it produce trained teachers as cost-effectively as the conventional colleges? The research also has looked at how MITEP operated, identified which components worked well, and assessed whether it is sustainable and replicable.

The principal data source was an evaluation of MITEP by the International Extension College and Action Aid. The results have provided student characteristics and numbers, and dropout, completion, and success rates. Other data sources were staff of MITEP, Action Aid, the Ministry of Education and Sports, and conventional colleges, and classroom observations of MITEP and conventional college students. Cost data were drawn from government budget documents, records of conventional colleges, and MITEP accounts, and data on student and teacher achievement were obtained from the Ugandan National Examinations Board.

The study's fieldwork and analysis are completed, and a report on the findings is being finalized.

Responsibility: Economic Development Institute, Human Resources and Poverty Division—Paud Murphy (Internet address pmurphy@worldbank.org). With Bernadette Robinson and Jason Pennells, International Extension College, Uganda; and James Hough, Loughborough University.

Completion date: September 1996.

An Institutional Approach to the Promotion of Education Services in Brazil

Ref. no. 680-38

Economists have long recognized human capital as an important factor in development. So expenditures for education have figured prominently in the budgets of developing countries and have been an important focus of Bank assistance. Education outcomes, however, vary inconsistently with expenditures, prompting some to suggest a restructuring of priorities to increase the efficiency of resource use.

This research hypothesizes that resource efficiency is highly correlated with local cultural and institutional factors. It is based on the notion that institutional factors—trust, social norms, modes of behavior, and the like—explain much of the variation in students' educational performance across regions. The nexus of informal rules, civic-minded attitudes, and relationships of trust forms a region's stock of social capital. Social capital increases the efficiency of society by facilitating coordinated activity. By instilling in children a sense of the importance of education and by fostering family and community involvement, social capital enhances the productivity of public expenditures for education.

The research proposes to incorporate social capital in a model of the educational performance of primary school age children in Brazil. Using data on cultural and institutional factors, it will construct an index of the stock of social capital for several municipalities. The study will use econometric techniques to estimate education production functions, with social capital as a technological shift.

The literature on educational achievement has established that simply increasing expenditures is not

an efficient way to improve outcomes. By providing insight into the role of social capital in student achievement, this study will contribute to the design of institution-building interventions. And its examination of institutional issues previously overlooked in project analysis could contribute to future education projects in Brazil and elsewhere that are more effective in delivering quality primary education. The study's findings will be discussed with members of the Brazilian academic community.

Responsibility: Latin America and the Caribbean, Country Department I, Country Operations Division 2—Danny Leipziger (Internet address dleipziger @worldbank.org), Country Department I, Country Operations Division 1—Homi Kharas, and Brazil Resident Mission—Robin Horn. With Vijay Gupta, Georgetown University; John Frost, Brown University; and O. B. de Lima, M. L. de Oliveira Barbasa, and L. da Veiga, Instituto João Pinheiro. The Instituto João Pinheiro contributed data for the research.

Completion date: June 1997.

International Measures of Schooling Years and Schooling Quality

Ref. no. 680-54

This project is updating and extending the widely used data compiled on educational attainment. Robert Barro and Jong-Wha Lee ("International Comparisons of Educational Attainment," *Journal of Monetary Economics* 32[December]:363–94, 1993) and Vikram Nehru, Eric Swanson, and Ashutosh Dubey ("A New Database on Human Capital Stock," Policy Research Working Paper 1124, World Bank, International Economics Department, Washington, DC, 1995) undertook the two most important recent efforts in constructing cross-country data on educational attainment. Both studies, however, have gaps in data construction and coverage that this work addresses. The project will use the extended data to further investigate the relationships between education (male and female) and economic growth.

A preliminary version of the educational attainment statistics compiled by Barro and Lee, updated through 1990 with census data for many countries, is now available on the Bank's Growth Research Website *(http://www.worldbank.org/html/prdmg/grthweb/growth_t.html).*

Responsibility: Policy Research Department, Macroeconomics and Growth Division—William Easterly (Internet address weasterly@worldbank.org). With Robert Barro, Harvard University; and Jong-Wha Lee, Korea University.

Completion date: February 1997.

The Informal Sector in Mexico

Ref. no. 680-59

The informal sector is often considered the disadvantaged sector of labor markets—made dualistic by excessive formal sector remuneration, benefits, and regulation. But earlier Bank research suggested that workers in the informal sector may not be queuing for formal sector jobs, may not be worse off after moving into the informal sector, and may have voluntarily sought self-employment after accumulating physical and human capital in salaried jobs. The earlier research also suggested that the high instability in informal employment partially reflects the high failure rates for microenterprises everywhere.

This research follows up on these findings in two areas. First, it seeks to map patterns of transition in employment across the business cycle to see what role the informal sector plays in downturns. Second, it develops a typology of microenterprises.

The study draws on data from the Mexican National Urban Unemployment Survey, which allow the construction of five quarterly panels that make it possible to track workers' movements among sectors. The data span 1987–93, a period of both recessions and relative prosperity. The research uses multinomial logit and partially observed probit models to map workers' movements during the business cycle, and relative wage and wage differential series to compare remuneration among sectors. And it applies factor and cluster analysis to data from the 1992 Microenterprise Survey to identify subsectors and stratification within the microenterprise sector.

The preliminary results are consistent with the earlier findings. They suggest that poorer formal sector workers are more likely to enter self-employment during downturns, while the better-off may await more auspicious business conditions. Movement into informal salaried work appears strongly procyclical, suggesting that microenterprises are more likely to take on employees in better times, and that informal salaried work is not the employment of last resort. The microenterprise sector appears to consist of multiple subsectors, distinguished by prosperity, plans for expansion, capital-labor ratios, and education level. Fewer than a third appear to be involuntarily informal.

In Mexico there is relatively little evidence of segmentation and informal employment, probably reflecting an efficient allocation of labor. It may be more appropriate to view the majority of informal sector workers as voluntarily self-employed, rather than as rationed out of the workforce. The findings suggest that labor market reform should focus more on raising the productivity of the formal sector than on eliminating segmentation.

The preliminary findings of the research were presented at the 1996 American Economic Association meetings in San Francisco, and will be presented at the Latin American Meetings of the Econometric Society in Rio de Janeiro in August. Seminars are planned at the World Bank for September and October 1996.

Responsibility: Mexico Country Department—Zia Qureshi (Internet address zqureshi@worldbank.org); and Europe and Central Asia, Country Department I, Office of the Director—Frank Lysy. With William Maloney, University of Illinois, Champaign-Urbana.

Completion date: September 1996.

Child Labor: What Role for Demand-Side Interventions?

Ref. no. 680-64

Child labor is pervasive throughout the world, especially in developing countries, with Asia and Africa accounting for more than 90 percent of child employment. Children work for a variety of reasons, the most important being poverty. Though they are not well paid, they still contribute a major share—as much as a quarter—of family income in developing countries. Legislation has been able to control child labor in the formal sector to some degree—but as a result, child labor is most prevalent in the largely unmonitored informal and rural sectors.

The intuitive solution would be to immediately abolish child labor. But there are problems with this strategy. There is no international agreement on the definition of child labor. And many children may have to work to attend school, so abolishing child labor would only hinder their education.

School is the most important means for drawing children away from the labor market. Economic incentives can help, by bringing about the economic change in the condition of a struggling family needed to free a child from the responsibility of working. The state can help by providing free education and by making it worthwhile for a child to attend school, whether by providing students with nutritional supplements or increasing the quality and usefulness of education. Poor families recognize good-quality schooling and are frequently prepared to sacrifice child labor to invest in a good education for their children.

This research analyzes the determinants of different forms of child labor in Bolivia, Colombia, Côte d'Ivoire, and the Philippines using household and labor force survey data. The data are drawn from the 1993 household survey in Bolivia, the labor force module from the 1992 household survey in Colombia, the 1988–89 Living Standards Measurement Study survey in Côte d'Ivoire, and the 1991 labor force survey in the Philippines. The study documents and analyzes the economic and time contributions of children. And it examines the effect of the cost of schooling, mother's employment, parental education, and family income on children's labor force participation.

The study uses a simple household production model in which the supply of child labor is a function of the economic and demographic characteristics of the household, the age and sex of the children, and the costs and returns of alternative uses of children's time. The analysis is based on children who are out of school and does not model the demand for education by the household. Taking as given that a child does not attend school, the research models the child work decision. It assumes that children will be involved in one of three activities: household work (caring for infants, assisting parents), working for wages, or working for the home enterprise.

Responsibility: Human Development Department—Harry Anthony Patrinos (Internet address hpatrinos @worldbank.org); and Environment Department, Social Policy and Resettlement Division—Christiaan Grootaert. With Kimberly Cartwright, Christos Sakellarion, and Gi-Taik Oh.

Completion date: December 1996.

Technology and Basic Education Reform: Chile and Costa Rica

Ref. no. 680-68

Revolutionary advances in information technology and communications are transforming the world economy and presenting new challenges to all countries. One such challenge is the need to compete in the emerging information economy, a challenge in which education must play a central role by preparing new generations to participate effectively in this dynamic environment.

This research is undertaking case studies of the experiences of two developing countries, Chile and Costa Rica, that have undertaken major programs to introduce computers in their education systems. Chile's program, which began as a pilot program in 1993, has placed computers in more than 200 primary and secondary schools and established a wide area network that electronically links students and teachers throughout the country. Costa Rica's program—launched in the 1980s by a nongovernmental organization, the Omar Dengo Foundation—has installed computers in about 150 primary schools, covering 40 percent of the primary school population.

The case studies seek answers to such questions as, What factors support—and what factors impede—the

integration of technology into curriculum and practice? What factors contribute to effective teacher training, support services, and maintenance systems? What are the characteristics of the schools perceived as the most effective educators in each program? And what are the benefits and costs of the programs and the factors needed to sustain them?

The research will examine several hypotheses on the intended benefits of introducing technology, on perceptions of its effect on the classroom, and on its effects on students. Finally, the research will compare and contrast the experiences of the two countries and attempt to draw useful lessons to guide policy and project formulation in other countries contemplating introducing computers in their education systems.

The study will be based on richly qualitative data collected through attitude surveys and in-depth classroom and school observations. It is conducting surveys of groups of school administrators, computer technology trainers, and teachers in six to eight schools in each country. And it is carrying out structured observations in the case study classrooms and computer laboratories. The participating schools are all public and have been selected because of their reputed success with computers.

The project was launched in April 1996 at a workshop in San José, Costa Rica, at which the research team refined the goals, methodology, and work program for the investigation. Since the workshop, the case study schools have been selected in Chile and Costa Rica, the evaluation instruments have been defined, and the fieldwork has begun in Costa Rica. A second workshop was held in June 1996 in Washington, DC, to review the results of the first school visit, confirm the effectiveness of the methodology, and revise the evaluation instruments.

Responsibility: Latin America and the Caribbean, Human and Social Development Group—Michael Potashnik (Internet address mpotashnick@worldbank.org) and Ricardo Rojas; Policy Research Department, Poverty and Human Resources Division—Laura Rawlings. With Barbara Means, Stanford Research International; and country research teams headed by Jeanina Umaña, Omar Dengo Foundation, Costa Rica, and Maria Ines Alvarez, ENLACES, Chile.

Completion date: April 1997.

Technology, Education Costs, and Distance Education

Ref. no. 680-70

Accelerating change in technology means that workers need to pursue education throughout their working lives to remain competitive in the labor market. But conventional means of education will not suffice to meet the needs of large populations for lifelong learning or, in poor countries, even to provide primary education for all.

With the growing demand for education—and the rising relative cost of conventional education—the prospect of electronic distance education becomes increasingly important. The digital revolution is steadily—and dramatically—reducing the cost of storing, manipulating, and transmitting information. And the convergence of the once-distinct media of image, sound, books, and computer networks into digital multimedia is making the world's knowledge base accessible anywhere on the planet. What role could such technology play in expanding education in developing countries?

This study is reviewing distance education technologies and their use, effectiveness, and cost in developing countries to find out what technologies, under what conditions, can provide cost-effective alternatives to conventional education. It focuses on computer-based electronic communications that integrate text, audio, and video media, transmitted by Internet and similar electronic data distribution systems. The study is gathering quantitative, descriptive data on the provision and availability of electronic distance education in postschool continuing education and carrying out case studies of electronic distance education. Fieldwork has been completed for case studies in Estonia and South Africa and has been launched in Brazil, Egypt, and Russia. A case study may also be conducted in an Asian country.

Responsibility: Human Development Department—Jacques van der Gaag (Internet address jvandergaag@worldbank.org) and Michael Potashnik; and External Affairs Department, Electronic Media Center—Peter Knight. With Michael Moore.

Completion date: December 1996.

Evaluating Active Labor Market Programs in Europe and Central Asia

Ref. no. 680-73

Active labor market programs (such as public works, retraining, job search assistance, and job subsidies) are increasingly common in transition economies, which are experiencing unprecedented levels of unemployment. There are political, social, and economic reasons for government action to quicken labor redeployment and cushion the impact of layoffs. Nevertheless, to avoid costly mistakes, investments in these labor programs need to be carefully and quickly evaluated. This project is developing comprehensive data on the costs of selected active labor market programs in the Czech Republic, Hungary, Poland, and Turkey, and evaluating their effectiveness in helping different groups of the

unemployed under varying labor market conditions and during different stages in the transition to a market economy.

The research addresses several questions: What are the key indicators of success for different active labor market programs? How can information be collected on these indicators? Do the results justify the expenditures? And how can information be used to improve the targeting and effectiveness of programs? To evaluate the effectiveness of programs, the study will use nonexperimental techniques to compare the labor market success of program participants with that of an otherwise similar group of nonparticipants. Counting as economic costs both direct program costs and the opportunity costs for participants, the study will calculate cost-benefit ratios for programs and use the results to rank them by cost-effectiveness.

The study should help resolve the debate within the Bank between the advocates of growth-oriented policies (combined with social safety nets for the most needy) and the advocates of labor market interventions. The study's cost-benefit ratios for different active labor market programs will be useful for client countries that have decided to spend money on such programs, as will its guidance in targeting these programs to those who will benefit most from them.

Research results will be summarized in short notes for dissemination in and outside the Bank. The findings will also be discussed in detail during a one-day seminar at the Bank in fiscal 1997. And they will be disseminated in client countries, especially to task managers of employment projects.

Responsibility: Poverty and Social Policy Department—Indermit S. Gill (Internet address igill @worldbank.org); and Europe and Central Asia, Country Departments I and II, Human Resources Operations Divisions—David Fretwell. With ABT Associates. The U.S. Department of Labor is contributing funding for the research, and the departments of labor of the Czech Republic, Hungary, Poland, and Turkey are participating in the research.

Completion date: June 1997.

The Effect of Education Decentralization Reforms on Resource Allocation, Quality, and Equity in Hungarian Schools

Ref. no. 680-78

Decentralization of administration and finance has become a common reform in education. In Hungary responsibility for public education through the secondary level now lies with municipalities, which spend more than 35 percent of their budgets on education. Yet little is known about how municipalities make funding decisions, what criteria they use in allocating funds among schools, and what levels of expenditure are sustainable. And it is not known how this decentralization has affected school quality, equity, and efficiency.

This study uses both qualitative and quantitative data collection and analysis to answer these research questions. It first analyzes archival data from national school-based surveys of student achievement and school inputs that were conducted in 1991 and 1995. Using a variety of simple descriptive techniques, the study looks at differences among types of municipalities in the level and distribution of student achievement and school inputs at these two points in time. It next returns to a small sample of municipalities to conduct in-depth interviews with school and municipal officials on changes related to recent decentralization initiatives. Preliminary analyses of the archival data have been completed.

The study is being carried out in close collaboration with the Hungarian Ministry of Education and regional Bank operational staff. Results will be disseminated through seminars and publications to the Hungarian government, Bank operational staff, and others interested in the decentralization of education. Reports will be available in English and in Hungarian.

Responsibility: Human Development Department—Marlaine Lockheed (Internet address mlockheed @worldbank.org) and Eluned Schweitzer; and Europe and Central Asia, Country Department II, Human Resources Operations Division—Christine Allison. With Gabor Halasz; Gyorgy Martonfe; Eva Balazs; Anna Imre; Maria Nagy; Peter Vari; and Neville Postlewaite. The National Institute of Public Education, Hungarian Institute for Educational Research, and Statistics Institute of Hungary are participating in the research.

Completion date: September 1996.

The Economics of Early Child Development Programs

Ref. no. 680-87

Abundant literature documents the positive effects of early child development programs on children's health and nutritional status and their preparedness for and progress in primary schooling. Many developing country governments have been expanding their investments in such programs, often with financial assistance from the World Bank. Yet little assessment has been made of the economic returns to such investments, making it difficult to evaluate alternative interventions for improving child welfare.

This research will attempt to provide a systematic cost-benefit framework for evaluating investments in

early child development programs. It is producing easy-to-use computer software to aid such evaluations and a survey of the literature on the costs and benefits of existing programs.

The research uses standard cost-benefit analysis. It starts with what is by now widely accepted evidence from the economics of education literature that workers who completed primary school earn more than workers with no schooling, with the difference often large enough to outweigh the cost of the investment in schooling. The monetary benefits of early child development programs can thus be estimated on the basis of the programs' effect on the number of children who survive to primary school age and the number of survivors who complete primary schooling. Given the benefits, it is then possible to ascertain the maximum cost consistent with an economic investment in an early child development program (that is, one that yields an economic return of, say, at least 10 percent a year).

The computer software sets up the calculation to allow users to enter country-specific data on child survival and schooling, and earnings profiles of people with and without primary schooling. This approach gives users a tool that is easily manipulated to assess the cost parameters for efficient investments in early child development programs, which typically lack a standard format and vary widely in cost according to their content and design.

The project is testing the utility of the program in specific country settings and consolidating information on the cost of early child development programs and their effect on child survival and schooling.

Responsibility: Human Development Department—Jacques van der Gaag (Internet address jvandergaag @worldbank.org) and Jee-Peng Tan. With Husein Abdul-Hamid.

Completion date: September 1996.

Report:

van der Gaag, Jacques. 1996. "Early Child Development: Investing in the Future." Paper presented at conference on Early Child Development, Carter Presidential Center, Atlanta, Georgia, April 8–9.

The Impact of Labor Market Policies and Institutions on Economic Performance

Ref. no. 680-96

This is the second phase of a broader study whose main goal is to measure the effect of labor market interventions on the short-run adjustment to economic reforms and on long-run growth. Rather than discussing the consequences of labor market rigidity in general, the study focuses on a series of well-defined departures from the undistorted, partial equilibrium model of the labor market: minimum wages, mandated benefits (or nonwage costs), payroll taxation (including social security contributions), public sector employment, and unionization. The relevance of these "distortions" was made clear by the choice of labor markets as the topic of *World Development Report 1995*. But there are still many unresolved issues. For example, the report calls for less government intervention and more reliance on collective bargaining. But are all labor market interventions equally distortive? And is collective bargaining really less distortive than government interventions?

To address these issues, the study includes both empirical and analytical work. A central piece of the empirical work is the construction of a cross-country, time-series database of labor indicators. This database includes information on employment and wage structures, the extent of government intervention in the labor market, the degree of unionization, and other variables. In the first phase of the study data were collected from existing cross-country sources. In this second phase the emphasis will be on collecting data from country-specific sources for a core set of about 40 developing countries. At the end of the project this database will be made available (at its marginal cost) to researchers interested in labor market issues in developing countries.

This study uses the cross-country database to extend the now standard growth regression analysis to take labor market policies and institutions into account. Preliminary evidence indicates that labor market "rigidity" is associated with low growth, but the rigidity appears to stem from public sector employment and unionization rather than from government interventions in the labor market. The study also uses the database to address the endogeneity issue—how labor market policies and institutions are themselves affected by other economic policies, particularly by increased openness to international trade. Finally, the study uses the database to evaluate the role of sectoral labor reallocation as an engine of growth.

The empirical work also relies on microeconomic data sets for selected countries to evaluate the effect of specific labor market "distortions." The study uses data from household surveys to assess the impact of mandated benefits on take-home pay in Ecuador, and data from plant-level surveys to compare wages and productivity in the public and private sectors in Mexico. It uses matched data for workers and firms to evaluate the consequences of unionization in Zimbabwe. And it uses data aggregated at the sectoral level to measure how unionization affects employment growth in Jamaica, and data aggregated at the provincial level to measure how minimum wages affect employment levels in Indonesia. These case studies have been selected using an

"opportunistic" approach, taking into account the availability of good-quality data, the existence of a significant labor market "distortion," and operational interest in the issue.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Rama (Internet address mrama@worldbank.org). With Raquel Artecona; Ann Bartel, Ann Harrison, and Dani Rodrik, Columbia University; Kristin Butcher, Boston College; David Card and Cecilia Rouse, Princeton University; Alex Cukierman, Tel Aviv University; Francesco Daveri and Guido Tabellini, IGIER; Alvaro Forteza, Universidad de la Republica, Uruguay; and Donna MacIsaac. The Chazen Institute is contributing funding for a conference.

Completion date: June 1997.

Understanding the Rationale for Education Reform: Parents as Principals and Teachers as Agents

Ref. no. 681-12

This research proposes to merge two strands in the literature on education reform into a coherent analytical framework for evaluating the expected impact of different types of education reform. The strands are the empirical work that estimates education production functions to examine the cost-effectiveness of education inputs and the case study work on specific education reforms, particularly decentralization. The research will attempt to show that both must be understood in the context of a plausible positive model of the behavior of all the actors in the system—teachers, education ministries, and parents. Once the framework is developed and tested, the study will apply it to examine the expected impact of various education reforms.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Lant Pritchett (Internet address lpritchett@worldbank.org) and Deon Filmer. With Jonah Gelbach, Massachusetts Institute of Technology.

Completion date: June 1997.

Improving Primary Education in Kenya: A Randomized Evaluation of Different Policy Options

Ref. no. 681-14

Many econometric studies have tried to estimate the effect of education policies on school performance in industrial countries. But even the most sophisticated econometric techniques may yield biased estimates if schools with different levels of inputs also differ systematically in other, unobserved ways. Randomized experiments overcome many of the statistical problems inherent in these econometric studies, but they are rarely done because of their high costs and because of public officials' reluctance to vary the level of inputs among schools. This research takes advantage of an opportunity to perform randomized evaluations of several different education policy options in collaboration with an international nongovernmental organization.

The study began with a small number of schools in 1995. Out of 14 schools, 7 were randomly chosen to receive the nongovernmental organization's standard package of assistance. Pretests were administered at the beginning of 1995, and posttests in the fall of 1995. The results are now being analyzed.

The project expanded in 1996. Out of 50 schools, 25 were randomly chosen to receive a large number of textbooks. Pretests were administered in early 1996, and posttests will be administered near the end of the year. The children will be followed for at least two more years to assess whether the initial effects endure for several years. Two other policy interventions will be tried in 1997 and 1998.

The results of the interventions will be compared with findings based on standard econometric techniques to see whether those techniques yield biased results. The first results from the larger sample of schools should be available in mid- to late 1997, with further results available in 1998 and 1999.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Paul Glewwe (Internet address pglewwe@worldbank.org). With Michael Kremer, Massachusetts Institute of Technology; and Sylvie Moulin. The International Christian Humanitarian Services, the Netherlands; and the National Science Foundation, United States, are contributing funding for the research.

Completion date: October 1999.

Putting Inputs to Work in Elementary Schools: What Can Be Done in the Philippines?

Low student achievement poses a continuing challenge in developing countries. Policymakers recognize the need for better outcomes, but the task of choosing appropriate interventions is often difficult—given limited budgets, the wide range of options, and the scant information, in developing and industrial countries alike, on the cost-effectiveness of alternative education investments. This study set out to provide evidence on the cost-effectiveness of alternative inputs in elementary schools, using data from the Philippines.

The study relied on data collected in 1990–91 in a survey of students in a random sample of 110 schools. The data, which cover 3,500 students in each of three grades (one, four, and six), include test scores at the beginning and end of the school year, students' personal and family background, and class and school characteristics. The study focused on first-graders because of the importance of low levels of student learning in this grade.

Consistent with evidence from past studies, the results show that class size, teachers' academic credentials, and teachers' experience have no effect on achievement. These factors can therefore be ruled out as priorities for policy intervention. The analysis identified three school inputs with unambiguously positive effects on learning: workbooks, classroom furniture, and preschool programs. Relating these inputs' effect on achievement to their costs suggests that the first two inputs are more cost-effective than preschool programs. But preschool programs remain attractive as an additional option to improve student achievement for two reasons. First, investments in workbooks and desks and chairs quickly reach diminishing (or even zero) returns once students have one each of these inputs. And second, only a small share of elementary school students in the Philippines still lack workbooks and classroom furniture (for example, no more than 30 percent of first-graders in the sample lacked workbooks in mathematics and Pilipino, and fewer than 20 percent were in classrooms with inadequate furniture).

Responsibility: Human Development Department—Jee-Peng Tan (Internet address jptan@worldbank.org). With Julia Lane, American University; and Paul Coustere, University of Bourgogne.

Completion date: October 1995.

Report:

Tan, Jee-Peng, Julia Lane, and Paul Coustere. Forthcoming. "Putting Inputs to Work in Elementary Schools: What Can Be Done in the Philippines?" *Economic Development and Cultural Change.*

Ethnicity, Education, and the Labor Market

Ethnicity is closely associated with poverty and disadvantage in many countries. Ethnic differences are evident in investments in human capital early in life and in subsequent labor market outcomes. Education and labor market policies can reduce ethnic inequality, however. In education, teaching in local languages and increasing the enrollment of minority groups can equalize opportunities. And in the labor market, policies to reduce inequality range from equal pay and equal opportunity legislation to affirmative action programs.

This research examined these education and labor market issues in several industrial and developing countries (Australia, Bolivia, Guatemala, India, Malaysia, Mexico, Paraguay, Peru, Romania, and the United States). It estimated ethnic wage and occupational differences in the labor market that are unjustified from an economic perspective, to account for significant efficiency losses in GDP. It found that at a microeconomic level, differences in labor market characteristics are largely the result of lower endowments of human capital among minority workers.

The research results suggest that policies that ensure equality in treatment, because they generate efficiency gains, can benefit not only minority workers but also others in the economy. But affirmative action policies can have mixed effects because they tend to benefit better-off members of the minority group.

The results of the research have been incorporated in *World Development Report 1995* and presented at a series of World Bank and international seminars. Country-specific results have been incorporated in operational projects and economic and sector work.

Responsibility: Poverty and Social Policy Department—Zafiris Tzannatos (Internet address ztzannatos @worldbank.org); and Human Development Department—Harry Anthony Patrinos.

Completion date: June 1996.

Reports:

Patrinos, Harry Anthony. 1995. "The Cost of Discrimination against Ethnic Groups." World Bank, Human Development Department, Washington, DC.

_____. 1995. "Differences in Education and Earnings across Ethnic Groups in Guatemala." Paper presented at the International Seminar on the Population in Central America. World Bank, Human Development Department, Washington, DC.

Tzannatos, Zafiris. 1995. "The Costs of Ethnic Discrimination to Society and Minorities: A Note on Methodology and Results from Guatemala and Bolivia." World Bank, Poverty and Social Policy Department, Washington, DC.

_____. 1995. "Reverse Race Discrimination in Higher Education: A Framework of Analysis and a Country Experience." World Bank, Poverty and Social Policy Department, Washington, DC.

Household Schooling Decisions in Tanzania

Education sector performance indicators in Tanzania paint a troubling picture. In 1993 primary school gross enrollment rates were 82 percent, about 10 percentage points lower than in 1980. There is chronic late starting. Although secondary school enrollments recently increased, gross secondary enrollment rates re-

mained less than 10 percent in 1993, among the lowest in the world.

This research seeks to identify the main determinants of household schooling decisions in Tanzania and to assess how policy and project interventions can improve schooling outcomes at the primary and secondary levels. It gives special attention to the gender dimensions of schooling decisions.

The research draws on three recent individual and household surveys from Tanzania: the 1990–91 labor force survey conducted by the Bureau of Statistics and Labor Department in Tanzania, and the 1993 human resource development survey and 1994 Focused Area Study Technique survey, both conducted by the World Bank. The survey data generate profiles of the costs and benefits to parents of sending children to school, including the opportunity cost of children's time. The study has developed a framework for household schooling decisions and estimated the determinants of school enrollment and late starting. And it has run policy simulations to assess the impact on enrollments of changes in key policy variables.

While private returns to primary and secondary education are high for wage employees, questions remain about returns to workers in the informal sector and agriculture. Low expected returns in these sectors may explain, in part, the low enrollment rates. The high direct costs of secondary school may also be an obstacle to school participation, particularly for poorer households. The study's econometric analysis suggests that income, distance to school, and the opportunity cost of children's time are significant determinants of school enrollment and late starting, particularly at the secondary level. Modest gains in secondary enrollments could be achieved through interventions that reduce household costs by compensating families for the direct and indirect costs of schooling or by reducing distances to schools.

Responsibility: Poverty and Social Policy Department—Andrew D. Mason (Internet address amason @worldbank.org), Shahidur R. Khandker, Hussain Samad, and Jacqueline Baptist; and Eastern Africa Department, Population and Human Resources Division—Luisa Ferreira, Charles Griffin, and Lynn Tsoflias.

Completion date: August 1996.

Reports:

Mason, Andrew D., and Shahidur R. Khandker. 1996. "The Determinants of Enrollment and Late Starting Decisions in Tanzania." HCD Working Paper. World Bank, Poverty and Social Policy Department, Washington, DC.

_____. 1996. "Household Schooling Decisions in Tanzania." World Bank, Poverty and Social Policy Department, Washington, DC.

_____. 1996. "The Myth of Free Education: Counting the Full Private Costs of Primary and Secondary Schooling in Tanzania." HCD Working Paper. World Bank, Poverty and Social Policy Department, Washington, DC.

ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT

Land Tenure Insecurity in Honduras and Paraguay

Ref. no. 678-74

Land tenure insecurity is pervasive in Latin America, especially among small farmers. Several factors account for this: farmers' lack of legal title, inappropriate legislation, institutions' lack of technical capacity to handle a proper registration system, lack of enforcement, and complicated and nontransparent procedures that unduly increase the cost of land registration.

The primary objective of this research is to study the efficiency implications of land tenure insecurity and other institutional restrictions affecting rural land markets in Honduras and Paraguay. Although earlier Bank studies have analyzed the constraints arising from insecure property rights in Africa and Asia, there have been no studies of similar scope for Latin America.

This study has developed an econometric model to rigorously quantify the effects of several factors related to land tenure security that contribute directly to agricultural productivity and to identify the effect of titling on the demand for land. The study considers three factors affecting agricultural productivity: an efficiency effect, an input demand effect, and a credit supply effect. The efficiency effect of land tenure security captures market mechanisms that allocate land among farmers with different management efficiencies. The input demand effect reflects incentives to invest, especially in capital goods that are attached to the land. And the credit supply effect reflects credit constraints that untitled farmers frequently face in formal credit markets.

During fiscal 1996 data from household surveys in Honduras and Paraguay were analyzed to provide panel data sets over a period in which land titling was implemented. The survey in Honduras used a baseline study of 1,500 farm households that had been surveyed in 1983–85 and again in 1987–88 as part of a USAID-funded project to title land. In 1994, 437 of these households were resurveyed to obtain comprehensive data on farm income, investments, assets, land transactions, and use of credit. The analysis of these data indicates that titling is strongly associated with higher yields and farm incomes (which are in turn closely associated with greater use of credit and inputs) and with increased investment on titled land, especially investments attached to that land, such as coffee plantations. The total effect of land titling in Honduras is about $100 per household, which provides a return of 17 percent on the estimated cost of titling.

For Paraguay the data sets consist of 286 farming households that were interviewed in the 1991 survey. Of these households, 120 had some titled land in 1991. This number increased to 137 in 1994.

The Paraguay data reflected enough intertemporal variation in the land tenure status of the surveyed households to allow the study to apply the first-differences econometric method of analysis. The results suggest that titling had a positive and significant effect on the demand for attached capital and on access to credit, especially for larger farmers. The estimated effect of titling on household income is $40.

The results of these analyses show that land titling is a good investment in Latin America. But several issues remain to be addressed. First, much more than land titling is needed to realize the potential benefits. An appropriate legal framework for land tenure, cadastral surveys, a registry of liens on land to allow the use of land as collateral and facilitate efficient land transactions, and implementation and enforcement mechanisms, including a functional judicial system, are all necessary conditions. In addition, the collateral effect will only be realized if there are well-developed financial markets.

Second, mounting large-scale, regionally focused titling programs that are proactive in supplying titles is likely to be more efficient and equitable than providing titling on demand. In regionally focused programs cadastral surveys can be mounted more efficiently, and the costs in legal and other fees and payments for individual titling can be reduced, especially for small farmers.

Third, regional land titling programs represent a significant investment and an area where development banks and donors could help support rural development efforts.

The results of this study have prompted the World Bank to intensify its dialogue on land issues in the region. The main results were disseminated and discussed at a two-day seminar in June 1996.

Responsibility: Agriculture and Natural Resources Department, Agriculture and Forestry Systems Divi-

sion—Derek Byerlee (Internet address dbyerlee @worldbank.org), and Office of the Director—Hans Binswanger; East Asia and Pacific, Country Department III, Agriculture Operations Division—Gershon Feder; and Latin America and the Caribbean Technical Department—Alberto Valdés. With Ramón López, Claudia Sepulveda, and Isidro Soloaga, University of Maryland; Alexander Coles; Michael Carter and Pedro Olinto, University of Wisconsin; Atenec de la Agro-Industria, Honduras; and Centro Paraguayo de Estudios Social, Paraguay.

Completion date: August 1996.

The Determinants of Agricultural Growth: Country and Cross-Country Analysis

Ref. no. 679-03

Understanding the process of agricultural growth is important for understanding the growth of the economy as a whole and for understanding the implications of policy change for the rural sector, which typically contains the majority of the poor. This project analyzes agricultural growth using a comprehensive approach based on the fundamental determinants of that growth: changes in inputs (land, labor, capital, purchased inputs), in technology, and in the economic environment.

In the first phase of the project a broad data set for a large sample of countries was assembled, drawing on data from the Food and Agriculture Organization, the International Labour Organisation, World Bank data sources, and national sources. The data cover trade, production, harvested area, producer prices, and agricultural investment.

Initial results from analysis of these data indicate that, despite lower real prices, growth in agricultural production has been pervasive and appears to be linked to domestic demand growth. Most of the gains can be attributed to productivity increases rather than greater use of primary inputs. For example, labor has steadily migrated out of the sector over the past four decades, and the land area devoted to agriculture has grown little over the past three decades. The benefits of these productivity gains have accrued primarily to consumers (in the form of lower prices), arguing for consumer financing of agricultural research.

The completion of the project was delayed to incorporate results on agricultural capital from the research project Total Investment, Agricultural Investment, and Investment in Manufacturing (ref. no. 680-50), which allowed work on investment, total factor productivity, and supply response and growth. Initial results from this phase of the study show that animal herds and tree stocks represent the largest share of agricultural capital. Fixed capital assets tend to grow as a proportion of total agricultural capital as economies develop. But the returns to fixed capital do not differ significantly from those to other capital. As an economy develops, capital in agriculture tends to decline as a share of total capital, but early results suggest that productivity gains are significantly higher in agriculture than in manufacturing.

Papers on total factor productivity, agricultural supply response and growth, and agriculture and investment demand are planned. In addition, the database assembled for the project will be documented, and portions will appear in the Bank's *World Development Indicators.*

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Donald Larson (Internet address dlarson@worldbank.org), and International Trade Division—Will Martin. With Yair Mundlak and Rita Butzer, University of Chicago; Al Crego, University of Maryland; Julie Coronado, University of Texas; Nanae Yabuki, Yale University; and Devashish Mitra, Columbia University.

Completion date: December 1996.

Reports:

Larson, Donald, and Yair Mundlak. Forthcoming. "On the Intersectoral Migration of Agricultural Labor." *Economic Development and Cultural Change.*

Mundlak, Yair, Donald Larson, and Al Crego. Forthcoming. "Agricultural Development: Issues, Evidence and Consequences." In Yair Mundlak, ed., *Contemporary Economic Issues.* Vol. 2, *Labor, Food, and Poverty.* London: Macmillan.

Energy Demand in Asian Developing Economies

Ref. no. 679-19

Energy demand in developing countries merits research attention for two main reasons. First, developing countries are playing an increasingly important role in world energy markets, with their consumption of commercial energy increasing substantially over the past two decades. The increase has been particularly pronounced among the developing countries of East and Southeast Asia and is expected to continue into the next century. The strength of future energy demand by these lower-middle-income countries will depend on a host of factors, however, such as expected income levels, real energy prices, the continuing trend away from traditional noncommercial energy sources to commercial fuels, and the speed of shifts toward energy-intensive activities because of such factors as urbanization and industrialization, increased motorization, and households' use of electrical appliances.

Second, the growing concern about the environment and the global nature of environmental problems have

focused attention on the pattern and trend of energy demand in the developing economies. More than half the total carbon dioxide emissions originate in the energy sector, and a large and increasing share of the flow of emissions will be from lower-middle-income countries. For example, with capital scarce in such countries as China and India, but highly polluting coal abundant, coal consumption in these economies under present energy policies will almost certainly continue to rise substantially over the next decade. A detailed analysis of energy demand and the possibilities of interfuel substitution in the major coal-producing countries, such as China and India, is therefore of great importance to a better understanding of global environmental problems and the energy needs of these economies.

This research is reviewing recent patterns of energy consumption in Asian developing countries, modeling energy demand using econometric and end-use approaches, projecting the energy demand of the major Asian countries over the next 15 years, and analyzing the effects of energy-related policies on energy demand.

The study uses an econometric approach to obtain estimates of income and price elasticities of sectoral energy demand disaggregated by fuel type. For most sectors, it pays special attention to adjustment dynamics, developing and using dynamic fuel share equations for this purpose. For countries for which detailed time-series data are not available, the research relies on cross-section estimates based on long averages. The estimated elasticities are incorporated into the model to project demand. In sectors for which reliable elasticities are not obtained, an end-use approach is used to project demand.

The results of the research should provide elasticities that are indispensable for analyzing energy-related policies in developing countries. They should also provide computer models to project energy demand by key sectors under various policy and other scenarios.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Takamasa Akiyama (Internet address takiyama@worldbank.org) and Shane Streifel. With H. Pesaran, Cambridge University; R. Smith, Birbeck College; and J. Mitchell.

Completion date: December 1996.

Managing Commodity Price Risks in Pakistan

Ref. no. 679-70C

The government of Pakistan intervenes in the domestic wheat market to ensure food security for consumers and adequate and stable incomes for producers. This intervention has high costs, among them poorer agricultural performance. The World Bank is urging policy changes, such as removing agricultural trade restrictions, price supports, and subsidies. But policymakers often resist such reform because of a fear that it will expose the domestic market to fluctuating international commodity prices.

Recently, there has been growing interest among developing countries in financial risk management instruments—instruments that could be highly suitable for use by Pakistan to reduce the impact of international price volatility on the domestic market. But little research has been done on hedging price risks for Asian grain-importing countries such as Pakistan. This study aimed to fill that gap by looking at the wheat sector in Pakistan. It assessed the risk management needs of the sector and evaluated whether using financial instruments would provide better risk management than the direct market interventions currently used to stabilize prices.

The results of the study show that price risk is now borne principally by the government through fluctuating import subsidy payments. Simulations based on monthly data for 1994 show that using futures hedging, the government could fix the international price it pays for wheat for the entire season. Alternatively, it could use options, which would limit subsidies when international prices rise, but allow the government to benefit from favorable price movements. These findings show that market-based methods of risk management could reduce the impact of international price volatility on the domestic market without imposing high costs on the government or distorting price signals.

The research results will be widely disseminated in Pakistan and used in the preparation of an agricultural sector investment project for the country.

Responsibility: South Asia, Country Department I, Agricultural and Natural Resources Division—Rashid Faruqee (Internet address rfaruqee@worldbank.org) and Jonathan Coleman. With Tom Scott.

Completion date: June 1996.

Report:

Faruqee, Rashid, and Jonathan Coleman. 1996. *Managing Price Risk in the Pakistan Wheat Market.* World Bank Discussion Paper 334. Washington, DC.

Pollution Control by Electric Utilities

Ref. no. 679-94

Throughout the world reducing air pollution has required placing controls on the emissions of electric power plants, which, if uncontrolled, are major generators of sulfur dioxide and particulates. Efficient pollution control requires, however, that policymakers know the marginal cost of abating pollution. Knowing the

marginal abatement cost functions for different emitters enables environmental protection agencies to calculate the lowest-cost method of achieving a given reduction in pollution, and to predict how emitters will react to emissions taxes.

This project has estimated marginal abatement cost functions for sulfur dioxide using 1985–94 data for coal-fired power plants in the United States. These calculations yield estimates of marginal abatement costs at the generator level as a function of the sulfur dioxide emissions rate and the prices of high- and low-sulfur coal, abatement capital, generating capital, and labor.

The study also investigates three issues relating to the potential efficiency of economic instruments to control emissions compared with command-and-control approaches. First, it computes the cost savings from achieving current emissions levels in a least-cost fashion. These savings represent the maximum gains achievable from a market for pollution permits. Second, it asks what fraction of these gains could be achieved solely by intrafirm trades—trades among generating units owned by the same firm. This represents a lower bound to the gains. And third, it asks whether regulations to reduce sulfur dioxide emissions in the United States by half (the goal set by the 1990 Clean Air Act Amendments) appear to have induced technical progress in abatement technology.

Although the answer to the last question is negative, significant improvements in abatement technology did occur over the period of this study. These improvements, together with decreases in the price of low-sulfur coal, have sharply reduced marginal abatement costs for sulfur dioxide control.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Maureen L. Cropper (Internet address mcropper @worldbank.org). With Curtis Carlson, University of Maryland.

Completion date: December 1996.

Measuring the Health Effects of Air Pollution in Developing Countries

Ref. no. 679-96

Air pollution in the urban areas of developing countries dwarfs that in industrial countries. Yet little research has been done to quantify the resulting health effects in those cities (notable exceptions include the Policy Research Department's study of Santiago, Chile). In assessing the health effects of air pollution in developing country cities, researchers have often applied dose-response functions estimated using U.S. (or U.K.) data to the populations of these cities. This process, known as benefits transfer, can produce misleading and implausible information.

The purpose of this study is to estimate original dose-response functions for premature mortality for a highly polluted urban area in a developing country—Delhi, India. Delhi suffers from some of the highest pollution levels in Asia, with particulate levels often five times higher than the limits recommended by the World Health Organization. In addition to providing a much-needed developing country case study for comparison with studies in industrial countries, this study should provide the Indian government with useful information at a time that it is reassessing its environmental policy.

Using multivariate regression techniques, the study is examining the relationship between daily mortality and air pollution levels for 1991–94. Mortality data for the study have been provided by the New Delhi Municipal Committee, and the air quality data for the nine monitoring stations in the city by the Central Pollution Control Board. Weather data, including temperature, humidity, wind speed, and precipitation, were obtained from the National Climatic Data Center of the National Oceanic and Atmospheric Administration (NOAA).

The research has been hindered by the quality of the air pollution monitoring data. Visibility data are now being used to predict the missing values for total suspended particulates. Preliminary results from examining the relationship between visibility and daily mortality suggest a significant relationship between air quality and mortality even after controlling for temperature, humidity, and season.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Maureen L. Cropper (Internet address mcropper @worldbank.org) and Nathalie B. Simon. With P. K. Sharma, New Delhi Municipal Committee; and Santosh Makhijani, Central Pollution Control Board, New Delhi.

Completion date: December 1996.

The Catalytic Effect of Tree Plantings on the Rehabilitation of Native Forest Biodiversity on Degraded Tropical Land: An Exploratory Analysis

Ref. no. 680-05

Many indigenous forest species are becoming endangered because of inappropriate and unsustainable land use and fragmentation of natural forest ecosystems. Preliminary research in Puerto Rico and in several tropical countries has shown that tree plantings (exotic or native) on degraded tropical land can dramatically increase the otherwise slow rate of recolonization of na-

tive forest species. The plantations seem to catalyze natural forest succession.

Validation of such observations in other regions and a better understanding of the underlying ecological processes are needed. The principal goal of this 18-month pilot project is to provide a strong scientific foundation on plantation-catalyzed native forest rehabilitation. The research examines a series of hypotheses concerning the importance of environmental and management factors that influence native forest regeneration. It compares biodiversity development on tree plantations and on unplanted control sites on moderately to highly degraded land in several tropical settings.

The project will conduct field surveys of floral and faunal biodiversity at sites selected to include a variety of existing plantations of different ages and species composition in tropical Asia and the Pacific (Australia, Hawaii, and Sri Lanka), Africa (Congo, Malawi, and South Africa), and Latin America (Brazil and Costa Rica). The data from the surveys will be used to test the hypotheses at both local and pantropical levels and to identify the geographical and biophysical conditions, landscape types, and plantation management options that can lead to significant improvements in biodiversity.

In June 1996 an international symposium, Accelerating Native Forest Regeneration on Degraded Tropical Lands, was organized in collaboration with the U.S. Department of Agriculture Forest Service and the International Union of Forestry Research Organizations to evaluate the results of this research. The meeting was attended by 80 research scientists, forest resource managers, and policymakers from 21 countries. Workshops yielded a general consensus on the validity of the hypotheses and recommendations on plantation species selection and management practices that will result in effective rehabilitation of native forest biodiversity under a range of conditions. Discussions suggested a broad array of uses for this rehabilitation approach, ranging from short-rotation commercial forestry to community-based forest management and restoration of forest ecosystems. While the general principles derived from the research hold for all these applications, the management objectives at any site will have to be dictated by stakeholders' needs and priorities.

Responsibility: Agriculture and Natural Resources Department, Agriculture and Forestry Systems Division—Norman Jones (Internet address njones @worldbank.org). With John A. Parrotta, U.S. Department of Agriculture Forest Service. The USDA Forest Service, the Center for International Forestry Research, and the Overseas Development Administration (United Kingdom) are contributing funding for the research. Additional financial support and staff time are being provided by research institutions and international organizations collaborating in the field studies.

Completion date: September 1996.

A Study of Oil Product Demand in the Developing Countries

Ref. no. 680-06C

Since the collapse of oil prices in 1986, world oil demand outside the former Soviet Union and Eastern and Central Europe has grown by 2.5 percent a year. More than half the growth occurred in developing countries, where demand rose by 4.5 percent a year—and by more than 7 percent a year in Asia. Most of the future growth in oil demand is expected to originate in the developing countries.

This research studied oil product demand in 37 of the largest oil-consuming developing countries, which represent about 90 percent of oil consumption in the developing world. It examined eight major oil products for each country. In addition to adding to the understanding of oil demand in developing countries, the research aimed to improve projections of oil demand, to aid in projecting global demand and supply balances and forecasting oil prices. The findings of the study have important implications for environmental issues—local and global emissions—and for the energy and macroeconomic policies of both oil-exporting and oil-importing countries.

The study used recently developed econometric techniques that allow for the possibility of imperfect price reversibility. The techniques are especially important for understanding what happened to oil demand in the 1980s, when the price increases of the 1970s were reversed but the reductions in demand were only partly reversed. The study analyzed results for two alternative demand specifications: one in which demand is assumed to be perfectly price-reversible, and one that allows for irreversibility by decomposing historical oil prices into three component series.

Initial results indicate that the developing countries are extremely heterogeneous both in income growth and in the relationship of income growth to energy and oil demand growth. The main driving forces in the growth of oil and energy demand are income growth and population growth. There was substantial switching away from oil in response to the oil price increases of the 1970s, especially in power generation. Since the oil price collapse in 1986, there has been some switching back to oil, notably in the Republic of Korea.

The results support expectations that oil demand will grow as rapidly as income in developing countries where per capita income is rising. Where per capita

income is declining, per capita demand also will decline, except in oil-exporting countries, where oil consumption has continued to increase despite declining per capita income. Demand for transport fuel also is expected to grow as rapidly as income, as is oil use in the residential sector, especially in countries where the transition to commercial fuels is an important factor. For naphtha and heavy fuel oil, demand projections are less certain because of commercial and political factors affecting the use of these products—for example, petrochemicals in the case of naphtha, and electricity for residential fuel oil.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Shane Streifel (Internet address sstreifel@worldbank.org). With Dermot Gately, New York University.

Completion date: June 1996.

Cost-Effectiveness Analysis of Coral Reef Management and Protection: A Least-Cost Model for the Developing Tropics

Ref. no. 680-08

Many coral reef areas in the tropics are deteriorating under heavy pressure from human and economic activities. There are many practical issues in devising cost-effective policy interventions to manage and protect coral reefs. There is also a key conceptual barrier: a lack of quantitative models to facilitate a comprehensive economic and ecological analysis of the effects of economic activity on coral reefs. This lack has made it difficult to develop a ranking of policy and investment interventions by cost-effectiveness, and thus to develop least-cost plans to manage and protect coral reefs. The central focus of this research is to develop a least-cost model of coral reef management and protection.

A key output of this model will be a cost curve, showing marginal costs and benefits on the vertical axis and coral reef cover (a measure of the quality of the coral reef) on the horizontal axis. The stepwise cost curve represents a series of interventions, each of which increases coral reef cover, with each succeeding intervention increasingly expensive.

The prototype model is capable of measuring the cost-effectiveness of policy interventions, though it is not yet capable of automatically developing the stepwise marginal cost curve. Cost-effectiveness is derived in three steps. First, a baseline is established by developing annual forecasts of economic activity and implied pollutant levels for 60 years and, on the basis of the pollutant levels and oceanographic and biotic conditions, developing annual forecasts of coral reef health. The measure of coral reef health is *coral reef abundance*, the percentage of the reef covered by live coral. Second, the total cost (as a present value) of a policy intervention is derived, along with annual pollutant levels and coral reef abundance after the policy intervention is in place. Finally, the cost-effectiveness is estimated on an annual basis, taking account of improvements in reef health over the entire period, but giving greater weight to early effects. The measure of cost-effectiveness is the unit cost of the impact of the intervention (the cost of a 1 percent increase in coral reef health).

Preliminary estimates of unit costs have been prepared for 10 policy interventions, using data loosely based on Montego Bay, Jamaica. In this case of a poor reef with potential for improvement, the key factors believed to be responsible for deterioration of the reef are sediment and nutrient loads. The most cost-effective intervention is a sewage outfall and pump station that takes the sediment beyond the reef edge.

The dissemination strategy focuses on in-country workshops and seminars for user groups and stakeholders, government agencies, and private and nongovernmental organizations involved in coastal zone management. It also includes activities to foster cooperation among countries on coordinated environmental policies, strategies, and action plans in the coastal zone, and to provide a consultation mechanism for formulating, strengthening, harmonizing, and enforcing environmental laws and regulations. Workshops have been held in Montego Bay, Jamaica, in June and November 1995, and in Curaçao, in November 1995 and April 1996.

This study is complemented by another research project, Marine Resource Valuation: An Application to Coral Reefs in the Developing Tropics (ref. no. 681-05), which is deriving improved estimates of coral reef benefits to be used in conjunction with the cost curve.

Responsibility: Latin America and the Caribbean, Country Department III, Environment and Urban Development Division—Richard M. Huber (Internet address rhuber@worldbank.org), Norman Hicks, and Carlo Rietveld. With H. Jack Ruitenbeek, H. Jack Ruitenbeek Consulting; Frank Rijsberman, Resource Analysis; and Steven Dollar and Mark Ridgely, University of Hawaii. The Netherlands Environment Consultant Trust Fund, the Norway Consultant Trust Fund, and the Swedish Consultant Trust Fund are contributing funding for the research.

Completion date: December 1997.

Reports:

Huber, Richard, Jack Ruitenbeek, Steve Dollar, Mark Ridgely, Frank Rijsberman, and Subodh Mathur. 1996. "A Least-Cost Model for Coral Reef Management and Protection, Phase I: A Prototype Model." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

Resource Analysis. 1995. "Costs Model for Waste Water Treatment, CORAL." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.
Rijsberman, Frank, Richard Huber, Susie Westmacott, and Danielle Hirsch. 1995. "Cost-Effectiveness Analysis of Coral Reef Management and Protection: A Case Study of Curaçao." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.
Westmacott, Susie, Frank Rijsberman, and Richard Huber. 1996. "Cost-Effectiveness Analysis of Coral Reef Management and Protection: A Case Study of the Maldives." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

Privatization, Foreign Investment, and the Environment

Ref. no. 680-11C

This research carried out case studies of the privatization of three large enterprises—Aguas Argentinas in Argentina, AHMSA in Mexico, and Indah Water Konsortium in Malaysia—whose operations have in the past resulted in large emissions of air or water pollutants or both. One of the motives for privatizing the enterprises was to improve their environmental performance—by strengthening their management and operations and improving their ability to tap private capital markets to finance better technologies or end-of-pipe pollution controls.

The research examined how the environmental conditions in the privatization arrangements were developed and how privatization has affected the enterprises' environmental performance, both in general and in response to specific contractual requirements.

The study found that privatization improved environmental performance in each of the cases studied. The magnitude and durability of the improvements depends in large part, however, on the incentive structures put in place by the government at the time of privatization and the government's capacity and willingness to ensure the effectiveness of the incentives after privatization.

The improvements occurred because privatization increased both the incentives for the enterprises to address at least some environmental issues and their ability actually to do so. Several factors enhanced the incentives to improve environmental performance: the process of privatization itself, the operating framework established by the privatization agreement and associated regulatory structure, separation of the government's ownership of the privatized entity from its regulatory authority over it, and a range of "international" environmental pressures.

The companies' ability to act on the incentives increased as a result of their removal from the government budgeting process, improved access to investment capital (international and domestic), improved employee awareness of and involvement in addressing environmental issues, greater freedom and need to improve relations with the surrounding community, increased access to international environmental experience, and increased access to information on environmental conditions and performance.

Although in theory the improvements in environmental performance might have been achieved under government ownership through a restructuring of government bodies, responsibilities, and methods of operation, in each of the three cases privatization appears to have been the best way to both improve performance and sustain the improvements.

Responsibility: Environment Department, Pollution and Environmental Economics Division—Gordon Hughes (Internet address ghughes@worldbank.org). With Bradford S. Gentry, Yale University.

Completion date: November 1995.

Report:

Gentry, Bradford S. Forthcoming. "Privatization, Foreign Investment, and the Environment: Case Studies of Large-Scale Privatizations with Foreign Participation." Environment Department Paper. World Bank, Washington, DC.

The Economics of Industrial Pollution Control in Developing Countries

Ref. no. 680-20

Industrial pollution has become a serious problem in many developing countries during the past two decades. But support for regulation of industrial pollution has remained lukewarm from many policymakers, despite research suggesting large benefits from pollution reduction even in very poor countries. There is widespread concern about diverting resources to pollution control when poverty, illiteracy, and infant mortality are still major problems. The resistance stems in part from uncertainty about which pollution control instruments will actually work under developing country conditions. Equally important is concern about how costly pollution reduction may be. This research project is designed to address both of these critical issues.

How much does pollution control cost? Empirical analysis of abatement costs in developing countries is almost nonexistent. This research project will provide a comprehensive assessment of abatement costs at the plant level, contributing to cost-benefit analyses of pollution control options in developing countries.

What works in practice? Many developing countries have adopted regulations to improve environmental quality. The strictness of monitoring and enforcement has varied widely across countries, however, and often even across regions in the same country. Some jurisdictions have comprehensive systems of plant-level emissions reporting and inspection; others have limited systems or none. Some jurisdictions have imposed significant penalties on noncompliant firms; others have been reluctant to impose any penalties. Where formal regulation is absent, local communities with sufficient interest and power have sometimes pursued informal regulation, negotiating pollution reduction agreements with neighboring factories.

Whatever the degree of formal or informal pressure to reduce pollution, industrial facilities exhibit widely varying responsiveness. This research will identify the impact of different policies on plant-level pollution and examine the circumstances under which local communities have improved environmental quality despite the absence of formal environmental standards. The results will improve our understanding of how effective different policies and institutional arrangements have been in reducing pollution.

The findings of this research should help new regulatory agencies develop pollution control systems that are both cost-effective and appropriate for conditions in developing countries. The project focuses on seven countries, in collaboration with the regional vice presidencies concerned: Brazil, China, India, Indonesia, Mexico, the Philippines, and South Africa.

Research results have been widely disseminated outside the Bank. In addition, a seminar on working with environmental agencies in developing countries was held in May 1996 for staff of the Economic Development Institute.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—David Wheeler (Internet address dwheeler1@worldbank.org), Sheoli Pargal, Mead Over, Hemamala Hettige, Susmita Dasgupta, Benoît Laplante, Mainul Huq, Shakeb Afsah, David Witzel, David Gray, and Muthukumara Mani. With Raymond Hartman.

Completion date: June 1997.

Reports:

Afsah, Shakeb, Hemamala Hettige, and David Witzel. 1996. "Implementation of the Pilot Program for Pollution Release and Transfer Registry: An Action Plan." Paper presented before the Institute de Nacional Ecologia, Mexico City, June and July.

_____. 1996. "New Models of Pollution Control and Priority Setting." Paper presented at the U.S. Environmental Protection Agency's Office of International Activities, Washington, DC, July.

Afsah, Shakeb, Benoît Laplante, and Nabiel Makarim. 1996. "Program-Based Pollution Control Management: The Indonesian PROKASIH Program." Policy Research Working Paper 1602. World Bank, Policy Research Department, Washington, DC.

Afsah, Shakeb, Benoît Laplante, and David Wheeler. Forthcoming. "Controlling Industrial Pollution: A New Paradigm." Policy Research Working Paper. World Bank, Policy Research Department, Washington, DC.

Afsah, Shakeb, David Wheeler, and David Witzel. 1996. "New Models of Pollution Control and Priority Setting." Paper presented before the Institute de Nacional Ecologia, Mexico City; FEEMA, Rio de Janiero; and CETESB, Saõ Paulo, April.

Dasgupta, Susmita. 1996. "Economics of Industrial Pollution Control in China." Paper presented at the Chinese Research Academy of Environmental Sciences and Tianjin Environmental Protection Bureau, Tianjin, April.

Dasgupta, Susmita, Mainul Huq, and David Wheeler. 1996. "Bending the Rules: Discretionary Pollution Control in China." World Bank, Policy Research Department, Washington, DC. Draft.

Dasgupta, Susmita, Mainul Huq, David Wheeler, and Chonghua Zhang. 1996. "Water Pollution Abatement by Chinese Industry: Cost Estimates and Policy Implications." Policy Research Working Paper 1630. World Bank, Policy Research Department, Washington, DC.

Dasgupta, Susmita, and David Wheeler. 1996. "Who's Complaining (and Why?): Citizen Environmental Protest in China." World Bank, Policy Research Department, Washington, DC. Draft.

Hettige, Hemamala, Mainul Huq, Sheoli Pargal, and David Wheeler. Forthcoming. "Determinants of Pollution Abatement in Developing Countries: Evidence from South and Southeast Asia." *World Development.*

Laplante, Benoît. 1995. "Equilibrium Incentives for Cleaner Technology Adoption under Emissions Pricing." Paper presented to the Department of Rural Economy, University of Alberta, Edmonton, September. (Also presented at the annual conference of the Canadian Resource and Environmental Economics Study Group, Vancouver, September, the American Economic Association meetings, San Francisco, January 1996, and the University of Calgary, March 1996.)

Laplante, Benoît, and Peter W. Kennedy. 1995. "Equilibrium Incentives for Adopting Cleaner Technology under Emissions Pricing." Policy Research Working Paper 1491. World Bank, Policy Research Department, Washington, DC.

Pargal, Sheoli, and David Wheeler. Forthcoming. "Informal Regulation in Developing Countries: Evidence from Indonesia." *Journal of Political Economy.*

Wang, Hua. 1996. "Environmental Demand and Supply Modeling and Estimation." Paper presented to China's National Environmental Protection Agency and Environmental Monitoring Center, Chinese Research Academy of Environmental Sciences, and Tianjin Environmental

Protection Bureau, Beijing and Tianjin, April and May.
_____. 1996. "Industrial Pollution Abatement Cost Estimation." Paper presented to China's National Environmental Protection Agency and Environmental Monitoring Center, Chinese Research Academy of Environmental Sciences, and Tianjin Environmental Protection Bureau, Beijing and Tianjin, April and May.
_____. 1996. "Industrial Pollution Projection System." Paper presented to China's National Environmental Protection Agency and Environmental Monitoring Center, Chinese Research Academy of Environmental Sciences, and Tianjin Environmental Protection Bureau, Beijing and Tianjin, April and May.
Wang, Hua, and David Wheeler. Forthcoming. "Pricing Industrial Pollution in China: An Econometric Analysis of the Levy System." Policy Research Working Paper. World Bank, Policy Research Department, Washington, DC.
Wheeler, David. Forthcoming. "Equilibrium Pollution and Provincial Development in China: An Analysis of the Levy System." Paper to be presented at the New England Universities Development Consortium Conference, Boston University, November 1996.
Wheeler, David, and Shakeb Afsah. 1996. "Going Public on Pollution: Indonesia's New Public Disclosure Program." *East Asian Executive Reports* (July).

Estimating Oil Supply Costs: Detecting Resource Scarcity

Ref. no. 680-24C

The conventional wisdom for many years has been that because of rising oil demand and declining non-OPEC oil supplies, the increase in demand for OPEC oil production will inevitably lead to sustained increases in real oil prices. A critical element in this outlook is the view that non-OPEC production will decline, often based on the notion that the world is running out of oil, and that therefore costs and prices must increase. But for years, nearly all non-OPEC supply forecasts have been unduly pessimistic despite the evidence of increasing supplies and despite significant advances in technology and reductions of costs. Excluding the United States and the former Soviet Union, non-OPEC oil supplies have more than tripled since 1971, and growth shows no signs of slowing.

Too little is known about the non-OPEC supply curve, however. OPEC continues to limit production to keep oil prices significantly above the costs of production in the Middle East and elsewhere. So for non-OPEC oil regions, oil prices are exogenous and unrelated to any indigenous scarcity. The main purpose of this research was to shed light on this critical part of the world oil market.

The study estimated crude oil supply costs in about 40 oil-producing countries around the world—both industrial and developing and covering the range of development stages in the oil industry, from infancy to maturity. The work focused on two critical issues. First, what is the apparent cost of new oil supply in selected non-OPEC sources? Second, how is the supply curve shifting in these countries? Is the curve shifting to the right, indicating that improvements in costs and "prospectivity" are overcoming the effects of resource depletion? Or is it shifting to the left, indicating that depletion is paramount?

For its analysis, the study collected or estimated data on additions to crude oil reserves, development costs per barrel of reserves added, and the in situ price of developed reserves. It found a lack of consistent data, especially for reserves. While data for some countries were quite good, the information on reserves for many countries was full of anomalies. The study had to make frequent adjustments to eliminate these anomalies, relying heavily on judgment. The data inconsistency reflected poor collection procedures and sometimes political influences on the booking of reserves.

Notwithstanding these caveats on data, the econometric results afford useful insights. Of the non-OPEC countries, only those with a long production history seem to be in a contractionary phase. Thus the gloomy outlooks for non-OPEC production are unwarranted. Several countries are still in an expansionary phase. Moreover, there is evidence—though based on a limited sample—that parsimonious shifts in supply functions may have been mitigated or arrested over the past 15 years or so.

The same limited sample of countries yielded evidence that the pace of technological change is sensitive to price: the lower the price, the greater the stimulus for cost reduction, with much of the reduction achieved through technological improvement.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Shane Streifel (Internet address sstreifel@worldbank.org) and Sangche Lee. With Campbell G. Watkins, Law & Economics Consulting Group, Inc., Canada.

Completion date: June 1996.

Medicinal Plant Biodiversity for Conservation and Sustainable Economic Use

Ref. no. 680-31C

Medicinal plants are important natural resources. They have been traded and used since ancient times. And millions of people in developing countries use herbal medicines. But the cultivation of medicinal plants

and the increasingly important issue of their conservation are neglected by both Western science and by mainstream development assistance. And except in China and India, developing country governments invest little or nothing in supporting and enhancing the conservation, cultivation, and trade of their medicinal plant resources. Limited data are available on the production and trade of medicinal plants in the formal market, and no data on their economic value in the informal market.

Moreover, there is a critical lack of research on management approaches that combine biological, physical, economic, and social variables. Cultivation will permit improved reliability of yield, and raw materials of uniform quality whose properties can be standardized. The knowledge that traditional health practitioners, women, and farmers could bring to medicinal plant conservation and cultivation programs needs to be more effectively used. Local health traditions that rely on medicinal plants tend to be oral and thus largely undocumented and are at risk of disappearing.

This study aimed to contribute to the knowledge on the cultivation and conservation of medicinal plants. The first part of the two-part study produced a concept paper exploring the role of medicinal plants as biological resources. The second part looked at how China and India are confronting the threats to their medicinal plants. It examined the status of policies and regulations governing the conservation of medicinal plants; the extent of cultivation; research needs for sustainable cultivation and quality control; the cultural value of the informal medicinal market; available data on production, sales, and trade in the formal market; and analytical approaches in assessing the current and potential value of medicinal plants.

This desk review was carried out using World Bank and other library resources and through personal communications with individuals in North America, Europe, China, and India.

Responsibility: Agriculture and Natural Resources Department, Agriculture and Forestry Systems Division—Jitendra P. Srivastava (Internet address jsrivastava @worldbank.org). With John Lambert, Carleton University; and Noel Vietmeyer, National Research Council.

Completion date: December 1995.

Reports:

Lambert, John, Jitendra Srivastava, and Noel Vietmeyer. Forthcoming. "Medicinal Plants: Rescuing a Traditional Heritage." World Bank, Agriculture and Natural Resources Department, Washington, DC.

Srivastava, Jitendra, John Lambert, and Noel Vietmeyer. 1996. *Medicinal Plants: An Expanding Role for Development.* World Bank Technical Paper 320. Washington, DC.

Total Factor Productivity Growth in Post–Green Revolution Agriculture of Pakistan and Northwest India

Ref. no. 680-34

This research aims to develop and apply appropriate methods to measure recent trends in total factor productivity (TFP) in irrigated agriculture in Pakistan and northwest India. In recent years there has been much concern about productivity growth and sustainability in these irrigated agricultural systems, which are critical to the food security and livelihood of some 500 million people. Accumulating micro-level evidence suggests that intensification of cropping is resulting in degradation of the land and water resource base and negating the effects of technologically induced productivity growth.

Yet trends in the aggregate performance of the agricultural sector are unclear. Although growth in crop yields—especially for the two main crops, wheat and rice—has slowed sharply in the past decade, the evidence on overall performance as measured by growth in TFP is inconclusive. Recent estimates of TFP show conflicting trends over the past two decades, ranging from significantly positive to negative growth. Given the general weakness in the methods and data used to measure TFP, there is an urgent need to measure TFP and interpret trends in technological progress, in cropping patterns, and in land degradation.

The study is estimating TFP with careful attention to system definition, the range and valuation of inputs and outputs, and indexing methods. The basic method is based on the Tornquist-Theil index.

In fiscal 1996 the study assembled comprehensive and up-to-date districtwide data sets for Pakistan and India. It is now estimating TFP for districts grouped on the basis of cropping system and technological level. This grouping aids comparisons for homogeneous ecological regions and will help determine whether productivity slowdown and environmental degradation are associated with particular cropping systems and ecosystems. Preliminary results appear to confirm a slowdown in productivity growth in these irrigated systems. The study is developing hypotheses on reasons for differences in TFP trends by cropping system, country, and time period.

The research complements World Bank–supported efforts to understand and arrest resource degradation in the rice-wheat systems and will help guide Bank lending strategies in the region. The results of the research will be discussed in seminars in the Bank and in the participating countries, where policymakers have expressed keen interest. A final report summarizing the main results and implications will be available in December 1996.

Responsibility: Agriculture and Natural Resources Department, Agriculture and Forestry Systems Division—Derek Byerlee (Internet address dbyerlee @worldbank.org); South Asia, Country Department I, Agriculture and Natural Resources Division—Rashid Faruqee, and Country Department II, Agriculture and Water Operations Division—Benoît Blarel. With Rinku Murgai, University of California, Berkeley; and Mubarik Ali, AVRDC.

Completion date: December 1996.

Improving the Quality of Teak Germination: A Study of Seed Dormancy and Germination

Ref. no. 680-56

Although teak has been cultivated on plantations for more than a century, the methods for raising its planting stock have changed little in that time. Foresters have paid scant attention to what is required for optimal growth, in part because teak, ideally suited to plantation cultivation, will grow regardless of the quality of planting stock. But that does not mean that all seedlings planted will produce well: only about a quarter will attain 100 percent of their growth potential. With teak one of the world's most valuable timbers, the poor planting stock leads to an enormous loss of resources.

The main problem is poor germination in nurseries. Only 3 percent of seeds result in a plantable seedling, and because of irregular dormancy cycles, germination is spread over a long period, making comparison of seedlings for culling difficult. To produce uniform, high-quality planting stock, germination needs to be rapid, complete, and synchronized. To help make this possible, this study is investigating cycles of dormancy and studying the response of nondormant seeds to saturation and temperature variation to induce germination. Greater understanding of the nature of dormancy may eventually help in identifying artificial ways to break it.

The study is collecting seed from a range of important sources, confirming the germination protocol for nondormant seed, and testing seeds during a year's storage to detect any possible annual cycle in seed dormancy. Nine samples of seed from seven sources have been included in the initial investigations: five from India, one from Malaysia, and three from Central America. Results have been encouraging, with three of the samples showing 30–50 percent germination after only 10 days. During February–May 1996 no obvious change in the dormancy of any sample in storage was detected.

An important and unexpected issue was raised during a visit and discussions with DANIDA scientists in March 1996 concerning the character of fruits and seeds of dry-zone teak from India. Compared with moist-zone teak, fruits of the dry-zone teak have a more restricted water uptake when moistened and seeds do not readily germinate when removed from the fruit. Investigations are being undertaken to determine the nature and scale of these differences.

Responsibility: Agriculture and Natural Resources Department, Agriculture and Forestry Systems Division—Norman Jones (Internet address njones @worldbank.org). With J. A. Mackenzie.

Completion date: September 1996.

Measuring the Impact of Climate Change on Indian Agriculture

Ref. no. 680-63

In recent years there has been growing concern that changes in climate will lead to significant damage to both market and nonmarket sectors. Although several sectors have been studied, none has received more attention than agriculture.

In the United States the initial studies suggested that agriculture would suffer severe effects. But recent analyses incorporating more up-to-date climate forecasts and adaptation consistently find that U.S. agriculture will be resilient to climate change. The agricultural sectors of other industrial countries in temperate climates are expected to react similarly. But how climate change will affect agriculture in the rest of the world is unclear: agricultural systems in developing countries are different, these systems may be less adaptable, and tropical and subtropical ecosystems may respond differently to climate change.

This project examines how climate change will affect agriculture in developing countries by exploring the case of India. That country is well suited for this research for three reasons. First, India encompasses a large land mass with a range of climates. By examining how farmers have adapted to the climates, the research can begin to understand how they might adapt to climate change. Second, India has detailed agricultural, climatological, and hydrological statistics. The analyses proposed in this study will rely heavily on these data sets. Third, India has a mix of modern and subsistence farms, so the study can examine how both systems adapt to climate change.

The study will rely on two independent methods—an empirical production function approach and a Ricardian model—to measure climate effects. The empirical production function approach estimates the effects of soil, water, climate, and other major factors of production on yields farmers receive for specific crops. A second model can then be estimated to determine

crop mixes for each climate and location. Combining these two estimates will yield estimates of farm net revenue as a function of climate, from which welfare estimates can be made for different climate outcomes. The Ricardian model, a reduced form estimation of this process, estimates the relationship between net revenue and climate directly from the data. Both models thus yield a relationship between net revenue and climate variables that can be used to forecast the impact of any specific climate change. The two models will be used to cross-check each other.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Ariel Dinar (Internet address adinar@worldbank.org). With Robert Mendelsohn and Robert Evenson, Yale University; Jyoti Parike and Kavi Kumar, Indira Gandhi University; and Steven Lonergan, University of British Columbia.

Completion date: May 1997.

Waste Imports for Recycling

Ref. no. 680-71

Resource recovery and recycling activities have been gaining momentum in many countries as a result of environmental concerns worldwide. An emerging but important aspect of this economic activity is the import of secondary raw materials from OECD countries by recycling industries in developing countries. Recycling industries in India and Indonesia, for example, have been importing large quantities of recyclable paper, pulp, and plastics from Germany, the United States, and other OECD countries during the past decade. Imports of waste paper and paper board by Indonesia alone increased from 67,000 tons in 1983 to more than 872,000 tons in 1993.

What are the economic and environmental implications of this trade? For example, how does it affect firms in the importing countries that recycle domestically generated secondary raw material, and how does it affect ragpickers? Under what conditions is the raw material transported, stored, and processed by recycling industries? And what are the economic incentives governing these international flows? Do lower environmental standards make it attractive to get waste processed in developing countries? Is there a market for (possibly lower-quality) recycled products in developing countries? Do prices (tariffs) in the receiving countries reflect possible negative externalities? What role do shipping costs play?

This research, an initial scoping study, aims to improve the understanding of these issues. The study assesses the magnitude, composition, and direction of these trade flows, and reviews related international and national regulations, policies, technologies, and practices. It is based on a desk study conducted in Washington, DC, and two case studies carried out in India and Indonesia by local consultants.

The Bank has been promoting recycling as part of its urban projects in borrower countries. But its knowledge about the magnitude of trade in secondary raw materials and the effects on domestic recycling activities is limited. The findings from this scoping study will enhance the understanding of these issues and provide the basis for an in-depth follow-up study and for discussions with policymakers in borrower countries.

Responsibility: Asia Technical Department, Environment and Natural Resources Division—Maritta Koch-Weser (Internet address mkochweser@worldbank.org) and Uma Subramanian. With Steffen Beerbaum, University of Stuttgart-Hohenheim; Isono Sadoko; and V. K. Sharma, Indira Gandhi Institute for Development Research.

Completion date: August 1996.

Incentives for Pollution Control in Developing Countries: The Role of Capital Markets

Ref. no. 680-76

It is often argued that firms in developing countries lack incentives to invest in pollution control efforts because of weak monitoring and enforcement of environmental regulations. But this assumes that the regulator is the only agent that can penalize a firm for poor environmental performance, or reward it for good performance. Another possible source of incentive is capital markets, which may react negatively to the announcement of an adverse environmental incident involving a firm (such as a spill or a permit violation) or positively to the announcement of greater pollution control effort (such as the adoption of cleaner technologies). To the extent that capital markets react to environmental news, the inability of regulatory institutions in developing countries to provide incentives for pollution control efforts may not be as serious a matter as is generally believed.

This research aims to determine whether capital markets in developing countries do react to the announcement of firm-specific environmental news. It is using event-study analysis to review the experience of publicly traded companies in Argentina, Chile, India, Mexico, and the Philippines over the period 1990–94. The study draws on two data sources. The stock market data come from the Emerging Markets Database maintained by the International Finance Corporation, the

premier source for comprehensive statistics on stock markets in developing countries. And environmental news involving publicly traded companies will be collected from the principal newspapers read by the financial community of each study country.

The project has built the database of environmental announcements for Chile and is now working on Argentina and the Philippines.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Susmita Dasgupta (Internet address sdasgupta@worldbank.org), Benoît Laplante, and Nlandu Mamingi. With Maria Teresa Correa and Miodrag Deric.

Completion date: June 1997.

Marine System Valuation: An Application to Coral Reefs in the Developing Tropics

Ref. no. 681-05

This project is working to develop improved methods for deriving estimates of coral reef benefits. Such estimates can be used in conjunction with the cost curve being developed in a related study (Cost-Effectiveness Analysis of Coral Reef Management and Protection, ref. no. 680-08) to help in identifying the lowest-cost interventions for improving coral reef health.

The project will adapt and refine existing valuation methods so that they take account of the key characteristics of coral reefs, and derive more accurate estimates of coral reef benefits for selected sites. To keep the analysis tractable, the study focuses on three methods for valuing the benefits: direct use valuation, contingent valuation, and marine system biodiversity valuation. The study will apply and refine each of these valuation methods, and then develop a synthesized benefits function. It will also identify appropriate policy and institutional reforms for improving the capture of resource values associated with coral reefs in developing countries, and the potential role of the World Bank and other development assistance agencies in helping to effect these reforms.

The study will apply direct use valuation to provide a baseline analysis of the direct use benefits accruing to the coral reefs at Curaçao and Montego Bay, Jamaica. Well-established techniques are available for estimating easily quantifiable values associated with direct consumptive and nonconsumptive uses of reefs (such as tourism, demersal fisheries, and mariculture). The study will use contingent valuation to monetize amenity and other noninstrumental uses for the coral reef site in Montego Bay, Jamaica.

The project's work on marine system biodiversity valuation will be more involved. It will require identifying appropriate physical or biophysical indicators in marine systems to which economic values might be attached, and appropriate, quantifiable indicators of biodiversity. It also will require identifying appropriate methods for marine system valuation, based on methods used for terrestrial systems, and for imputing values to natural products. Once the study has identified potential methods for marine biodiversity valuation, it will evaluate them for policy relevance, methodological soundness, operational tractability, and data availability. Up to three of the methods will then be subjected to a preliminary field test.

The dissemination strategy will focus on in-country workshops and seminars targeting those involved in coastal zone management. The workshops will provide training in conducting the contingent valuation survey and in analyzing and collecting data.

Responsibility: Latin America and the Caribbean, Country Department III, Environment and Urban Development Division—Richard M. Huber (Internet address rhuber@worldbank.org), Norman Hicks, and Carlo Rietveld. With H. Jack Ruitenbeek, H. Jack Ruitenbeek Consulting; Daniel M. Putterman; Clive Spash, Cambridge University; Nick Hanley, British University of Stirling, Scotland; and Montego Bay Marine Park Trust. The Netherlands Environment Consultant Trust Fund is contributing funding for the research.

Completion date: December 1997.

Report:

Huber, Richard M., H. Jack Ruitenbeek, and Daniel M. Putterman. "Marine Resource Valuation: An Application to Coral Reefs in the Developing Tropics." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

Acid Rain and Emissions Reduction in Asia (RAINS-ASIA)

By 2010 the sulfur dioxide emissions of Asia are expected to exceed those of North America and Europe combined. To deal effectively with the resulting environmental challenges in Asia, scenario-generating tools are needed to "look into the future." A collaborative effort begun in 1992 to develop such a tool produced RAINS-ASIA, a user-friendly, integrated, PC-based model for regional policy analysis and decisions relating to energy sector development. It is designed to help policymakers and researchers in Asia to anticipate effects from acid depositions resulting from sulfur dioxide emissions and identify cost-effective control options. RAINS-ASIA was developed by a team of Asian, European, and North American scientists, under the leadership of the World Bank and the Asian Development Bank.

The RAINS-ASIA model combines sectoral energy use, sulfur dioxide emissions, abatement approaches, a long-range transport model for dry and wet deposition of sulfur dioxide and sulfate, and regional environmental effects of sulfur deposition. Effects of acidification on ecosystems are treated in two ways: through a qualitative map showing the sensitivity of ecosystems to acid deposition and through a quantitative map of critical loads (for 14 ecosystems).

The methodology and the model will be made available to national and international agencies and research institutions to facilitate further development and discussions on actions to mitigate environmental degradation. The methodology is expected to contribute to the development of regional policy on acid deposition and transboundary pollution. The RAINS-ASIA model has been presented at a number of workshops held at the World Bank and in Austria, Japan, Norway, and the Republic of Korea.

Responsibility: Asia Technical Department, Environment and Natural Resources Division—Jitendra Shah (Internet address jshah@worldbank.org), Ramesh Ramankutty, Katsunori Suzuki, and Maritta Koch-Weser, and Office of the Director—Anil Malhotra. With L. Hordijk, Wageningen Agricultural University; W. Foell, Resource Management Associates; D. Streets, Argonne National Laboratory; G. Carmichael, University of Iowa; J. P. Hettelingh, National Institute of Public Health and Environmental Protection, the Netherlands; M. Aman, International Institute of Applied Systems Analysis, Austria; M. J. Chadwick, Stockholm Environment Institute; Z. Dianwu, Chinese Academy of Sciences; and T. Haughland, ECON. Research institutes in Asia collected country-specific energy scenario data under the auspices of an Asian Development Bank project at the Asian Institute of Technology.

Completion date: August 1995.

Reports:

Carmichael, G., and others. 1993. "An International Collaborative Project on Acid Rain in Asia." Paper presented at conference, Regional Environmental Change, Taipei, Taiwan (China), November.

Foell, W., and others. 1994. "Draft Report on Acid Rain and Emissions Reduction in Asia, Phase 1."

Environmental Management of the Industrial Sector in the Newly Industrializing Countries: Lessons from East Asia

Explosive manufacturing-led growth and a nearly fourfold increase in per capita income in the past 25 years have led to increasing pollution intensity, growing public pressure for pollution abatement, and the allocation of greater resources for pollution control in the newly industrializing countries of East Asia. The environmental management experience of these countries offers useful lessons for the next generation of countries entering rapid manufacturing-led growth and is more proximate to the challenges they face than is the experience of the industrial countries.

To derive lessons from the East Asian experience, this regional research project undertook country studies of environmental management in the industrial sectors of Japan, the Republic of Korea, and Singapore. These studies examined the effects of environmental regulation and enforcement, financial incentives, and public pressure on plant-level pollution abatement and compared approaches for building regulatory capacity. The Korea and Singapore studies included surveys of regulatory and pollution abatement behavior in 170 industrial plants in 1988–93. Preliminary analysis of the data from these surveys has been completed. A synthesis workshop in Tokyo in March 1995 incorporated data on Japan's environmental management of its industrial sector and compared the intensity of each country's use of regulation, incentives, and public pressure.

The findings suggest that all three countries, despite differences in the timing of their initial industrial pollution abatement campaigns, have succeeded in "decoupling" their industrial growth rates from changes in pollution levels. And all three appear to fit an "East Asian environmental management model," characterized by a mainly administrative approach, a constructive role for industry in environmental management, and an important role for public pressure that differs from that in Europe and the United States.

Under the mainly administrative approach, administrative agencies have significant autonomy, and the roles of the legislature and the courts, though occasionally important, are largely ancillary. Interagency conflicts are generally resolved behind the scenes. Further, the government generally sets environmental goals attainable within a specified time frame, and environment agencies' largely merit-based incentive structures promote strong performance and discourage rent-seeking by staff. This approach dominates even where modified market-based instruments are in use.

Industry's role in the East Asian model of environmental management includes regular consultation between industry associations and government outside the public eye, with assured confidentiality. Networks of environmental managers in manufacturing plants report emissions data on request and facilitate dissemination of information within their networks on regulatory requirements and on the availability of technologies and financial incentives.

The preliminary statistical analysis of the data from the 170-plant survey indicated significant differences in the effects of regulatory actions, community pressure, and financial incentives on industrial plants' pollution abatement expenditures, by sector and country. These findings suggest practical guidelines for assisting environmental managers in developing pollution abatement strategies and for monitoring and evaluating pollution abatement programs sector by sector.

Findings from the study have been disseminated through workshops for Vietnamese officials in Washington, DC, Hanoi, and Ho Chi Minh City in the fall of 1995 and the spring of 1996. Plans to disseminate results in China and Central America are under discussion, as is a possible expansion of the case study materials to include Malaysia's pollution abatement experience. Papers linking the Korea and Singapore case studies to the more fully documented Japanese environmental management experience are under preparation.

A database containing coded responses to the questionnaires administered to 170 industrial plants in Korea and Singapore is available on diskette.

Responsibility: Asia Technical Department, Environment and Natural Resources Division—Jean Aden (Internet address jaden@worldbank.org) and Carter Brandon. With Kyu-Hong Ahn, Korea Institute of Science and Technology; Sang Don Lee, Chung-Ang University; Faith Halter; Loh Wah Sing, Lin Yucheng, and Lucy Tay, Singapore Institute of Scientific and Industrial Research; Chin Kee Kean, Ong Say Leong, and Chia Lin Sien, National University of Singapore; Kazu Takemoto and Nahoko Nakazawa, Japan Environment Agency; and Jerry Warford, University of London. The Korea General Consultant Trust Fund, the Swedish Consultant Trust Fund, Singapore Pools, the Norwegian Trust Fund, and the Japan Environment Agency contributed funding, staff, and data for the research.

Completion date: March 1996.

Reports:

Aden, Jean. 1995. "Environmental Management of the Newly Industrializing Economies: Lessons from East Asia—Korea Country Study, Industry Survey Data Analysis." World Bank, Asia Technical Department, Washington, DC.

_____. 1995. "Environmental Management of the Newly Industrializing Economies: Lessons from East Asia—Singapore Country Study, Industry Survey Data Analysis." World Bank, Asia Technical Department, Washington, DC.

Ahn, Kyu-Hong, Sang Don Lee, and Faith Halter. 1995. "Environmental Management of the Newly Industrializing Economies: Lessons from East Asia—Korea Country Study." World Bank, Asia Technical Department, Washington, DC.

Nakazawa, Nahoko. 1995. "Environmental Management of the Newly Industrializing Economies: Lessons from East Asia—Japan Perspective Report." World Bank, Asia Technical Department, Washington, DC.

Sing, Loh Wah, and others. 1995. "Environmental Management of the Newly Industrializing Economies: Lessons from East Asia—Singapore Country Study." World Bank, Asia Technical Department, Washington, DC.

Energy Strategies for Rural and Poor Urban People in the Developing World

This project sought to devise a new approach to providing increased, more efficient, and cleaner energy supplies for rural and poor urban people in developing countries. It examined the lessons of past programs, the complexities of energy development for rural and poor urban populations, and the implications for developing countries and for Bank policy. Its analysis suggested moving away from promoting centrally planned, narrowly focused energy supply projects toward promoting an energy strategy for rural and poor urban people that is appropriate in the context of rural development and poverty reduction.

The study suggested a strategy with two main characteristics. First, the strategy would be more diversified and demand-driven. Countries and development agencies would focus directly on the energy needs and economic capacities of rural and poor urban populations. The strategy would emphasize an enabling environment (including appropriate energy trade and pricing policies) that promotes investment in and consumption of sustainable and efficient energy. It would also focus on finding innovative and economic ways to lower costs and provide credit, especially to mitigate the high first costs of efficient fuels and appliances. And the strategy would shift the role of government from entrepreneur and planner to regulator, technical adviser, and facilitator.

Second, the strategy would entail wider institutional collaboration and sharper focus on rural energy development. Acting alone, the World Bank has achieved—and can expect—only limited success in implementing programs that help rural and poor populations improve their access to sustainable and efficient energy. The proposed strategy suggests that the Bank help develop wider collaboration and appropriate division of responsibilities among international banks, bilateral donors, nongovernmental organizations, national governments, private investors and entrepreneurs, and local communities and cooperatives. Access to energy for rural and urban poor people would be incorporated into Bank energy sector work, sector loans, and project lending, and the Bank's capabilities to support rural energy development would be strengthened.

Responsibility: Industry and Energy Department, Power Development, Efficiency, and Household Fuels Division—Douglas Barnes (Internet address dbarnes @worldbank.org), Robert van der Plas, and Willem Floor.

Completion date: June 1996.

Report:

Barnes, Douglas, Robert van der Plas, and Willem Floor. Forthcoming. "Rural Energy and Development: Improving Energy Supplies for Two Billion People." Best Practices Paper. World Bank, Industry and Energy Department, Washington, DC.

Natural Resource Degradation

In many developing countries forests are being cleared for agriculture at a rapid rate. There is concern especially about slash and burn agriculture, which may be both environmentally unsound and economically unsustainable. The problem is that shifting cultivation can sustain high yields only if the period between successive burnings of the forest is long—at least 10 years. But as populations increase, there is pressure to shorten the fallow period, often to two or three years. Without additional inputs this is likely to reduce yields. Short fallow also leads to soil erosion and to sedimentation of rivers and reservoirs and may result in significant loss of forest habitat in some areas.

While there is consensus on the qualitative effects of changes in roads, population density, and agricultural prices on different types of land use, there has been little quantification of these effects. This study examined the effect of roads and population pressures on the conversion of forests to agriculture in Thailand between 1976 and 1989, using data at the provincial level.

To analyze the effect of road building, population growth, and physical factors on deforestation, the study developed a model in which the amount of land cleared, the number of agricultural households, and the size of the road network are jointly determined. The model assumes that the amount of land cleared reflects an equilibrium in the land market. In the long run the amount cleared depends on the profitability of agriculture and on the long-run costs of clearing. The size of the agricultural population in the country and the size of the road network affect the demand for cleared land and thus the amount cleared in equilibrium.

The cleared land equation was estimated using data for the 58 provinces that were forested in 1973. Data from five years (1976, 1978, 1982, 1985, and 1989) were combined to estimate the equilibrium model. While the study found that agricultural household density and road density both increase the fraction of each province cleared, their effects are small, with elasticities well below 0.5 for each variable.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Maureen L. Cropper (Internet address mcropper @worldbank.org), Charles Griffiths, and Muthukumara Mani.

Completion date: June 1996.

Report:

Cropper, Maureen L., Charles Griffiths, and Muthukumara Mani. 1996. "Roads, Population Pressures, and Deforestation in Thailand, 1976–89." Paper presented at the Association of Environmental and Resource Economists conference, San Francisco, January 6.

Causes and Consequences of Tropical Deforestation

Although tropical deforestation is a major global environmental concern, its causes remain poorly understood. As part of a larger project (Social and Environmental Consequences of Growth-Oriented Policies) looking at links among growth, poverty, and the environment, this study examines the causes, correlates, and consequences of forest conversion in the tropics. A particular focus is the economic and environmental effects of road building, since roads are thought to help the rural poor but also to lead to deforestation. The research also seeks to elucidate the nature of smallholder activities at the forest margin, and the degree to which these activities are affected by macroeconomic and sectoral policies.

The research strategy emphasizes the spatial analysis of deforestation patterns, for two reasons. Important for analytical purposes is that spatial variation in the causes of deforestation make it possible to disentangle the importance of these causes. And important for policy is that the impact of change in land cover on both biodiversity and poverty depends strongly on where the change takes place. Accordingly, the research has pioneered in the statistical analysis of provincial- or national-level geographic information systems (GIS) data. These include remote sensing data on land cover and topography, data from soils surveys, and georeferenced socioeconomic data from censuses and household surveys. Study areas include Belize, Chad, Indonesia, and the tropical belt of Africa.

Research results for Belize and Central Africa show that the effects of roads on both the nature and the extent of forest conversion are highly sensitive to soil characteristics and market proximity. This suggests that well-informed regional planning can enhance rural development while preserving the environment.

Analysis of village-level data for Indonesia suggests that high-value tree crop cultivation, rather than subsistence-oriented food crop production, plays a major role in smallholder-related forest conversion in that country.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—Kenneth M. Chomitz (Internet address kchomitz @worldbank.org), David Gray, Charles Griffiths, and Nlandu Mamingi. With Vivi Alatas, Princeton University; Upik Rosalina Wasrin, SEAMEO/Biotrop; and Xiaowen Huang. The International Center for Research in Agroforestry, Bogor, Indonesia, is participating in the research. The U.K. and Swedish Trust Funds for the Social and Environmental Consequences of Growth-Oriented Policies are contributing funding for the research.

Completion date: June 1997.

Reports:

Chomitz, Kenneth, and David A. Gray. 1996. "Roads, Land Use, and Deforestation: A Spatial Model Applied to Belize." Poverty, Environment, and Growth Working Paper 3. World Bank, Policy Research Department, Washington, DC. (Also forthcoming in *World Bank Economic Review.*)

Chomitz, Kenneth, and Charles Griffiths. 1996. "Deforestation, Shifting Cultivation, and Tree Crops in Indonesia: Nationwide Patterns of Smallholder Agriculture at the Forest Frontier." Poverty, Environment, and Growth Working Paper 4. World Bank, Policy Research Department, Washington, DC.

Chomitz, Kenneth, and Kanta Kumari. 1996. "The Domestic Benefits of Tropical Forests: A Critical Review Emphasizing Hydrological Functions." Policy Research Working Paper 1601. World Bank, Policy Research Department, Washington, DC.

Environmental Accounts

This project seeks to elucidate, through detailed sectoral analysis, the characteristics of the environmental costs of economic growth and structural change and to measure the costs of different types of growth for the environment and for different population groups. All economic gain is accompanied by losses, because production requires resources and energy. And while a significant share of GDP gain—if allocated predominantly to consumption—is transitory, the losses tend to be cumulative, adding to the burden on nature's capacity to absorb such byproducts as waste and heat. This type of growth, while benefiting a few, may also generate unwanted environmental effects that disproportionately affect the poorest groups, often unable to avoid the consequences of increased agricultural or industrial activity.

Using conventional national accounts tables, the project shows how the depletion of resources and degradation of the environment lead to real economic and social costs—as well as inefficient resource allocation because of the "free" availability of natural capital. These real costs are not fully taken into account in the current development equation. The project will identify techniques that have worked well in adjusting data to take into account these costs and that have proved useful in improving policy understanding.

In partnership with the United Nations Statistical Office and the United Nations Environment Programme, the project will develop a common strategy to apply to three case studies—Costa Rica, Indonesia, and South Africa—within a recognized system of integrated environmental and economic accounts. Efforts will be made to see how local capacity in data analysis can be strengthened to ensure that environmental evaluations can be carried out on a more routine basis. The project will calculate data adjustments—related to the cost of maintaining current environmental conditions and resource capital or to the size of the avoidance of defensive expenditures required to prevent environmental damage—at the sectoral level. The purpose of these calculations is to identify where the problems are most serious and to come up with an "environmentally adjusted" GDP. Growth rates will then be adjusted accordingly. The project will then estimate the effect on employment and incomes of alternative policy strategies.

Identifying and adopting development strategies that promote sustainable economic growth without compromising development objectives or imposing heavy costs on future generations is crucial to maintaining and improving the well-being of societies. The project's compilation of data in an integrated national accounting system will help in understanding the implications of economic strategies and thus in developing a more balanced and constructive path to progress that avoids unnecessary environmental recovery, cleanup, and defensive costs. The basic information generated by this project will be disseminated through a series of workshops and seminars at the country level.

Responsibility: International Economics Department, Development Data Group—Michael Ward (Internet address mward@worldbank.org), Saeed Ordoubadi, and Yi Chen; Environment Department, Pollution and Environmental Economics Division—John Dixon, and Office of the Senior Vice President, Development Economics—F. Desmond McCarthy. With Rafael Celis, ProDesarrollo; the State Ministry of Environment, Indonesia; and the Development Bank of South Africa. The United Nations Statistical Office is providing staff support.

Completion date: June 1997.

Prices, Policies, and Industrial Pollution

What pollution control strategies are the most cost-effective for developing countries? Anecdotal evidence suggests that many factors play some role in determining international (and interregional) variations in industrial pollution: differences in input prices, environmental standards, regulatory instruments, enforcement strategy, and "informal regulation" (pressure from neighboring communities, "green consumers," and so on). But little is known about the relative importance of these factors in reducing pollution. Better pollution control strategies require much more detailed quantitative analysis of actual outcomes. They also require the adaptation of regulatory theory to the conditions that prevail in developing countries.

This research project has two parts. The first is using detailed plant-level data from several countries to econometrically estimate the effect of variable input prices, formal regulation, and informal regulatory pressure on the environmental performance of industrial facilities. The second part is working on ways to adapt OECD-based regulatory economics to conditions in developing countries.

The initial empirical work has focused on gauging the potential of informal regulatory pressure as a low-cost complement to formal regulation. Analyses for several Southeast Asian countries have suggested that local community pressure and national emissions disclosure campaigns can, under at least some conditions, lead to rapid reductions in emissions.

The initial work on regulatory economics has focused on adapting for developing countries incentive regulatory systems that are now widely used in OECD countries. Such systems combine performance targets with economic incentives for industrial facilities. Given the inevitability of quantitative targets in many pollution control programs, such incentive regulatory systems may contribute significantly to economic efficiency because they can approximate the workings of tradable permit systems.

Findings from the study have been presented at several EDI seminars and Bank workshops.

Responsibility: Policy Research Department, Environment, Infrastructure, and Agriculture Division—David Wheeler (Internet address dwheeler1@worldbank.org), Hemamala Hettige, Sheoli Pargal, Shakeb Afsah, Mainul Huq, Raymond Hartman, Benoît Laplante, and Susmita Dasgupta.

Completion date: June 1997.

Reports:

Hartman, Raymond, Mainul Huq, and David Wheeler. Forthcoming. "Why Paper Mills Clean Up: Determinants of Pollution Abatement in Four Asian Countries." Policy Research Working Paper. World Bank, Policy Research Department, Washington, DC.

Laplante, Benoît. 1995. "The Firm and the Environment." Paper presented to the International Institute of Management Services in Singapore, June.

_____. 1996. "Monitoring of Pollution Regulation: Do Local Conditions Matter?" Paper presented at the First International Conference of the Sustainable Forest Management Network of Centres of Excellence, Edmonton, March.

Mani, Muthukumara. 1996. "Environmental Tariffs on Polluting Imports: An Empirical Study." *Environmental and Resource Economics* (June).

Wheeler, David, and Raymond Hartman. 1996. "Incentive Regulation: Market-Based Pollution Control for the Real World?" In Claudio Frischtak, ed., "Regulatory Policy and Reform: A Comparative Perspective." World Bank, Finance and Private Sector Development Vice Presidency, Washington, DC.

Social and Environmental Consequences of Growth-Oriented Policies

The World Bank has long maintained that economic growth is good for people and good for the environment. Yet skepticism persists about whether this "win-win-win" scenario applies in all places at all times. In some cases there are tradeoffs that clearly have to be considered: A new factory that brings higher incomes may also foul the air and water. Expansion of smallholder farming may result in the loss of natural habitats. How significant and widespread are these tradeoffs? Do win-win-win solutions become fewer as an economy becomes more efficient? Are there instances in which economic growth is at odds with improved human and ecological welfare, or in which poverty can be reduced only by harming the environment?

This project addresses these and other questions about the relationships between poverty, growth, and the environment. It uses a systematic, quantitative approach and draws on extensive data reflecting a wide range of country experience that have recently become available. The study seeks to derive lessons from this experience to guide future policy, using three analytical methods.

The first of the three research components comprises cross-national analysis. This analysis is intended to set the stage by examining the relation, across countries and over time, between macroeconomic policy indicators and indicators of growth, environmental conditions, and poverty or equality.

The second component, centered on structural models, is the heart of the project. The research attempts to model three sets of issues in which tradeoffs between

growth, poverty reduction, and environmental protection are thought to be especially acute. The first set of issues concerns industrial pollution and the behavior of industrial firms. The research analyzes regional and firm-level data on industrial output, employment, and emissions. Policy levers examined include macroeconomic policies affecting the sectoral composition of industry, such as trade, industrial, and energy policies, and pollution regulation policies. Study sites include Brazil, China, Ecuador, India, Indonesia, and Pakistan.

The second set of issues relates to land use conflicts between agricultural expansion and natural habitat preservation. The research analyzes the incentives to convert tropical forests and other habitats to agriculture, the ecological consequences, the magnitude and persistence of economic gains, and the distribution of those gains. Policies investigated include agricultural pricing (including exchange rates) and regional development strategies, especially the siting of infrastructure. Study sites include Belize, Indonesia, Mexico, and tropical Africa.

The third set of issues centers on poverty, fertility, and household use of environmental resources. Because of the diversity of households and their environmental problems, this set of models also is diverse. One line of research studies the links between poverty, fertility, technology, and use of fuelwood and other environmental resources in Nepal and Pakistan. Another line of research concentrates on the responsiveness of decisionmaking and urban sanitation to changes in tenure conditions in Ecuador and Indonesia.

In the third component of the project, case studies build on the structural models, placing them in a historical, environmental, and policy context and exploring cross-sectoral links. Case studies include economic liberalization in China and trade reform in Mexico, and may also include public expenditures in Indonesia, exchange rate reform in Nigeria, and land tenure in Ethiopia or Sri Lanka.

Preliminary results suggest the following conclusions: A more even income distribution is more important than initial income levels in determining the extent to which economic growth reduces poverty. Enforcement of pollution regulations increases with income and education in China and Indonesia, and informal pressures play an important role in determining pollution levels. On communal lands in Mexico poverty increases deforestation, whereas liberalized agricultural pricing policies had the opposite effect. In Indonesia deforestation is sensitive to macroeconomic policies such as exchange rates, and in tropical Africa the location of infrastructure plays an important role in deforestation. In Pakistan the relation between fertility and environmental degradation varies between regions.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Emmanuel Jimenez (Internet address ejimenez@worldbank.org), Martin Ravallion, Lant Pritchett, and Peter Lanjouw, Environment, Infrastructure, and Agriculture Division—David Wheeler, and Macroeconomics and Growth Division—William Easterly. With David Gray, Robert Lucas, Bart Minten, Annika Persson, Giuseppe Iarossi, Deon Filmer, and Benu Bidani. The Overseas Development Administration, United Kingdom; Directorate General for Technical Cooperation, the Netherlands; and the Swedish International Development Authority are contributing funding for the research.

Completion date: June 1997.

Reports:

Chomitz, Kenneth M., and David A. Gray. 1996. "Roads, Land Use, and Deforestation: A Spatial Model Applied to Belize." Poverty, Environment, and Growth Working Paper 3. World Bank, Policy Research Department, Washington, DC. (Also forthcoming in *World Bank Economic Review*).

Chomitz, Kenneth M., and Charles Griffiths. 1996. "Deforestation, Shifting Cultivation, and Tree Crops in Indonesia: Nationwide Patterns of Smallholder Agriculture at the Forest Frontier." Poverty, Environment, and Growth Working Paper 4. World Bank, Policy Research Department, Washington, DC.

Filmer, Deon, and Lant Pritchett. 1996. "Environmental Degradation and the Demand for Children: Searching for the Vicious Circle." Poverty, Environment, and Growth Working Paper 2. World Bank, Policy Research Department, Washington, DC. (Also forthcoming as a Policy Research Working Paper.)

Ravallion, Martin, and Shaohua Chen. 1996. "What Can New Survey Data Tell Us about Recent Changes in Living Standards in Developing and Transitional Economies?" Poverty, Environment, and Growth Working Paper 1. World Bank, Policy Research Department, Washington, DC.

A Smart, Computer-Coordinated Market for Water Allocation

Systems for allocating water are complex, involving externalities, public goods, and shared production facilities. These and other such complex systems have relied on central authorities to solve coordination problems and dictate solutions to allocation problems. But in a world of rapid technological and environmental change, government solutions may move too slowly to allow a society to adapt efficiently.

The recent development of smart, computer-assisted markets at the University of Arizona's Economic Science Laboratory may lead to flexible, decentralized solutions to these complex problems. *Smart markets*

refers to the application of computer optimization algorithms to the decentralized messages (bids and offers) of agents in complex markets where coordination is difficult or costly using conventional forms of market organization. Smart markets allow private market allocations to instantaneously account for problems of coordination. They also can incorporate environmental or distributional constraints. They thus enable decisionmakers to respond to a changing environment, and allow society to adapt rapidly. The political process—not the final allocations—determines the environmental or distributional constraints on the system.

This project will develop, test, and implement a generic smart market for water allocation in California. It will serve as an empirical test for a smart market for water allocation in any arid land; other applications will simply involve a different network configuration and different supply sources.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Ariel Dinar (Internet address adinar@worldbank.org). With Vernon L. Smith and Stephen Rassenti, University of Arizona; Richard Howitt, University of California, Davis; and Elizabeth Hoffman, Iowa State University. The National Science Foundation is funding the research.

Completion date: December 2000.

INFRASTRUCTURE AND URBAN DEVELOPMENT

Enhancing Urban Productivity: Determinants of Optimal Expenditure on Infrastructure, Human Resources, and Consumption Public Goods

Ref. no. 677-66C

Because of infrastructure's role in enhancing productivity in urban areas, investment in infrastructure has received renewed attention in developing and transition economies. But how much should be spent on infrastructure—and how much on public goods—given fiscal constraints, policy goals, an economy's internal features, and foreign aid flows?

This research project addressed that question. The study analyzed empirically the determinants of public expenditure on infrastructure (transport and communications), drawing on World Bank cross-sectional databases.

Findings indicate that per capita central government expenditures on transport and communications depend on internal features of the economy, the level and mix of external funding, and government objectives. Transport and communications expenditures increase with per capita GDP (nonlinearly if measured on the basis of exchange rate conversions, but linearly if measured on the basis of purchasing power parities), population density (nonlinearly), urban-rural migration rates, institutional development, the size of the foreign sector, and the existing stock of infrastructure. Transport and communications expenditures are lower in highly urbanized countries and in countries with a high labor force participation rate. And they respond most strongly to changes in the level of development, the labor force participation rate, and the urbanization rate.

When a relatively large share of foreign funding is in commercial bank loans, transport and communications expenditures are greater. They also are greater when foreign direct investment constitutes an especially large (relative) share of foreign funding. The strength of a country's credible commitment to poverty reduction influences transport and communications spending nonlinearly: countries whose commitment to poverty reduction is either higher or lower than is typical spend less on transport and communications.

Responsibility: Europe and Central Asia, Country Department I, Country Operations Division—Zeljko Bogetic (Internet address zbogetic@worldbank.org). With Dennis Heffley and Susan Randolph, University of Connecticut.

Completion date: June 1996.

Report:

Randolph, Susan, Zeljko Bogetic, and Dennis Heffley. Forthcoming. "Determinants of Public Expenditure on Infrastructure: Transportation and Communications." Policy Research Working Paper. World Bank, Europe and Central Asia, Country Department I, Washington, DC.

Motorization

Ref. no. 679-46C

Coping with rapidly growing car ownership and use, particularly where road infrastructure remains inadequate, is one of the most challenging problems facing developing and transition economies. The purpose of this project was to define the scope of the problem and to identify priority issues for further investigation.

To identify critical issues, the study examined the dynamics of motorization, system response, and policy response. The issues it identified as meriting further work can be organized in five groups:

- National automotive policy issues, including the relationship between industrial development strategy and transport policy
- Social issues, relating both to personal mobility and to social equity
- Transport system issues, including mobility, congestion, alternatives to motorization, the role of motorization in urban freight, and associated infrastructure implications
- Environmental issues, particularly those relating to energy consumption, urban air quality, and ecological dynamics
- The relationship between motorization and urban land use.

The project has produced a philosophical framework supported by a set of working outlines for developing more detailed investigations of the issues. The main thrusts of the work were incorporated in the World Bank's 1996 publication, *Sustainable Transport: Priorities for Policy Sector Reform* (Washington, DC). And the work was discussed in World Bank seminars in the spring of 1995.

Responsibility: Transportation, Water, and Urban Development Department, Transport Division—John Flora (Internet address jflora@worldbank.org). With Ralph Gakenheimer, Massachusetts Institute of Technology.

Completion date: July 1995.

Report:

Gakenheimer, Ralph. 1995. "Motorization in the Developing World: A Draft Set of Research Concepts." World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

Urban Transport Indicators

Ref. no. 679-64

The effect of transport on the environment is an important concern in the rapidly growing cities of the developing world. An indicator often used to measure this effect, as well as the real resource cost of urban transport, is the amount of transport fuel consumed per capita.

In a separate exercise an extensive and meticulous database on these variables had been established for a set of industrial country cities for 1971 and 1981. This project has supported the updating of the database to include 1991 data and the addition of new indicators of public transport demand, supply, and cost and data for a number of developing country megacities. Although this work has proved difficult because of the fragmentation of public transport institutions, especially in many of the developing countries, data collection is now nearing completion.

Analysis of the initial database showed that the amount of fuel consumed per capita depends on a complex interaction between such factors as the size and structure of cities, the amount of transport demanded, the choice of transport mode, and the technologies used. The implication drawn from that analysis was that action to control urban form could reduce the resource and environmental costs of urban transport both through its direct effect on the number and length of trips and through its effect on the choice of transport mode. Less well understood were the relationship between fuel costs and total transport costs (including the costs of urban public transport subsidies) and the applicability of conclusions drawn from analysis of industrial countries to the developing world. This project has supported analysis of those issues, which remains to be completed.

The research has contributed to Bank papers on the urban environment and served as the basis for discussion of the Bank transport and land use policy embodied in *Sustainable Transport: Priorities for Policy Sector Reform* (Washington, DC: World Bank, 1996). It also underpins the arguments for establishing the multimodal, multifunctional conurbation transport authorities being encouraged in many client countries (for example, in Buenos Aires).

Responsibility: Transportation, Water, and Urban Development Department, Transport Division—Kenneth Gwilliam (Internet address kgwilliam@worldbank.org). With Peter Newman and Jeff Kenworthy, Murdoch University, Perth.

Completion date: September 1996.

Reports:

Barter, P., and Jeff Kenworthy. 1995. "Transport and Urban Form in ASEAN Cities: An International Comparative Perspective." Paper presented at City Trans Asia '95 Conference, World Trade Center, Singapore, September.

Barter, P., Jeff Kenworthy, Peter Newman, and C. Poboon. 1994. "The Challenge of Southeast Asia's Rapid Motorization: Kuala Lumpur, Jakarta, Surabaya, and Manila in an International Perspective." Paper presented at Asian Studies Association of Australia conference on Environment, State, and Society in Asia: The Legacy of the Twentieth Century, Murdoch University, Perth.

Kenworthy, Jeff. 1995. "Automobile Dependence in Bangkok: An International Comparison with Implications for Planning Policies." *World Transport Policy and Practice* 1(3):31–41. (Also presented at fifth annual public health forum, Health at the Crossroads: Transport Policy and Urban Health, London School of Hygiene and Tropical Medicine, London, April.)

_____. 1996. "Automobile Dependence in a Global Sample of Cities: Learning from the Best and Worst." Keynote address at Canadian National Conference on Sustainable Transportation, Simon Fraser University, Vancouver, October 30–November 1.

Kenworthy, Jeff, P. Barter, Peter Newman, and C. Poboon. 1994. "Resisting Automobile Dependence in Booming Economies: A Case Study of Singapore, Tokyo, and Hong Kong within a Global Sample of Cities." Paper presented at Asian Studies Association of Australia conference on Environment, State, and Society in Asia: The Legacy of the Twentieth Century, Murdoch University, Perth.

Kenworthy, Jeff, and F. Laube. 1996. "Transport and Urban Structure in 44 Global Cities: Some Key Physical Planning Policy Directions for Enhanced Sustainability and Reduced Automobile Dependence." Paper presented at Second United Nations Conference on Human Settlements (Habitat II), Istanbul, June.

_____. Forthcoming. "Automobile Dependence in Cities: An International Comparison of Urban Transport and Land Use Patterns with Implications for Sustainability." *Environmental Impact Assessment Review* (special issue).

Kenworthy, Jeff, Peter Newman, P. Barter, and C. Poboon. 1995. "Is Increasing Automobile Dependence Inevitable in Booming Economies? Asian Cities in an International Context." *IATSS Research* 19(2):58–67.

Newman, Peter. 1995. "Transportation and Greenhouse." Paper presented at ICLEI Summit on Climate Change, Saitama, Japan, October.
_____. 1996. "City Life and City Death." *The Macroscope.*
_____. 1996. "Reducing Automobile Dependence." *Environment and Urbanization* 8(1):67–92. (Also presented at OECD conference, Towards Sustainable Transportation, Vancouver, March.)
_____. 1996. "Transportation." In D. Satterthwaite, ed., *United Nations Global Review of Human Settlements.* Oxford: Oxford University Press.
_____. 1996. "Winning Back Public Space in the City: Overcoming Automobile Dependence." Paper presented at Car-Free Cities Conference, Copenhagen, May.
_____. Forthcoming. "The New Urbanism." In *Encyclopedia of Public Policy.*
_____. Forthcoming. "Sustainability and Cities: Urban Planning, Urban Ecology, Transportation, Energy, and Land Use." In *Encyclopedia of Environmental Control Technology,* vol. 10.
_____. Forthcoming. "Sustainable Cities: Concepts, Indicators, and Plans." *Australian Journal of Environmental Management.*
Newman, Peter, and Jeff Kenworthy. Forthcoming. "Urban Forms and Car Use." *Les Cahiers de l'IAURIF.*
Poboon, C., and Jeff Kenworthy. 1995. "Bangkok: Towards a Sustainable Traffic Solution." Paper presented at Urban Habitat Conference, Delft, the Netherlands, February.
Poboon, C., Jeff Kenworthy, Peter Newman, and P. Barter. 1994. "Bangkok: Anatomy of a Traffic Disaster." Paper presented at Asian Studies Association of Australia conference on Environment, State, and Society in Asia: The Legacy of the Twentieth Century, Murdoch University, Perth.

Changing Location Patterns of Manufacturing Employment in the Greater Johannesburg Region

Ref. no. 680-01C

The location of firms and households is an important determinant of the efficiency and productivity of cities. Location patterns of employment and population affect the tax base of urban centers and the ability of urban governments to provide the right level and mix of public services.

In South Africa apartheid policies determined the location of households and firms based on racial criteria. With the dismantling of apartheid, the issue of locational policy is being revisited. New urban boundaries are being created as racially based cities are being merged, plans for providing urban infrastructure and services to black communities are being proposed, and urban transport policy is being dramatically changed. At the same time, market forces have already begun to influence the locational decisions of firms and households.

Few empirical studies have been done in South Africa to document how the spatial structure of its cities has been evolving and how changing location patterns of households and firms can inform and influence the changes in urban policies being contemplated. This research analyzed the location dynamics of formal manufacturing enterprises in the Witwatersrand area in 1980, 1989, and 1994. It used data from an industrial registry that provides information on the location, size, and production of manufacturing firms. These data enabled the study to draw a profile of the manufacturing base of the Johannesburg area, tracking the growth of new firms, the relocation of existing firms across and out of the region, and the "deaths" of firms.

The research found that the location patterns of manufacturing firms in the Johannesburg area are similar to those observed in the seminal 1980s studies in Bogotá and Seoul—despite very important differences in economic and social conditions (including different government policies on the decentralization of economic activities). First, the general tendency toward decentralization of manufacturing firms was confirmed. Second, as in other cities, manufacturing firms in the greater Johannesburg area do not relocate far from city centers, and their location patterns are not significantly influenced by government policy. This was a surprising finding for South Africa, where apartheid policies included explicit incentives to promote the decentralization of employment. Third, the city center may play an "incubator role" for small manufacturing firms. Finally, the data suggest that policymakers, by failing to take into account the location patterns of manufacturing firms when redrawing municipal boundaries, may have created significant fiscal disparities among the new urban centers.

Responsibility: Southern Africa Department, Energy and Infrastructure Division—Junaid Ahmad (Internet address jahmad@worldbank.org). With Christian M. Rogerson and Jayne M. Rogerson, University of Witwatersrand.

Completion date: December 1995.

Report:

Rogerson, Christian M., and Jayne M. Rogerson. 1995. "Manufacturing Location in the Developing Metropolis: The Case of Greater Johannesburg." World Bank, Southern Africa Department, Washington, DC. Draft.

Reaching Turkey's Spontaneous Settlements

Ref. no. 680-66

Gecekondus—spontaneous settlements—house half the urban population in Turkey. These settlements began springing up after World War II as rural immigrants

flooded Turkey's cities looking for work. Because of limited resources and land and housing markets that failed to meet their needs, these people built their own dwellings on government-owned land, doing without infrastructure services or obtaining them informally for high prices.

Some of the *gecekondus* have been legalized and have gained some services. In these settlements modern apartment blocks are rising, foretelling dramatic growth in their population and in demand for services—even as more *gecekondus* emerge. And most *gecekondus* still lack services.

What explains the lack of services in these settlements? This study will explore that question within the framework of institutional economics, which suggests that institutional behavior is motivated by incentives that are created by formal and informal rules. The study will identify and review the formal and informal rules governing land development and service provision in Turkey, particularly as they affect *gecekondus*. To identify the incentives that these rules create, interviews will be conducted with government officials, *gecekondu* dwellers, academics, land and housing developers (formal and informal), and other private sector actors. These interviews will also draw out ideas about ways to improve the rules and institutional arrangements.

Responsibility: Europe and Central Asia, Country Department I, Infrastructure Operations Division—Henry Boldrick (Internet address hboldrick@worldbank.org). With Josef Leitmann and Deniz Bahroglu.

Completion date: October 1996.

Valuing Direct and Indirect Benefits of Water Supply and Sanitation Projects: Application to Project Investment Analysis

Ref. no. 680-79

The World Bank is executing a number of water supply and sanitation projects that have direct and indirect benefits. Direct benefits are welfare improvements resulting from connection to a service. Indirect benefits stem from the environmental and public health effects of the projects. Project analysis commonly values such direct and indirect benefits through willingness-to-pay surveys using the contingency valuation method.

But concerns about limitations of the contingency valuation approach have led to questions about the validity of using it to estimate project benefits. Are the estimates it yields stable over time? Are they replicable across locations? Do they measure the true benefits of the project? Can they be reliably used to make investment decisions?

Several considerations point to a need to evaluate the use of the contingency valuation approach for estimating the direct and indirect benefits of water and sanitation projects. First, little or no effort has been made to validate preproject estimates by comparing them with the actual consumption choices people have made as a result of a project. Second, it has been observed that estimates of willingness to pay vary widely across locations and across income categories. It is critical to know the reasons for such variations—whether real differences in preferences or artifacts of the methods and their assumptions. And third, the costs of data collection and estimation using alternative methods differ—sometimes by large amounts—mainly because of differences in sample size requirements and in the number of questions needed to get to an appropriate answer.

To contribute to improved project evaluation procedures for direct and indirect benefits, this research will address these analytical gaps. It will compare estimates of marginal willingness to pay calculated for the same location using different methods, including contingency valuation, property value analysis, and an analysis of the impact of incidence of diarrhea on willingness to pay. It will compare values for marginal benefits estimated using the contingency valuation method and based on responses from beneficiaries of similar projects in different locations in Brazil. And it will suggest correction factors that can be applied at the project level to conduct sensitivity analyses of the estimated direct and indirect benefits of water and sanitation projects.

The research will draw on data on willingness to pay in anticipation of a project collected in the preinvestment evaluation of World Bank–financed projects in the Brazilian cities of Vitoria, Guarapari, Belem, and Fortaleza. It also will use data being gathered on postproject willingness to pay, property values before and after the project and from locations with differing service levels, and the incidence of diarrhea among children under five in areas with different service conditions.

Preliminary results using existing data sets show that survey respondents are generally sensitive to variations in the service that they will receive. Respondents already connected to a service were willing to pay higher prices for better service. And the willingness to pay for a new connection is higher than the willingness to pay for improved service, showing that respondents are able to evaluate the benefits of different characteristics of the public good offered. Further research will test whether the willingness to pay is affected by such factors as having experienced an illness due to a waterborne disease, or having sold or purchased a property before or after an improvement in water supply and sanitation services.

Since choosing a project evaluation method involves tradeoffs between cost and reliability of results, it is important to compare alternative methods. This research will provide the main elements for making such a choice for water and sanitation projects with environmental management components. The research will classify methods by the degree to which estimated benefits are consistent or biased.

The results of the research will be disseminated in an Institute for Applied Economic Research workshop in Brazil in 1997. The database developed from the research will be made available.

Responsibility: South Asia, Country Department I, Infrastructure Operations Division—Frannie Humplick (Internet address fhumplick@worldbank.org); Policy Research Department, Infrastructure, Environment, and Agriculture Division—Maureen Cropper and Nathalie Simon; and Latin America and the Caribbean, Country Department I, Urban Infrastructure and Environment Operations Division—Alex Bakalian, Yoko Katakura, and Carlos Velez. With Luiz Antonio Baltar and Marcio Tagliari, Institute for Applied Economic Research, Brazil; and Marcia Rosado, University of Maryland. The water supply utilities in Vitoria (CESAN), Fortaleza (CAGESE), and Belem (COSAMPA) and the Institute for Applied Economic Research, Brazil, are participating in data collection.

Completion date: December 1997.

Transboundary Rivers: Analytical Approaches to Aid Conflict Resolution

Ref. no. 680-85

A majority of the world's people live on shared river basins—50 percent of the people on basins shared by two or more countries and about 80 percent on basins shared by states of one country. With growing populations and rising living standards, there is ever-increasing pressure to develop water resources for irrigation, industry, and municipal uses, leading to conflicts between upstream and downstream users within these shared river basins.

While intranational conflicts are more tractable than international ones, they are by no means easy to resolve. In such countries as India and the United States, interstate water disputes have held up water development for many years. The World Bank and other international agencies are cautious about financing water resource projects under such circumstances. There is a need for good analytical approaches for resolving these problems and for examining the value of cooperation in river basin planning.

This study will develop analytical tools of conflict resolution and apply them in several case studies of inter- and intranational river basins. An international river basin case study will focus on the Ganges-Brahmaputra Basin, where water is essential in all sectors, the potential for water resource development is great, and the conflicts among Bangladesh, India, and Nepal over water have intensified. Intranational case studies will focus on the Cauvery and Krishna Basins in India, the sites of two very difficult water disputes.

The analytical tools will build on work done by the principal consultant to this project, Peter Rogers, on river basin planning and water resource economics. Drawing on work on multiple objective optimization, Pareto-admissibility frontiers, and game theory, the study will create computer-based decision support systems to analyze interdisciplinary transboundary water problems. Data sources will include government reports, databases, personal contacts, and unpublished literature collected over the years.

The study will produce user-friendly, interactive decision support system software. The results will be disseminated through seminars, workshops, conferences, and reports and through the Internet.

Responsibility: Asia Technical Department, Environment and Natural Resources Division—Maritta Koch-Weser (Internet address mkochweser@worldbank.org), William A. Price, and Nagaraja Rao Harshadeep; and South Asia Country Department staff. With Peter Rogers, Harvard University.

Completion date: January 1997.

Performance Measures for Infrastructure and Environmental Resources, Phase II

Ref. no. 680-88

The deterioration of infrastructure, particularly in urban areas, is an important constraint on economic development in many developing countries. In an environment of limited managerial and analytical capacity, infrastructure managers face complex decisions in preserving these assets. Infrastructure management decisions could be significantly improved through effective measures of asset performance. Most attempts to measure performance focus on the input side of infrastructure delivery services (such as the quantity and quality of water put into the system), not on the output side (the quantity, quality, and reliability of water delivered to the consumer). Users' perspectives on service give a true measure of performance. This research is developing an appropriate analytical framework and a process for incorporating users' perspectives in performance measures and infrastructure management decisionmaking.

The first phase of the research, a case study in Indonesia, showed that performance measurement can im-

prove the cost-effectiveness of investment and operation and maintenance decisions. It also provided a model for service-level performance measurement and valuation methods. And it developed a framework to measure the costs and benefits of investment decisions according to user and provider criteria. The study found the service-level approach particularly useful in evaluating the impact of projects on low-income groups. It also showed that inexpensive survey techniques can be used effectively in developing models of user behavior.

The goals of this second phase of the research are to replicate the framework in water sector case studies in Africa, extend it to provide a decision support system for ensuring adequate public water supply services for unserved and underserved communities, and evaluate the effect of infrastructure investment on public health and the environment. The framework will be developed with partners in South Africa. The project will then conduct a beneficiary assessment survey in that country and implement the new approach. As a separate exercise, the approach may be implemented in one or more African borrower countries, possibly including Togo, and then replicated in Bank water projects in Africa.

Building on the service-level approach developed in Indonesia, the pilot decision support system will establish relevant performance measures (for provider and users), analyze existing data to identify deficiencies, and build a development investment framework, allowing managers to interpret the effects of their decisions. An initial case study in South Africa will apply a cost-benefit analysis framework to measure the quantity, quality, reliability, and availability of services received by users. The pilot decision support system will analyze investment options and the effects of operation and maintenance decisions on performance in the water sector, predict user behavior in response to changes in service levels, and calculate net economic costs and benefits for users and providers.

The pilot decision support system will utilize existing survey and field estimation data taken from three test areas. Results will be fed through a pilot geographic information system (GIS) to analyze service levels in each area, link data to the service-level approach, and analyze the effects of different investment and operation and maintenance strategies. Based on an examination of the literature and statistical analysis of survey results, a model will be created for each user group to predict responses to changes in water supply performance. These models will be combined with estimates of the effects of investment and operation and maintenance choices on service delivery for each user group and service area, to predict changes in costs and benefits. Costs and benefits will be correlated with the economic and time costs of alternative uses of the water source. Capital costs, savings in operation and maintenance costs, and health and environmental costs also will be calculated.

The performance optimization decision support system should provide an effective method for evaluating infrastructure management issues, with far-reaching policy implications for public infrastructure decisionmakers. It should also improve the Bank's capacity in infrastructure project design, monitoring, and evaluation. And it will help to meet the growing demand in the Bank for user-based, "bottom-up" measures of project performance.

Responsibility: Africa Technical Department, Environmentally Sustainable Development Division—David Grey (Internet address dgrey@worldbank.org). With Jonathan Stevens. Umgeni Water, Pietmaritzburg, South Africa, is providing data and financial and other support for the research.

Completion date: June 1997.

Infrastructure and Growth: A Multicountry Panel Study

Ref. no. 680-89

Faced with a need for fiscal adjustment, developing country governments often have to make hard choices about which components of public expenditure to cut. This study will attempt to inform such decisions by examining the effects of public infrastructure on productivity and growth. A follow-on to an earlier pilot study, the research will disaggregate infrastructure into roads, rail, electricity generation and transmission, and telephone lines (all measured in physical terms) and then examine the impact of these different types of infrastructure on productivity and growth in a panel data set of 100 countries.

The research will estimate a flexible production function that includes infrastructure capital along with private capital and labor (and other variables) as factors. It will use simultaneous-equation estimation methods, since many of the factors are endogenous (such as private capital and infrastructure). After identifying the effect of infrastructure on growth and productivity, the study will turn to the mechanisms through which these effects occur. It will examine, among other things, whether infrastructure "crowds out" or "crowds in" private investment, and whether the effect of infrastructure on growth is mediated through structural change of the economy and through urbanization.

Responsibility: Policy Research Department, Public Economics Division—Shantayanan Devarajan (Internet address sdevarajan@worldbank.org); and Transporta-

tion, Water, and Urban Development Department, Office of the Director—Christine Kessides.

Completion date: October 1998.

Tradable Water Rights: A Property Rights Approach to Improving Water Use and Promoting Investment

In most countries water is still regarded as public property. Public officials decide who gets it, at what price, and how it is used. The government also builds and operates the necessary infrastructure for water delivery. The track record of such administered systems of water allocation has not been impressive. Despite growing water scarcity and the high costs of hydraulic infrastructure, water is typically underpriced and used wastefully, the infrastructure is frequently poorly conceived, built, and operated, and delivery is often unreliable. These systems also have tended to favor the relatively wealthy and to have high fiscal and economic costs.

This research considered whether, in water-scarce countries, a system of tradable water rights is preferable to administered methods of water allocation, and sought to provide guidance on how to establish such a system. The research analyzed the successes and failures of the tradable water rights approach in Chile, Mexico, Peru, and the United States, drawing on the property rights and new institutional economics literature.

The results show that a market-based system of allocation is likely to lead to a more efficient outcome in water-scarce countries than are traditional systems of assigning water rights. Such a system has the potential to increase the productivity of water use, improve service delivery, stimulate private investment and economic growth, reduce water conflicts, and free government resources for activities with a public good content or positive externalities. The findings suggest that in formulating laws and regulations to establish tradable water rights, particular attention should be paid to the initial allocation of water rights and to developing dispute resolution mechanisms, maintaining a registry, minimizing negative third-party effects, and designing and enforcing environmental laws. The Bank could assist in such efforts by raising awareness of the potential benefits of tradable water rights and by providing technical assistance to establish such rights.

The findings have been presented at professional workshops in water management in Berlin, Paris, and Washington, DC, and in Bankwide seminars. They also have been presented to senior government officials in Mexico and Peru, members of Peru's congress, a group of nongovernmental organizations in Peru, and a convention of water user associations in Peru.

Responsibility: Latin America and the Caribbean Technical Department, Advisory Group and Economic Adviser's Unit—Paul Holden and Mateen Thobani (Internet address mthobani@worldbank.org).

Completion date: February 1996.

Reports:

Holden, Paul, and Mateen Thobani. 1995. "Tradable Water Rights: A Property Rights Approach to Improving Water Use and Promoting Investment." *Cuadernos de Economía* (97).

_____. 1996. "Tradable Water Rights: A Property Rights Approach to Resolving Water Shortages and Promoting Investment." Policy Research Working Paper 1627. World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Thobani, Mateen. 1995. "Tradable Property Rights to Water: How to Improve Water Use and Resolve Conflicts." FPD Note 34. World Bank, Private Sector Development Department, Washington, DC.

_____. 1996. "Water: Tapping a New Market." *Hemisfile* (Institute of the Americas) 7(1).

World Bank. 1995. "Peru: A User-Based Approach to Water Management and Irrigation Development." Report 13642-PE. Latin America and the Caribbean, Country Department. Washington, DC.

Private Financing of Toll Roads

This study assesses the international private toll road industry. It analyzes public policy and financing challenges and strategies in undertaking private toll road concessions and mobilizing financing for construction and operation. It also assesses the future prospects for private toll roads.

The study distills the main issues and draws its conclusions based on an analysis of nine toll road projects that have attracted substantial private capital. The research is based on a review of project concession documents, offering memorandums for financial transactions, trade journals and other industry publications, industry research, and interviews with project sponsors, financial advisers and consultants, and officials at multilateral financial institutions.

The study analyzes several aspects of private toll road financing, including project economics, country and concession environment, risk sharing between the public and private sectors, financing structures and sources, policy issues for private toll road programs, and future developments.

Preliminary findings suggest several conclusions. Project economics for toll roads vary widely, depending on the function, cost, traffic volume, and certainty of traffic demand. Governments have pursued a wide range of strategies for sharing risk between the public

and private sectors. There are several ways provide financial and other support for toll roads, but before committing themselves to particular arrangements, governments should weigh the tradeoff between the value of such support to the private sector and their exposure. And governments should carefully consider both project selection and the method of bidding for toll concessions.

The study's results should be useful for Bank staff advising clients on private toll road programs.

Responsibility: Cofinancing and Project Finance Department, Project Finance and Guarantees Group—David Baughman (Internet address dbaughman @worldbank.org) and Suman Babbar. With Greg Fishbein, Mercer Management Consulting.

Completion date: September 1996.

Report:

Fishbein, Greg, and Suman Babbar. Forthcoming. "Private Financing of Toll Roads: A Review of Experience." Cofinancing and Project Finance Department Discussion Paper. World Bank, Washington, DC.

The Electric Power Sector in Asia

This study examines the electric power sector in eight Asian developing countries—China, India, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. It reviews the structure, regulatory framework, and investment climate in the electric power industry, paying particular attention to current and proposed changes to government policies that will affect foreign investment.

Electricity production is the fastest growing end use of fuel worldwide. Growth is especially strong in the developing countries—particularly in Asia, owing to the region's rapid economic development. Electricity demand in Asia is expected to grow much faster than the region's economies. In addition to rising incomes and rapid development, another important source of the growth in demand will be the large population still without electricity.

Traditionally, state companies typically have been responsible for supplying electricity to consumers. But the general trend worldwide to liberalize and privatize the economy is beginning to change that. Asian countries have been pursuing efforts to liberalize and privatize electricity markets and attract foreign investment, though the pace has been uneven, ranging from fairly advanced reform in the Philippines to little progress in Myanmar.

This study will review government plans to change the structure of the industry and to effect reforms relating to foreign investment. It will review power development plans in the eight countries and provide a comparative view of the challenges facing their power industries and the opportunities for foreign participation.

The study will provide a cross-country comparison of reform measures to date and of plans for further liberalizing and privatizing electricity industries. The experiences and practices it highlights should benefit governments and companies both in Asia and in other regions.

Responsibility: International Economics Department, Commodity and Policy Analysis Unit—Shane Streifel (Internet address sstreifel@worldbank.org) and Nese Erbil. With Masayasu Ishiguro, Nomura Research Institute, Japan. The Nomura Research Institute is contributing funding for the research.

Completion date: October 1996.

Rural Travel and Transport Project

Inadequate rural transport infrastructure and lack of mobility pose important constraints to rural development in Sub-Saharan Africa. The responsibility for rural transport infrastructure is often split among national, regional, and local governments and among different ministries, such as transport, public works, local government, forestry, agriculture, and rural development. Planning is often haphazard or nonexistent, and the resource allocation among new construction, rehabilitation, and maintenance rarely reflects the requirements of a sustainable network. Design standards are frequently higher than warranted by the circumstances; this affects the choice of technology and the cost (and thus the amount of infrastructure produced), the amount of employment created, and the technology of the means of transport used. Funding falls far short of needs, and mobilization of local resources is meager. And most Sub-Saharan African countries lack a policy framework for rural transport.

The aim of this project is to present a new policy framework for rural transport infrastructure in Sub-Saharan Africa. In preparing this policy framework, it is addressing several questions: What are the underlying constraints to expanded use of appropriate technologies, including the adoption of labor-based work methods by road agencies and contractors? What is the potential for introducing or expanding the use of intermediate means of transport? What are the planning, institutional, and financial issues surrounding rural travel and transport? What are the key elements of a successful national rural transport policy and strategy? And what examples of best practice are there from other regions?

The project has commissioned case studies based on qualitative research methods and carried out a series of village-level travel and transport surveys. On the basis of these case studies and surveys, the project has quan-

tified the transport burden over a number of rural areas with differing characteristics across the continent, and developed a profile of those who bear it; identified the parameters that determine whether labor-based private contracting of infrastructure works can reduce unemployment; and determined the patterns of use of intermediate means of transport and how to identify constraints to the introduction and use of these means.

These findings have aided in the formulation of rural road strategies in Ghana, Madagascar, and Uganda and the preparation of rural transport strategies in Ethiopia, Nigeria, and Tanzania. And the rural travel and transport component of the Integrated Roads Project Phase II in Tanzania represents a logical progression of the project's policy and strategy developments. Further outreach from the project continues through the preparation of integrated road sector projects in Ethiopia and Zambia.

Responsibility: Africa Technical Department, Environmentally Sustainable Development Division—Snorri Hallgrimsson (Internet address shallgrimsson @worldbank.org), Elisabeth Stock, and Christina Malmberg Calvo.

Completion date: November 1996.

Reports:

Barwell, Ian. Forthcoming. "Transport and the Village." World Bank, Africa Technical Department, Washington, DC.

Gaviria, J. 1991. "Rural Transport and Agricultural Performance in Sub-Saharan Africa: Six Country Case Studies." World Bank, Africa Technical Department, Washington, DC.

Gaviria, J., and T. Pankaj. 1991. "Rural Road Sub-Sector Strategy." Vol. 1, "Madagascar." World Bank, Africa Technical Department, Washington, DC.

_____. 1991. "Rural Road Sub-Sector Strategy." Vol. 2.,"Ghana." World Bank, Africa Technical Department, Washington, DC.

International Labour Organisation, IT Transport. 1991. "Village-Level Transport and Travel Surveys."

Malmberg Calvo, Christina. 1994. "Case Study on Intermediate Means of Transport: Bicycles and Rural Women in Uganda." World Bank, Africa Technical Department, Washington, DC.

_____. 1994. "Case Study on the Role of Women in Rural Transport: Access of Women to Domestic Facilities." World Bank, Africa Technical Department, Washington, DC.

Riverson, J., and S. Carapetis. 1991. "Potential of Intermediate Means of Transport in Improving Rural Travel and Transport in Africa." World Bank, Africa Technical Department, Washington, DC.

Riverson, J., J. Gaviria, and S. Thriscutt. 1991. "Rural Roads in Sub-Saharan Africa: Lessons from Bank Experience." World Bank, Africa Technical Department, Washington, DC.

Stock, Elisabeth. 1995. "The Problems Facing Labor-Based Road Programs and What to Do about Them: Evidence from Ghana." World Bank, Africa Technical Department, Washington, DC.

Stock, Elisabeth, and Jan de Veen. 1996. "Expanding Labor-Based Methods in Roads Programs." World Bank, Africa Technical Department, Washington, DC.

Tanzania, Bureau for Industrial Cooperation, Office of the Prime Minister and First Vice President. 1992. "Rural Travel and Transport in Tanzania: A Situation and Strategy Paper."

Uganda, Ministry of Local Government. 1993. "Uganda Strategy for Rural Feeder Roads Rehabilitation and Maintenance."

Reform of Government-Owned Water Utilities

The performance of water and sanitation utilities in most developing countries is poor from several perspectives. From an economic perspective, the utilities seldom use available resources efficiently. From a financial perspective, they seldom collect sufficient revenues to cover their recurrent costs—let alone to service their debts. And from an equity point of view, too, they perform poorly, typically leaving small enterprises and the poor to bear the brunt of unreliable service or denying them service altogether while subsidizing the consumption of the rich and the middle class.

There is increasing recognition that the causes of this poor performance lie both in the utilities and in the environment in which they function. In recent years there have been major advances in understanding the determinants of institutional performance, particularly the importance of the rules, regulations, incentives, and procedures that create an enabling (or disabling) environment for utilities. Institutional reform efforts to improve performance take a number of forms. Some countries try to increase private sector participation in water and sanitation. Others prefer to reform water and sanitation utilities in the context of government or municipal ownership.

This project aims to derive general principles for improved institutional performance under government ownership, drawing on applied institutional economics, practical experience with the Bank's water and sanitation projects, and more general experience with public sector reform in such countries as New Zealand. The emphasis is on strategies for enhancing the efficiency of government-owned utilities through:

- Clarification of objectives
- Governance structures and processes
- Transparency and performance indicators
- Accountability and responsibility
- Monitoring of efficiency and effectiveness
- Regulation (traditional and "light-handed")
- Customer participation.

The project also focuses on key elements of the broader environment in which government utilities function—

political, legislative, and judicial frameworks and cultural and historical factors.

Responsibility: Transportation, Water, and Urban Development Department, Water and Sanitation Division—Penelope Brook Cowen (Internet address pbrookcowen @worldbank.org). With Graham C. Scott, Graham Scott NZ Limited.

Completion date: September 1997.

Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply

Most water utilities in the developing world have been characterized by insufficient maintenance, misallocation of investment, unresponsiveness to users, overstaffing, excessive political intervention, and other inefficiencies. Moreover, 1 billion people lack safe drinking water, and 1.7 billion lack adequate sanitation services. The majority of the very poor, often the apparent target of investment programs and subsidies, continue to rely on alternative water sources that are expensive and unsafe. The poor record of urban water and sanitation services is largely a legacy of government ownership, operation, and financing of the sector. Reforms promoting private sector participation in the provision of urban water supply are being cited as success stories.

This study will analyze the effect of political and contracting institutions in the design and performance of contracts for private sector participation in urban water supply. First, it will determine under what conditions the private sector may be more efficient than the government. Second, because private involvement in urban water supply can take many contractual forms, it will identify what privatization schemes are feasible and efficient under specific institutional settings. Third, it will determine how to implement the privatization reforms and how to obtain the desired results (improved performance and increased welfare) under different institutional and political settings.

The study has two main objectives. It aims to provide Bank task managers and client governments with a better set of tools for thinking through when and how best to involve the private sector in the reform of water and sanitation utilities, including guidelines for the design and implementation of a successful reform. And it seeks to provide a methodology to assess the welfare effects of reforms involving private sector participation in urban water supply.

The research will use a case study approach, systematically analyzing experience with private sector participation in the provision of urban water services in five countries: Argentina (concession in 1992), Côte d'Ivoire (lease in 1962 and concession in 1987), Guinea (lease in 1989), Mexico (management contract in 1993), and England and Wales (full privatization in 1989). The sample represents the main contracting options used in water supply and provides significant variation in the institutional setting.

The study will divide the analysis in three parts. The first part will analyze the political issues that may determine the design and performance of reform. It will analyze the political motivation and feasibility of reform, the commitment to reform, and the role played by the political importance of water. The second part will analyze contracting issues in the design and performance of reform (including the process of selecting the contractor, the design of the contract, and the regulatory framework). It will look at how the different types of contracts address possible problems of incentives, information asymmetries, and credibility. The third part will assess the results of the reform, looking at different indicators of performance. The study also will measure the welfare effects of each reform compared with the publicly owned and operated counterfactual (using the methodology developed by Galal and others, *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, New York: Oxford University Press, 1994).

The findings of the case studies will be disseminated through working papers and a synthesis paper on the policy and operational lessons of the research.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Lorena Alcazar (Internet address lalcazar@worldbank.org) and Colin Xu; and Transportation, Water, and Urban Development Department, Water and Sanitation Division—Penelope Brook Cowen.

Completion date: December 1997.

Africa Road Maintenance Initiative

Road transport grew rapidly in Sub-Saharan Africa after World War II and is now the dominant form of transport in the region. Roads carry 80–90 percent of the region's passenger and freight transport and provide the only access to most rural communities. By the end of the 1980s there were nearly 2 million kilometers of roads in Sub-Saharan Africa. These roads are among the region's largest assets: their replacement costs total nearly $150 billion.

But despite the importance of roads in Africa, most are poorly managed and badly maintained. Virtually all are managed by bureaucratic government roads departments. Because of the large backlog of deferred maintenance, it would take nearly $43 billion to fully restore all roads requiring immediate rehabilitation or reconstruc-

tion. To restore only those roads that are economically justified and to prevent further deterioration would require annual expenditures over the next 10 years of at least $1.5 billion—nearly one percent of regional GDP.

The economic costs of poor road maintenance are borne primarily by road users. For each dollar saved on road maintenance, vehicle operating costs increase by $2–3. Thus, far from saving money, cutting back on road maintenance increases the costs of road transport and raises the net costs to the economy. The costs of insufficient road maintenance in Africa are estimated at about $1.2 billion a year, or 0.85 percent of regional GDP.

Working with seven African countries (Cameroon, Kenya, Madagascar, Tanzania, Uganda, Zambia, and Zimbabwe), the Road Maintenance Initiative, created in 1988, has attempted to find ways to put the financing of roads on a sustainable long-term basis. The program also has assisted, on a demand basis, a number of other countries, including Benin, the Central African Republic, Ethiopia, Ghana, Lesotho, Malawi, Mozambique, and Togo. Program staff worked with local stakeholders—highway agencies, private sector operators, chambers of commerce—to identify the underlying causes of poor road maintenance policies and to develop an agenda for reforming them.

What has emerged is that poor road maintenance policies are attributable to the institutional framework in which roads are managed. Because they are not managed as part of the market economy, managerial incentives are biased. There is no clear price for roads, road expenditures are financed from general tax revenues, and road agencies are not subjected to market discipline. Poor terms and conditions of employment create further difficulties, as do weak management structures, a lack of clearly defined responsibilities, and a lack of managerial accountability. Road agencies are unlikely to operate efficiently until they face competition (or a surrogate for it), the primary factor that motivates managers to cut waste, improve operational performance, and allocate resources efficiently.

One of the first lessons to emerge from the program is that attempts to improve road maintenance policies should not focus on maintenance alone. Poor road maintenance policies are a subset of the wider issues of managing and financing roads. This insight quickly led to a wider debate on what could be done to strengthen the management and financing of roads. The key concept that came out of this debate was commercialization: bring roads into the marketplace and put them on a fee-for-service basis. But since roads are a public monopoly and most roads will remain in government hands for some time, commercialization requires complementary reforms in four other important areas. These reforms should focus on:

- Creating ownership by involving road users in the management of roads—to win public support for more road funding, to control potential monopoly power, and to limit road spending to what is affordable
- Stabilizing road financing by securing an adequate and stable flow of funds
- Clarifying responsibility by clearly establishing who is responsible for what
- Strengthening the management of roads by providing effective systems and procedures and strengthening managerial accountability.

These reforms also entail reforming road funds that do not function effectively, establishing representative management boards to manage the road funds and, in some cases, the road agencies themselves, and introducing commercial systems and procedures. Ghana installed an independent board to oversee the management of its road fund in 1995. Tanzania in 1992 and Zambia in 1995 created new-generation road funds. Lesotho and Malawi are in the process of creating autonomous road funds and road boards.

The program's findings are being disseminated through high-level regional seminars, with participants from government agencies, the business community, and academia. The first two regional seminars, with about 300 participants, were held in 1995 in Pretoria, South Africa, and Nairobi, Kenya. The program has also supported a number of national seminars to facilitate policy and institutional reforms, such as in the Central African Republic and Ethiopia in 1996.

Responsibility: Africa Technical Department, Environmentally Sustainable Development Division—Pedro Geraldes (Internet address pgeraldes@worldbank.org), Thor Wetteland, Gerard Paget, Shunsuke Otsuka, Leita Jones, and Anna Gueya. With Anne Balcerac de Richecour. The program is cofinanced by the governments of Denmark, France, Germany, Japan, the Netherlands, Sweden, and Switzerland and the European Union, with the collaboration of the United Nations Economic Commission for Africa.

Completion date: 2000.

Reports:

Balcerac de Richecour, Anne, and Ian G. Heggie. 1995. "African Road Funds: What Works and Why?" Sub-Saharan Africa Transport Policy Program Working Paper 14. World Bank, Africa Technical Department, Washington, DC.

Heggie, Ian G. 1995. "Commercializing Africa's Roads: Transforming the Role of the Public Sector." *Transport Reviews* 15(2):167–84.

_____. 1995. *Management and Financing of Roads: An Agenda for Reform*. World Bank Technical Paper 275. Washington, DC.

MACROECONOMICS

Decentralization, Fiscal Systems, and Rural Development

Ref. no. 679-68

Policies and processes that encourage decentralization are the latest in a succession of initiatives that have been aimed at bringing about rural development. Although decentralization efforts have a long history, much more needs to be understood about the components of decentralization if sound advice is to be given to policymakers.

This program of research investigates the hypothesis that more decentralized decisionmaking and resource allocation will improve the responsiveness and accountability of public institutions and strengthen the capacity of local governments and communities to manage their own development programs.

The research program consists of six components covering three main areas of investigation: democratic decentralization, fiscal decentralization, and decentralization of decisionmaking and responsibilities. It uses a variety of quantitative and qualitative instruments to analyze issues of political economy, local government capacity, participation, accountability, responsiveness, and efficient and sustainable delivery of public goods.

Early findings show that decentralization holds promise for:

- Reinforcing national democracy and central government commitment to rural development
- Reversing "urban bias"
- Easing the complexity of coordinating integrated rural development projects and improving their sustainability
- Reducing poverty that arises from disparities between regions and increasing attention to socioeconomic factors
- Facilitating the scaling-up of projects and promoting cooperation between nongovernmental organizations and government
- Increasing transparency, accountability, and the responsiveness of institutions.

Decentralization seems to hold little promise for:

- Reducing poverty that arises from disparities within localities
- Easing excessive rates of agricultural taxation
- Ensuring macroeconomic balance
- Reducing overall government expenditure.

These early findings suggest that the Bank and the rest of the development community should focus on maximizing the benefits that decentralization can help bring about, carefully monitor issues for which the effects of decentralization could go either way and intervene using various mechanisms, and ensure an appropriate role for central government in addressing areas where decentralization offers little promise.

Results have been disseminated through operational support to Bank projects and sector work, ties with other international development agencies, and a workshop, seminars, and training courses on decentralization. In addition, the project is preparing a user-friendly database, dissemination notes aimed at policymakers in developing countries, a workshop in Rome in partnership with the Food and Agricultural Organization, and training materials for a series of regional seminars for policymakers. It also is producing a Bank policy paper that will present a revised rural development strategy, best practice materials for Bank operational staff, and a university press book. The Economic Development Institute, Environment and Natural Resources Division, will collaborate with the Agriculture and Natural Resources Department in disseminating research findings and operational experiences.

Responsibility: Agriculture and Natural Resources Department, Office of the Director—Hans Binswanger (Internet address hbinswanger@worldbank.org); and Policy Research Department, Public Economics Division—Anwar Shah. With Johan van Zyl, Pretoria University; Justin Yifu Lin, Peking University; and James Manor, University of Sussex.

Completion date: December 1997.

Reports:

Humplick, Frannie, and James Manor. 1996. "The Political Economy of Decentralization." World Bank, Agriculture and Natural Resources Department, Washington, DC.

Parker, Andrew N. 1995. "Decentralization: The Way Forward for Rural Development?" Policy Research Working Paper 1475. World Bank, Agriculture and Natural Resources Department, Washington, DC.

van Zyl, Johan. 1995. "Analyzing the Capacity of Local Government: A Case Study of Municipalities in Northeast Brazil." World Bank, Agriculture and Natural Resources Department, Washington, DC.

van Zyl, Johan, T. Barbosa, Andrew N. Parker, and L. Sonn. 1995. "Decentralized Rural Development and Enhanced Community Participation: A Case Study for Northeast Brazil." World Bank, Agriculture and Natural Resources Department, Washington, DC.

Wiens, T., and M. Guadagni. 1996. "The Design of Rules for Demand-Driven Rural Investment Funds: The Latin American Experience." LATAD Studies on Decentralization. World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

World Bank. 1995. *Local Government Capacity in Colombia: Beyond Technical Assistance*. World Bank Country Study. Washington, DC.

Fiscal Decentralization and Economic Growth

Ref. no. 680-02C

Of the 75 developing and transition economies with populations greater than 5 million, all but 12 claim to have embarked on some type of transfer of power to local governments. Fiscal decentralization is seen as part of a package to reform the inefficient public sector, increase competition among subnational governments in efficient delivery of public services, and escape from low economic growth.

While many policy discussions have favored decentralization, they have a weak analytical basis and little empirical support. The objectives of this study were to supply an analytical framework and empirical methodology, and to use the methodology to test for the presence and size of efficiency gains from fiscal decentralization, which are assumed to lead to higher growth.

The study developed a theoretical model of fiscal decentralization and economic growth that assumes three levels of government: federal, state, and local. Fiscal decentralization is measured by the spending by each level of government as a fraction of total government spending. The model allows analysis of the efficiency gains of fiscal decentralization and characterization of the associated parameters. These parameters determine the relationship between fiscal decentralization and growth.

The theoretical exercise showed that it is not necessarily true that the more decentralized a country's fiscal system becomes, the faster its economy grows. For economic growth there is only an optimal degree of fiscal decentralization, determined by the relative productivity of different levels of government spending.

The study's empirical analysis examined the effects of fiscal decentralization on economic growth for a cross-country panel, for China, and for the United States. The cross-country panel data set includes data for 46 industrial and developing countries for 1970–92. Since information on the number of levels of government is crucial for a proper test of the model, the study constructed a database on measures of fiscal decentralization for countries with two and three levels of government.

The study found that industrial countries in the sample tend to be more fiscally decentralized and to have higher growth rates than developing countries. This observation could lead to the conclusion that there is a strong positive relationship between fiscal decentralization and growth. But without conditioning on any variables there is no statistically significant relationship in fiscal decentralization between fast-growth and slow-growth countries.

The picture changes dramatically once other determinants of growth are allowed for, however. For countries with three levels of government the sequence of fiscal decentralization matters a great deal to the growth process. For industrial countries fiscal decentralization enhances growth if a smaller central government is brought about as a result of a larger state government, but not a larger local government. For developing countries it is just the opposite: fiscal decentralization enhances growth if a smaller central government comes about as a result of a larger local government, but not a larger state government.

In the sample of countries with two levels of government, the study found a statistically insignificant relationship between decentralization and growth for the world sample as well as for the subsamples of industrial and developing countries. When it consolidated the accounts of three-level countries into two levels and combined these countries with the two-level countries, it found a statistically significant negative relationship for the world sample and developing countries, but not for industrial countries.

Finally, when the study allowed for a possible nonlinear relationship between fiscal decentralization and growth, it found evidence suggesting that developing countries would have a higher growth rate if they reduced the size of the central government or allocated more spending to lower levels of government.

The study found that in China fiscal decentralization has had a negative effect on provincial economic growth, suggesting that the fiscal reforms begun in the early 1980s have failed to promote economic growth. This finding is surprising in light of the conventional wisdom that fiscal decentralization usually boosts provincial or local economic growth. It may reflect the central government's limited resources for public investment in infrastructure.

Applying the model to the U.S. economy, the study found that greater fiscal decentralization is associated with lower economic growth. This finding holds for two

and three levels of government, for three different periods (1952–91, 1948–92, and 1930–92), with different conditioning variables, and across three estimation techniques. This finding is highly relevant for the current policy debate on the allocation of federal grants and assignment of expenditure responsibilities among the three levels of government in the United States.

Responsibility: Policy Research Department, Public Economics Division—Heng-fu Zou (Internet address hzou@worldbank.org) and Hamid Davoodi. With Jan Brueckner, University of Illinois; Andrew Feltenstein, Virginia Polytechnic; and Yaoting Zhang, Wuhan University.

Completion date: February 1996.

Reports:

Brueckner, Jan. 1996. "Infrastructure Financing and Urban Development: The Economics of Impact Fees." World Bank, Policy Research Department, Washington, DC.

Davoodi, Hamid, Danyang Xie, and Heng-fu Zou. 1996. "Fiscal Decentralization and Economic Growth in the United States." World Bank, Policy Research Department, Washington, DC.

Davoodi, Hamid, and Heng-fu Zou. 1996. "Fiscal Decentralization and Economic Growth: A Cross-Country Study." World Bank, Policy Research Department, Washington, DC.

Feltenstein, Andrew. 1996. "An Analysis of the Costs and Benefits of Decentralization: An Economywide General Equilibrium Model with a Regional Structure." World Bank, Policy Research Department, Washington, DC.

Zhang, Tao, and Heng-fu Zou. 1996. "Fiscal Decentralization, Public Spending, and Economic Growth in China." Policy Research Working Paper 1608. World Bank, Policy Research Department, Washington, DC.

The Impact of Budgetary Institutions on Expenditure Outcomes

Ref. no. 680-30C

This research project examined how institutional arrangements in a public expenditure management system affect incentives governing the allocation and use of budgetary resources. Its objective was to identify key arrangements that create incentives leading to better expenditure outcomes. Institutional arrangements were categorized by their relative impact on three expenditure outcomes—the aggregate level of spending and deficits (aggregate fiscal discipline), strategic prioritization of expenditures, and technical efficiency in the use of budgeted resources.

Using theories from the New Institutional Economics, the research identified underlying theoretical problems that plague any public expenditure management system. It then identified institutional arrangements that can address these problems, and mechanisms for tranparency and accountability that can bind key players to these arrangements. It constructed a diagnostic questionnaire that, when completed, produces index values for each of the arrangements and mechanisms, as well as three parsimonious measures ("slack coefficients") characterizing the potential effectiveness of a system in achieving each of the three expenditure outcomes. It then correlated these measures with actual expenditure outcomes in a sample of seven countries.

Analyzing the radical reforms in Australia and New Zealand, the study found that in New Zealand reforms have been geared primarily to achieving aggregate fiscal discipline and technical efficiency. Formal systems of transparency and accountability and devolution of managerial authority have been key. The Australian reforms also emphasize transparency and greater managerial flexibility, but not formal accountability mechanisms. The thrust of these reforms has been improving strategic prioritization within a hard budget constraint.

The analysis for Indonesia and Thailand revealed that both countries have systems that are reasonably effective in instilling aggregate fiscal discipline. But the Indonesian system places greater emphasis on prioritization, manifested in its ability to protect basic social services during fiscal austerity. By contrast, Thailand's is an overly centralized system that does not capitalize on the information at line agencies and lower levels of government.

Two key factors affect expenditure outcomes in the three African countries that the study looked at—Ghana, Malawi, and Uganda. The first is the central role of donors. While donor assistance has provided short-term incentives for aggregate fiscal discipline, it has impeded expenditure prioritization because of the way in which it has imposed expenditure cuts. And multiple donor projects have fragmented the budget. The second key factor is the lack of transparency and accountability in these systems, resulting in poor enforceability of rules. Budgets typically are remade as they are implemented, resulting in large variances with approved allocations and lack of predictability in resource flows to line agencies.

Responsibility: Policy Research Department, Public Economics Division—Sanjay Pradhan (Internet address spradhan@worldbank.org) and Shantayanan Devarajan, and Finance and Private Sector Development Division—Ed Campos. With Geoffrey Dixon; Graham Scott; Ashok Chakravarti; Mari Pangestu; Joseph Abbey; Medhi Krongkaew; and Poonsup Piya-anant.

Completion date: March 1996.

Reports:

Campos, Ed, and Sanjay Pradhan. Forthcoming. "Budgetary Institutions and Expenditure Outcomes: Binding Govern-

ments to Fiscal Performance." Policy Research Working Paper. World Bank, Policy Research Department, Washington, DC.

Dixon, Geoffrey. 1996. "Budgeting Institutions and Expenditure Outcomes in Australia." World Bank, Policy Research Department, Washington, DC.

Scott, Graham, and Ian Ball. 1996. "The Influence of Fiscal Institutions on Aggregate Fiscal Outcomes, Expenditure Composition, and Effectiveness of Resource Use in New Zealand." World Bank, Policy Research Department, Washington, DC.

Total Investment, Agricultural Investment, and Investment in Manufacturing

Ref. no. 680-50

The accumulation of stocks of physical and human capital is considered essential to growth and development. Moreover, during the process of growth, resources not only accumulate, they also flow between sectors. Still, much of the work on growth and such related areas as productivity gains has been limited because of a lack of consistent data on sector investment. The purpose of this research is to assemble information on sector investment from international and national sources and to find an appropriate method for converting the data into capital stock series.

The first phase of the research has located, recorded, and documented data series on fixed investment for 22 industrial and 39 developing countries, along with subsector investment for agriculture and manufacturing. The research has adapted a method developed by Eldon Ball and others ("The Stock of Capital in European Community Agriculture," *European Review of Agricultural Economics* 20:437–50, 1993) to convert the investment series into fixed capital stock series. In addition, for agriculture the study has developed measures of livestock and tree stock capital.

Initial results indicate that for most countries, most agricultural capital takes the form of livestock herds and planted trees. Because of falling international and domestic prices, the replacement value of this capital stock has declined even as the stock has grown. Output ratios for both manufacturing and agricultural capital show great diversity in economies at low income levels, but tend to converge as income rises, suggesting that the economic environments of poor countries differ more than those of wealthy countries. For various reasons then, economic agents choose different, but country-appropriate technology when deciding to produce. As incomes improve and economies become more integrated into the global economy, this diversity is less pronounced and the choices among technologies converge.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Donald Larson (Internet address dlarson@worldbank.org). With Yair Mundlak and Rita Butzer, University of Chicago; and Al Crego, University of Maryland.

Completion date: December 1996.

Estimating the Marginal Cost of Public Funds in Developing Countries

Ref. no. 680-69

Public expenditures, regardless of the benefits they confer, impose a cost on society to the extent that they are financed by distortionary taxes. This cost is not just the resources diverted to private use but also the deadweight loss associated with distortionary taxation. Thus to evaluate a public expenditure, the analyst needs to know the marginal cost of public funds—the sum of the marginal dollar raised from the private sector and the "marginal excess burden," or the change in the total welfare cost of taxation caused by increasing tax revenue by that dollar.

Estimates of the marginal cost of funds are critical for properly evaluating projects and conducting public expenditure reviews. In reconsidering the role of the state, governments (and the World Bank) in the 1990s have been shifting their mix of projects toward infrastructure, health, and education, where there is a strong case for public sector involvement. In projects in these sectors the benefits are enjoyed by the private sector while the costs are borne by the public sector. Since the World Bank has not used the marginal cost of funds in its economic appraisal of projects, it has implicitly treated these public costs and private benefits equally. But in the absence of lump-sum taxation the marginal cost of funds is almost surely greater than one, so a public project should produce marginal benefits greater than a dollar of cost to be welfare-improving. Put another way, the Bank has systematically overestimated the net benefits of many of its projects.

Estimates of the marginal cost of funds also provide a guide for tax reform by highlighting what types of taxes generate the highest welfare costs. In principle the marginal cost of funds should be equated across all tax instruments to minimize distortionary losses. But in practice governments do not behave optimally, and the marginal cost of funds varies among tax instruments. Estimates of marginal cost of funds indicate tax reforms that would provide equal revenue at lower cost.

As part of the Policy Research Department's broader research effort on fiscal policy in developing countries, this research seeks to provide estimates of marginal cost of funds for six developing countries—Bangladesh,

Cameroon, India, Indonesia, the Philippines, and South Africa—and use these estimates to derive guidelines for calculating the marginal cost of funds in other countries. The project addresses the following questions:

- What are the most important determinants of the marginal cost of funds? For example, do the tax rate and elasticity of demand capture most of the welfare burden? Under what conditions is the partial equilibrium calculation a good approximation?
- Are there any patterns in the marginal cost of funds across countries? A finding that trade taxes are consistently costlier than consumption taxes, for example, would provide a useful guideline for tax reform.
- What is the effect of additional untaxed sectors on the marginal cost of funds? In industrial countries the untaxed sector is typically given by leisure. But in developing countries entire productive sectors of the economy, such as small-scale agriculture, often go untaxed. How might estimates of the marginal cost of funds for developing countries differ from those for industrial countries?
- What is the sensitivity of estimates of marginal cost of funds to different uses of government revenue? Other analysts have shown that the marginal cost of funds depends not only on the tax but also on the effect of the type of government spending under consideration. Some of these considerations can be captured through different closure rules in computable general equilibrium (CGE) models.

The study will estimate the marginal cost of funds for the six countries by modifying existing CGE models for these countries and conducting tax exercises with them. The study will then assess how estimates derived from simpler methods compare with those obtained from the CGE simulations. This should provide guidance on how analytical (partial equilibrium) formulas and simple CGE models can be used to derive benchmark estimates of the marginal cost of funds in countries for which full-fledged CGE models do not exist.

Responsibility: Policy Research Department, Public Economics Division—Delfin Go (Internet address dgo@worldbank.org), Sethaput Suthiwart-Narueput, and Shantayanan Devarajan. With David Wildasin, Vanderbilt University.

Completion date: June 1997.

Economic Liberalization and Industrial Restructuring: The Sri Lanka Experience

Ref. no. 681-03

Sri Lanka's economic liberalization, which began in 1977, provides an important and continuing experiment for examining how the trade, finance, and exchange rate reforms affected the country's industrial structure. Research on the effect of liberalization on a country's industrial structure generally has been confined to aggregate analysis, examining the response of production, exports, imports, and productivity in relation to overall outcomes. This study will examine the results of liberalization at the firm level. The study also will attempt to find out how long a reform impact lasts and where the main changes occur in industries and in patterns of industrial development following a multifaceted liberalization. The postliberalization period is sufficiently long to distinguish the long-term resource allocation effects of liberalization from the short-term impact effects. The purpose of the research is to derive lessons for other countries undertaking liberalization.

Using a firm-level data set, the study will attempt to establish changes in patterns of industrial growth, export orientation, factor proportions, employment potential, and factor productivity following liberalization. It also will attempt to measure the gap between declared policy and the policy actually implemented, in the context of the political support or opposition to the reforms. This will allow the incorporation of sociopolitical and institutional factors that might explain any inconsistency between stated and actual reforms.

The study will establish a set of hypotheses about what was expected following the liberalization and what actually happened. The firm-level results will be used to examine changes in the level and composition of output, in factor proportions, and in investment behavior. This has been made possible by the annual surveys of manufacturing in Sri Lanka initiated in 1977. If the study finds that patterns that have regularly been found in other countries after liberalization do not appear in Sri Lanka, it will use the firm-level findings to examine the outcomes more closely. This will allow more accurate generalizations about the effects of economic liberalization on industrial structure.

Responsibility: Operations Policy Department, Operations Policy Group—Sarath Rajapatirana (Internet address srajapatirana@worldbank.org). With Premachandra Athukorala, Australian National University; and Jayantha Kelegama and P. Samararatne, Institute of Policy Studies. The Institute of Policy Studies is providing data and data processing for the research.

Completion date: June 1997.

Public Expenditure Analysis and Data

A confluence of factors has heightened attention to public expenditure allocation. In developing countries fiscal austerity has entailed expenditure cuts, and the issue of where to make these cuts has assumed central

importance. And in the World Bank it is now widely acknowledged that project loans have ignored larger sectoral priorities and that adjustment loans have paid too little attention to the composition of public spending.

Recognizing the importance of these issues, the Bank has devoted considerable resources in recent years to public expenditure reviews (PERs), which analyze and make recommendations on a government's expenditure program. A review of PERs revealed the lack of a systematic methodological or data framework to guide them. Similarly, budgeting in developing countries is ad hoc or incremental, with political dynamics weighing heavily.

To improve public expenditure analysis in the Bank and in developing countries, this project developed a simple framework for public expenditure analysis, illustrated by country and sectoral examples, for use by Bank staff and policy analysts in developing countries. The framework is being disseminated through training seminars and associated training materials and through outreach and working papers. The framework also is being applied in in-depth public expenditure reviews in Caribbean countries and in Guinea.

Responsibility: Policy Research Department, Public Economics Division—Sanjay Pradhan (Internet address spradhan@worldbank.org). With Min Zhu.

Completion date: May 1996.

Report:

Pradhan, Sanjay. 1996. *Evaluating Public Spending*. World Bank Discussion Paper 323. Washington, DC.

Applied Macroeconomic Models for Developing Countries

Applied macroeconomic models are an essential tool for evaluating countries' policy options and growth prospects under different scenarios. In recent years the World Bank has put significant effort into developing a family of policy-oriented macroeconomic models for use in its operational work. These models range from simple accounting frames to more complex tools with rich behavioral content firmly grounded in economic principles.

This research, which will result in a book, is undertaking a thorough review and evaluation of these models. The study has four objectives. The first is to put the Bank models in a broader perspective by comparing them with other applied macroeconomic frameworks for developing countries used by international institutions and the policymaking community. The research has carried out a comparative analytical review of applied macroeconomic models, taking stock of the field and providing the necessary reference for evaluating the Bank models. The review encompassed policy-oriented analytical frameworks ranging from rudimentary financial programming devices to relatively sophisticated macroeconomic models embodying a careful treatment of expectations and dynamics.

The second objective is to describe and document the structure of the Bank models and their application to specific countries. The research is completing the application of prototype versions of Bank models to the analysis of macroeconomic policies in specific developing countries, comparing the outcomes of policy experiments, and relating them to the structure and features of the analytical frameworks.

The third objective is to evaluate the application of models at the Bank from the point of view of users. For this purpose the study conducted a survey of model users focusing on the objectives, the structure, the cost, and the performance of models. The study's fourth objective is to draw methodological and practical lessons from the Bank's experience with the design and use of applied macroeconomic models.

The applied macroeconomic models in use at the Bank vary in structure and complexity—some embody a more detailed disaggregation of the economy than others, their behavioral content differs, and they pay varying degrees of attention to such issues as relative prices and nominal variables. But they have been found uniformly easy to use and helpful for policy analysis. Moreover, models are often used as tools in policy discussions with borrowers, donors, and other international institutions.

On the whole, users of applied models at the World Bank report high satisfaction with them. But more complex models—those with richer behavioral content—are typically found more satisfactory because of their superior ability to portray an economy's response to policy changes and external shocks. They also require more resources for development and maintenance. From the user's point of view, there is a steep tradeoff between a model's sophistication—its behavioral content and capacity to trace through the impact of policy and external disturbances—and its cost. That suggests that upgrading to more complex policy-oriented models should be highly selective.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Klaus Schmidt-Hebbel (Internet address kschmidthebbel@worldbank.org) and Luis Servén. With Peter Montiel, Oberlin College; Jaume Ventura, Harvard University; Rodney Chun, Cornell University; and Douglas Smith, Columbia University.

Completion date: September 1996.

Reports:

Montiel, Peter. 1994. "Applied Macroeconomic Models for Developing Countries." World Bank, Policy Research Department, Washington, DC.

Schmidt-Hebbel, Klaus, and Luis Servén. 1994. "Fiscal Policy in Classical and Keynesian Open Economies." Policy Research Working Paper 1299. World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Dynamic Response to External Shocks in Classical and Keynesian Economies." In D. Curie and D. Vines, eds., *North-South Linkages and International Macroeconomic Policy*. Cambridge: Cambridge University Press.

_____. 1995. "Fiscal Adjustment and the Exchange Rate under Rational Expectations in Chile." World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Fiscal and Monetary Contraction in Chile: A Rational Expectations Approach." Policy Research Working Paper 1472. World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Hacia una menor inflacion en Chile: contraccion monetaria bajo expectativas racionales." In F. Morande and A. Rosende, eds., *Analisis empirico de la inflacion en Chile*. Santiago: ILADES.

_____. Forthcoming. "Adjuste fiscal y tipo de cambio real en Chile: en enfoque de expectativas racionales." In F. Morande, ed., *Estudios empiricos sobre el tipo de cambio en Chile*.

Ventura, Jaume. 1995. "World Bank Macroeconomic Models: Findings and Suggestions." World Bank, Policy Research Department, Washington, DC.

Fiscal Decentralization and Fiscal Performance

Many studies have examined the effect of fiscal decentralization on total government intervention in the economy. But they have treated fiscal decentralization as the decentralization of either taxing or spending powers, neglecting the inseparability of taxing and spending decisions. This research corrects this deficiency and addresses the following questions in an econometric model of government behavior using cross-country data:

- Does the simultaneous decentralization of the national government's taxing and spending powers—fiscal decentralization—tend to act as a constraining device on the overall size of the public sector?
- If so, do revenue sharing arrangements that concentrate taxing powers in the hands of the national government circumvent the constraining influence of the decentralized spending?
- Does fiscal decentralization constrain the overall tax effort?
- If so, do revenue sharing arrangements subvert the constraining effect of decentralized spending on the tax effort?
- Does fiscal decentralization tend to dilute the national government's effort to control the overall budget deficit?

The answers to these questions are important for policymakers in most transition and many market-oriented economies because governments often decentralize spending powers alone, while pursuing the objectives of smaller public sectors and smaller budget deficits.

The first phase of this research project addressed the deficiency of the literature and attempted to answer the first two questions above. The econometric results show that simultaneous decentralization of the national government's taxing and spending decisions exerts a negative and significant effect on the growth of the public sector, and that revenue sharing arrangements eliminate the constraining influence of decentralized spending.

The second phase addresses the last three questions, and extends the model to separate the effects of fiscal decentralization, "decentralism," and fragmentation on the overall tax effort. The econometric estimation of the extended model indicates that the government's tax effort declines significantly as fiscal decentralization increases, and rises as revenue sharing arrangements expand. But the results show that fragmentation does not play a significant role in restraining the overall tax effort.

A comparison of the results from the two phases indicates that simultaneous decentralization of taxing and spending powers does not appear to result in the deterioration of the overall budget deficit. The findings show, however, that the overall budget deficit tends to deteriorate as revenue sharing arrangements expand.

These findings suggest that countries that want to reduce total government intervention in the economy from both the revenue and the expenditure sides without deterioration of the overall budget deficit need to decentralize both taxing and spending powers. Decentralizing one without the other can encourage expansion of total government intervention and lead to deterioration of the overall budget deficit.

Responsibility: Policy Research Department, Public Economics Division—Jaber Ehdaie (Internet address jehdaie@worldbank.org).

Completion date: December 1996.

Reports:

Ehdaie, Jaber. 1994. "Fiscal Decentralization and the Size of Government: An Extension with Evidence from Cross-Country Data." Policy Research Working Paper 1387. World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Fiscal Decentralization and the Tax Effort: Summary of Findings." World Bank, Policy Research Department, Washington, DC.

_____. Forthcoming. "Fiscal Decentralization and Growth of Public Spending." In Anwar Shah, ed., *Macrofederalism*. Washington, DC: World Bank.

Latin American Growth Puzzle

After years of poor macroeconomic performance many Latin American countries recently undertook ambitious programs of macroeconomic stabilization and structural reform. The change in policy created high expectations for the region. But some observers question whether actual growth outcomes in several countries have measured up to the expectations.

This project offers some evidence that the response of economic growth to the reforms—macroeconomic stabilization, financial deepening, external sector liberalization, and other structural reforms—has not been disappointing. Because of the significant changes in policies by the 1990s and despite the global slowdown, Latin American growth has responded to changes in policy variables as would have been predicted on the basis of experience in other times and places.

The study estimates the effects of policy variables on growth through a panel regression spanning 70 countries and all five-year periods in 1960–93. To obtain consistent estimates of the parameters linking policy variables and growth, the research uses a dynamic panel methodology, based on the generalized method of moments, that both controls for unobserved time- and country-specific effects and accounts for the likely joint endogeneity of the policy variables.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Norman Loayza (Internet address nloayza@worldbank.org), William Easterly, and Peter Montiel.

Completion date: December 1996.

Report:

Easterly, William, Norman Loayza, and Peter Montiel. 1996. "Has Latin America's Post-Reform Growth Experience Been Disappointing?" World Bank, Policy Research Department, Washington, DC.

Public Expenditure and Growth

Noting that the literature has focused on the link between the level of public expenditure and growth, this research derives conditions under which a change in the composition of expenditure leads to a higher steady-state growth rate. The conditions depend not just on the productivity of different components of public expenditure, but also on the initial shares.

Using data from 43 developing countries over 20 years, the research shows that an increase in the share of current expenditure has positive and statistically significant growth effects. By contrast, the relationship between the capital component of public expenditure and per capita growth is negative. So seemingly productive expenditures, when used in excess, could become unproductive. These results imply that developing country governments have been misallocating public expenditures in favor of capital expenditures and at the expense of current expenditures.

Responsibility: Policy Research Department, Public Economics Division—Shantayanan Devarajan (Internet address sdevarajan@worldbank.org), Vinaya Swaroop, and Heng-fu Zou. With Min Zhu.

Completion date: March 1997.

Report:

Devarajan, Shantayanan, Vinaya Swaroop, and Heng-fou Zou. 1996. "The Composition of Public Expenditure and Economic Growth." *Journal of Monetary Economics* 37(2):313–43.

The Peace Dividend: Military Spending Cuts and Economic Growth

Conventional wisdom suggests that reducing military spending would bring stronger economic growth. Yet empirical studies have yielded only partial support for this view. To unravel the ambiguous empirical findings, this study estimated an extension of a standard growth model using a panel data econometric procedure that delivers consistent estimates of the effect of military spending on economic growth. The econometric methodology follows Chamberlain's II-matrix technique, which controls for country-specific unobservable effects and reduces measurement error bias, thus producing consistent parameter estimates. The study used pooled, time-series, cross-sectional data for 79 countries from all regions (except formerly socialist countries) for the period 1970–85. It drew the data from the Summers and Heston database (for national account variables) and the Stockholm International Peace Research Institute database (for military spending).

The study found that high military spending detracts from economic growth both by reducing productive capital formation and by acting more generally to distort resource allocation. In contrast with the results of earlier empirical work, the study's panel data estimates of these adverse effects are statistically significant and sizable.

The study simulated the likely quantitative impact of these effects for different regions. The first set of simulations shows that the military spending cuts that occurred in most regions in the late 1980s will eventually lead to substantial gains in per capita output, particularly for developing countries in Asia, North Africa, and the Middle East, where military spending ratios were markedly reduced. By contrast, in Eastern Europe and Sub-Saharan Africa, where military spending ratios

rose in the late 1980s, the output path will eventually be lower. The results of a second set of simulations suggest that economic growth would be increased substantially by the deeper cuts in military spending that would be feasible under a general international peace. These findings suggest that countries undertaking macroeconomic adjustment and structural reform programs to achieve strong and durable increases in per capita output should consider including military spending cuts.

The estimated peace dividend, while sizable, may nevertheless understate the potential gains in economic growth. This is so because a general peace would almost certainly result in improvements in other determinants of growth by, for example, permitting fuller liberalization of trade regimes and higher expenditure on health, education, and infrastructure. The project is therefore studying other channels through which military spending may affect growth.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Norman Loayza (Internet address nloayza@worldbank.org). With Malcolm Knight and Delano Villanueva, International Monetary Fund.

Completion date: June 1997.

Report:

Knight, Malcolm, Norman Loayza, and Delano Villanueva. 1995. "The Peace Dividend: Military Spending Cuts and Economic Growth." IMF Staff Paper. International Monetary Fund, Washington, DC.

Economic Growth and the Informal Sector

Although much has been written on the informal sector, little is known about its relation to economic growth. This project aims to produce an analytical framework that will help in understanding what gives rise to the informal sector and the channels through which it affects economic growth.

The study starts from the view that the informal economy arises when distortionary government regulations are coupled with weak enforcement agencies. Informal activities are then the rational response to the restrictions and regulations imposed by governments on legal firms. The research studies the determinants and effects of the informal sector in an endogenous growth model whose production technology depends essentially on congestable public services. The model concludes that changes in policy parameters and in the quality of government institutions that lead to an increase in the relative size of the informal economy will also generate a reduction in the rate of economic growth.

The project then applies the theoretical model to the experience of two groups of countries, Latin American and formerly socialist countries. While the application to Latin American countries has been completed, the application to formerly socialist countries is in progress.

The project uses data from the Latin American countries in the early 1990s to test some of the implications of the model and to estimate the size of the informal sector. The empirical approach consists of relating the size of the informal sector to a latent variable for which there are multiple causes and multiple indicators. The size of the informal sector is found to depend positively on proxies for tax burden and labor market restrictions, and negatively on a proxy for the quality of government institutions. Further, the empirical results suggest that expansion of the informal sector hurts growth by reducing the availability of public services for everyone in the economy and by increasing the number of activities that use public services less efficiently or not at all.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Norman Loayza (Internet address nloayza@worldbank.org).

Completion date: July 1997.

Report:

Loayza, Norman. 1996. "The Economics of the Informal Sector." *Carnegie-Rochester Conference Series on Public Policy 46.*

Tools for Fiscal Analysis

The Public Economics Division of the Policy Research Department devotes much of its time and resources to developing tools for the quantitative assessment of fiscal policies in developing countries. One such tool, dubbed the 1-2-3 model, is a simple general equilibrium model of an open economy in a popular spreadsheet format. The model enables policy economists, using little more than national accounts data, to calculate the likely impact of proposed policy changes, such as the effect of trade liberalization on the real exchange rate, or the revenue impact of replacing trade taxes with domestic indirect taxes. The division has provided about 100 country-specific versions of the model to Bank operational departments.

The model is now being integrated into RMSM-X, the World Bank's standard accounting framework, and can easily be applied to any country to generate policy scenarios or the standard tables in country assistance strategies and unified surveys. A dynamic version of the framework also has been developed to examine the impact of fiscal policy on investment and growth. Future work will undertake empirical estimation of some key parameters of the model and link similar models to household-level data to examine the interaction between macroeconomic policies and equity issues.

Responsibility: Policy Research Department, Public Economics Division—Delfin S. Go (dgo@worldbank.org) and Shantayanan Devarajan.

Completion date: December 1997.

Reports:

Devarajan, Shantayanan, and Delfin S. Go. Forthcoming. "The Simplest Dynamic General Equilibrium Model of an Open Economy." *Journal of Policy Modeling.*

Devarajan, Shantayanan, Delfin S. Go, Jeffrey D. Lewis, Sherman Robinson, and Pekka Sinko. Forthcoming. "Simple General Equilibrium Modeling." In J. François and K. Reinert, eds., *Applied Methods for Trade Policy Modeling.* Cambridge: Cambridge University Press.

Joint Policy Research Department–Africa Region Work Program on African Development

Achieving accelerated economic growth and poverty reduction in Sub-Saharan Africa may be the biggest challenge for the development economics profession and the World Bank. At the end of fiscal 1996 the Bank's Policy Research Department and Africa Regional Office initiated a joint effort to develop a work program on salient issues on which further analytical work could lead to improved policy outcomes in Africa. Preliminary work has identified seven issues: equitable rural development, trade and industrial policy, finance, public resource management, private capital flows, debt, and country selectivity.

The work program will consist of a set of research projects on these topics carried out in each of a sample of countries so that the interaction among the topics can be assessed. The work will involve collaboration with African researchers and outside institutions.

Responsibility: Policy Research Department, Public Economics Division—Shantayanan Devarajan (Internet address sdevarajan@worldbank.org), Office of the Director—Lyn Squire, and Macroeconomics and Growth Division—Christine Jones; International Economics Department, International Trade Division—L. Alan Winters and John Nash; and Economic Development Institute, Office of the Director—Peter Miovic.

Completion date: June 1999.

INTERNATIONAL ECONOMICS

Equipment Prices and Trade Policies for Developing Country Manufacturing Industries: A Pilot Study of Brazil

Ref. no. 676-61

This project tests the hypothesis that the "law of similars" or "domestic availability" style of licensing equipment imports in developing countries excludes some potential foreign machinery suppliers or otherwise reduces competition between foreign suppliers, raises foreign currency prices or worsens other selling terms (or both), and leads to the choice of overspecified or otherwise inappropriate imported equipment. The project also considers the hypothesis that the credit risks faced by suppliers of equipment to highly indebted countries also worsen the terms on which machinery and equipment are imported. If these hypotheses are correct, another dimension is added to the well-known economic costs of import substitution policies.

To assess how well these hypotheses can be tested empirically, the research was narrowed to a pilot study of exports of garment and textile machinery from Germany, Italy, and Switzerland to Brazil. Brazil was chosen in the expectation that the trade policy liberalization in 1990 would allow useful before-and-after comparisons of import licensing, and because its external indebtedness has greatly increased the credit risks perceived by foreign equipment suppliers and their banks.

The study's empirical work consisted of small, structured interviews with and questionnaire surveys of textile machinery exporters and other firms and organizations in Germany, Italy, and Switzerland and similar surveys of importing textile manufacturing and other relevant firms and organizations in Brazil. This work was supplemented by an analysis of World Bank subproject data and by independent statistical analysis (separately financed) of unit value data from official trade statistics. A theoretical conceptual framework developed for analyzing the effects of the "law of similars" import licensing was developed further to take account of the empirical findings.

The fieldwork has broadly confirmed the hypotheses. Many European textile machinery firms that are regular suppliers to other markets either do not bid at all or have limited their activity in Brazil. Before 1990 a complex game was played in which Brazilian textile firms adjusted the kinds of machinery they ordered so that they could obtain an import license on the grounds that there was no similar local machinery, and Brazilian machinery manufacturers extended the range of machines they produced to block import license applications. After the 1990 trade liberalization these practices and the accompanying economic costs largely disappeared. But the perceived cost and risk of financing equipment exports to Brazil still limited competition among exporters and worsened the terms on which Brazilian textile firms bought the equipment.

Papers on the European survey, the Brazilian survey, and the theoretical framework will be incorporated in a synthesis paper.

Responsibility: International Economics Department, International Trade Division—Garry Pursell (Internet address gpursell@worldbank.org) and Francis Ng. With Dean Spinanger, Kiel Institute of World Economics; Barbara Spencer, University of British Columbia, Vancouver; Thomas Magyar; and Sumana Dhar.

Completion date: December 1996.

Reports:

Spencer, Barbara J. 1995. "Bureaucratic Import Licensing, Rent-Seeking Quality Effects, and the High Cost of Imported Capital Goods." University of British Columbia, Vancouver.

Spinanger, Dean. 1995. "Did Brazil or Other LDCs Pay More for Capital Goods Imports? Analysis of Potential Development Implications." World Bank, International Economics Department, Washington, DC.

Determinants of Japanese Foreign Direct Investment: Policy Implications for Developing Countries

Ref. no. 679-35

This study examines several questions: What are the main factors contributing to the surge in Japanese foreign direct investment (FDI) in recent years? What are the policy implications of these factors for host developing countries? And what effect does Japanese FDI have on the pattern and characteristics of host country trade?

Empirical analysis is being carried out for four major subgroups: 10 industrial countries, the United States as a representative case, developing countries (with a special focus on Asia, the largest recipient of Japanese FDI),

and the Republic of Korea as a representative case. The separate regressions are intended to show more clearly the importance of host country variables. The analysis draws on data from Japanese ministries, the U.S. Department of Commerce, central banks, and the International Monetary Fund's financial statistics.

Results from the empirical analysis of the determinants of FDI are expected shortly. Preliminary findings on the trade effects of foreign direct investment suggest the following conclusions:

- Exports and imports by foreign manufacturing firms, in absolute amounts or as a share of sales, responded to exchange rate movements as might be expected, with exports falling and imports rising when the dollar rose, and exports rising and imports declining when the dollar fell. The results from disaggregate regression analyses confirm the negative effect of a rise in the value of the dollar on the export-sales ratios for both foreign firms and local U.S. firms in all sample industries.
- FDI regression coefficients on the exchange rates are uniformly larger for foreign firms than for U.S. firms in all regression equations, suggesting that the export behavior of foreign firms may be more sensitive to exchange rate movements than that of domestic firms. This is also confirmed for Japanese firms.
- Foreign-owned firms are somewhat less export-oriented, as measured by the ratio of exports to sales, and more dependent on imports than local firms. This phenomenon is especially significant for Japanese firms. Country-specific evidence shows that among firms from major industrial countries, Japanese firms showed the greatest home-sourcing, but their reliance on imports decreased over the past decade.
- The comparative advantages of foreign firms in the United States relative to U.S. multinationals appear to be concentrated in chemicals and metals. The foreign firms may bring some technological or other firm-specific advantages in these industries to the United States, increasing the country's strong competitive advantage in metals and machinery. The comparative advantages of host country trade seem to reflect the increasing presence of foreign firms in local markets and the differing and changing competitiveness of domestic and foreign firms.
- For developing host countries FDI can significantly influence the trade balance, exchange rate sensitivity of trade, and export competitiveness.

The empirical results of this study should provide useful guidance for host country FDI policies, which can affect a country's industrial competitiveness and comparative advantages and thus its attractiveness as a destination for further FDI flows. The study is expected to contribute to the Bank's policy dialogue with member countries seeking greater and sustained FDI inflows and to the Bank's technical assistance for dealing with private capital flows.

Responsibility: International Economics Department, International Finance Division—Kwang W. Jun (Internet address kjun@worldbank.org). With Joosung Jun, Yale University and Ewha University, Republic of Korea.

Completion date: October 1996.

World Bank Project Effectiveness and Country Policy Environment

Ref. no. 679-49C

Does country governance matter for the performance of World Bank–financed projects?

This research used data on the performance of more than 3,000 Bank-financed projects during 1970–92 to examine the effects of the country policy environment on project performance. The research confirms earlier findings that poor macroeconomic policies (black market premiums, fiscal deficits) are associated with poor project performance.

Controlling for other determinants of country success, the study found that countries with good civil liberties have better project performance than those with worse civil liberties. This negative effect of the lack of civil liberties is large, comparable in size to that of black market premiums. This result probably reflects better government performance in selecting and implementing projects when citizens have avenues available for influencing the government. Controlling for civil liberties, the study also found that the type of political regime has no effect on project success.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Lant Pritchett (Internet address lpritchett@worldbank.org). With Jonathan Isham, University of Maryland.

Completion date: May 1996.

Report:

Isham, Jonathan, Daniel Kaufmann, and Lant Pritchett. 1995. "Governance and Returns on Investment: An Empirical Investigation." Policy Research Working Paper 1550. World Bank, Policy Research Department, Washington, DC.

Export Competitiveness and the Real Exchange Rate

Ref. no. 679-58C

Analyses of factors leading to rapid economic growth must inevitably look at the role of export growth: nearly all countries that have achieved rapid growth in the past three decades have also experienced rapid growth in

exports. How can countries ensure success in exports? This study aimed to contribute to the discussion of this issue, focusing on the demand side. Using Bangladesh as an example, it investigated the link between the real exchange rate and export performance.

In assessments of export competitiveness the conventional price variable that has been used is the real exchange rate measured by the exporter's price index relative to a weighted sum of the price indexes of its major *trading* partners. For Bangladesh, which exports primarily to the OECD countries, that would mean defining the real exchange rate relative to prices in OECD countries. Yet Bangladesh typically competes not against OECD countries but against other developing countries exporting to OECD markets. Unlike most other analyses of competitiveness, this study therefore assessed demand on the basis of comparative prices from *competing* countries.

The research used data from the U.S. International Trade Commission for products covered by the Multifibre Arrangement (MFA). These data are highly disaggregated. And because MFA categories are tightly defined, products within a category coming from a country are homogeneous. Unit values in these data therefore represent prices of homogeneous products and are far more meaningful than those in the aggregate data conventionally used for estimating import demand.

The project developed a new method for estimating import demand that exploits the fact that MFA products are subject to binding quotas. It derived a system of import demand equations from a theoretical model and then estimated it econometrically. There is a tight relationship between the theoretical model and the estimated equations.

The most dramatic finding of the research is that both own-price and cross-price import demand elasticities are high. Though trade economists generally believe that countries such as Bangladesh face highly elastic demand and therefore do not hesitate to make the small-country assumption for them, empirical estimates of own-price import demand elasticities have been uniformly low—no more than 3 and generally around 1. And the estimates often are not based on statistically significant coefficients. By contrast, this study found own-price elasticities of between 30 and 40 and cross-price elasticities ranging from 3 to 10 (most investigators do not estimate cross-price elasticities). These elasticities are based on coefficients that are statistically highly significant. A variety of tests of the results found them to be robust.

The study's results are expected to inform policy discussion on the management of the real exchange rate, particularly in countries that, like Bangladesh, depend heavily on textile exports. Such countries need to take into account changes in the exchange rates not only of the destination countries for their exports, but also of their competitors.

Responsibility: South Asia, Country Department I, Country Operations Division—Shekhar Shah (Internet address sshah@worldbank.org). With Arvind Panagariya and Deepak Mishra, University of Maryland.

Completion date: June 1996.

Report:

Panagariya, Arvind, Shekhar Shah, and Deepak Mishra. 1996. "Estimating the U.S. Demand for MFA Imports from Bangladesh: The Impact of Competitors' Prices." World Bank, South Asia, Country Department I, Washington, DC.

Foreign Aid and the Composition of Public Spending

Ref. no. 679-76C

Using a model of aid fungibility, this research examined the relationship between foreign aid and public spending. On the basis of data from 14 developing countries over 20 years, it found that roughly three-quarters of each dollar given in development assistance goes to current expenditure and a quarter to capital expenditure.

The research used a newly constructed data series on the net disbursement of concessionary loans to test aid fungibility across public spending categories. The results show that concessionary loans given to the transport and communication sector are nonfungible. Loans to the agriculture, education, and energy sectors are fungible, but there is no evidence of funds' being diverted for military purposes.

The research findings also indicate that while total public spending in the health sector has no effect in reducing infant mortality, concessionary loans given to the health sector do. These findings suggest that linking foreign aid with an agreed-on public expenditure program in areas critical to development might be an effective way of transferring resources to developing countries.

Responsibility: Policy Research Department, Public Economics Division—Vinaya Swaroop (Internet address vswaroop@worldbank.org). With Tarhan Feyzioglu, Georgetown University; Min Zhu; and Renhong Wu.

Completion date: March 1996.

Reports:

Feyzioglu, Tarhan, Vinaya Swaroop, and Min Zhu. 1996. "Foreign Aid's Impact on Public Spending." Policy Research Working Paper 1610. World Bank, Policy Research Department, Washington, DC.

Swaroop, Vinaya. 1996. "Is Foreign Aid Fungible?" World Bank, Policy Research Department, Washington, DC.

An Operational Model for Evaluating Preferential Trading Arrangements

Ref. no. 679-77C

This research developed an index that can be used to calculate the effect of the formation of a customs union on the welfare of a small open economy, taking advantage of the detailed data available on tariffs and trade flows while maintaining computational simplicity. The purpose was to recast the traditional analysis of trade preferences in a form that permits ready quantification of the trade and welfare effects of integration and to provide a simple-to-use set of computer programs to allow widespread use of the index. Although the conceptual basis is not new, both the derivation of specific indexes of tariff changes and the provision of computer programs to allow country economists to apply them are. So too are the extensions to the model made to increase its applicability. To prove the practicability of the methods, they have been applied to Chile to examine its prospective membership in Mercosur and the North American Free Trade Agreement (NAFTA).

The index contains two components. The first is a price index reflecting the effect of a change in the tariff structure on the cost of consumption goods and on the tariff revenue generated from imports of consumption goods. The second component is an index of domestic production that calculates the effect of tariffs on domestic value added and on the tariff revenue collected from imports of intermediate goods. These indexes have minimal data requirements: they can be calculated from information on tariff rates and the value of imports of consumption and intermediate goods.

The index is based on the assumptions that the country being analyzed is small relative to world markets and that products imported from different countries are imperfect substitutes. These assumptions allow the application of standard techniques for calculating the effects of tariff reform in small open economies to the calculation of the effect of discriminatory tariff cuts. It is well known from the theory on customs unions that a discriminatory tariff cut has an ambiguous effect on national welfare: while eliminating tariff barriers leads to expansion of trade between member countries, it may lead to substitution away from imports from (more efficient) nonmember countries. The index developed in this project is valuable in part because it allows analysis of which characteristics of trade between countries are likely to lead to a successful union.

An important feature of the index is the assumption that production and utility functions have a nested constant elasticity of substitution form, which allows the elasticity of substitution between products to differ from that within product categories (that is, between products of the same type from different countries). That captures the notion that products of the same type from different countries are better substitutes for one another than for products in other categories.

The study showed that the welfare effects of tariff cuts associated with the formation of regional trading arrangements can be decomposed into two components. One component shows that discriminatory tariff cuts will tend to reduce welfare by an amount proportional to the difference between the average tariff on the partner country and the average tariff on all trade. This effect is similar to the concept of trade diversion. The second component, which differs in magnitude between imports of consumption goods and imports of intermediate goods, captures the idea of trade creation. For consumption goods, this effect is proportional to the difference between the average tariff and the average consumption distortion. For intermediate goods, it is proportional to the average tariff rate on imported inputs. Calculation of the index for a specific country will show the relative importance of these two effects.

The research first evaluated the index for the case of a small country that is a price-taker on world markets, deriving explicit computational forms for the case of nested constant elasticity of substitution functions on the demand and production sides. It then discussed how the index can be extended to allow a richer production structure and endogeneity of prices for some goods. This could allow relaxation of the small-country assumption so that formation of a customs union can affect the prices of goods sold to member countries.

Responsibility: International Economics Department, International Trade Division—L. Alan Winters (Internet address awinters@worldbank.org) and Francis Ng, and Development Data Group—Jerzy Rozanski. With Eric W. Bond, Pennsylvania State University; and the International Computing Center.

Completion date: June 1996.

Reports:

Bond, Eric W. 1996. "An Operational Model for Evaluating Preferential Trading Arrangements." World Bank, International Economics Department, Washington, DC.

Bond, Eric W., C. Syropoulos, and L. Alan Winters. 1996. "Deepening Regional Integration and Multilateral Trade Agreements." CEPR Discussion Paper 1317. Centre for Economic Policy Research, London

Foreign Direct Investment Spillovers in Developing Countries

Ref. no. 680-07

Many developing countries see foreign direct investment (FDI) as a key element of their development strat-

egies, and seek to attract it through a variety of financial incentives. They view FDI as a source of important direct benefits for the host country—financing new firms or business expansions, creating jobs, and generating tax revenues. They also believe that FDI produces important indirect benefits for domestic firms—"spillovers"—from the accelerated transfer of superior technology, turnover of skilled labor, and increased export opportunities through links with multinational corporations and foreign buyers. This study seeks to quantify the most important spillovers from FDI, and to investigate the mechanisms through which these spillovers occur.

In the course of the research the study has shifted its focus to just two developing economies—Malaysia and Mexico—where firm-level panel data on foreign ownership, research and development (R&D) spending, training, and production are available. Data on the production, R&D spending, and worker training of foreign firms are used to characterize the presence and importance of FDI, and to estimate the potential technology and skill spillovers of FDI for the sample of domestic firms. The effects of FDI on domestic firms are measured using frontier production function models to estimate the efficiency-enhancing effects of FDI on domestic firms; through aggregate measures of FDI presence; and through measures of the technological and training activities of foreign firms.

Early results, based on 1992 data for Mexico and 1994 data for Malaysia, are promising. Frontier production function estimates indicate that in both countries domestic firms have levels of technical efficiency that lag significantly behind those of multinational corporations, while joint ventures have intermediate levels of efficiency. More interesting is the evidence that the larger the foreign presence, as measured by the FDI share of industry output or employment, the higher the efficiency levels of local firms. In Mexico the evidence also suggests that R&D by foreign firms raises the productivity of local firms in the same industry, suggesting that technology spillovers are important. In Malaysia it is R&D by joint ventures that has the most significant effect on domestic firms. In Mexico no evidence was found for skill spillovers from training by foreign firms. In Malaysia, by contrast, the intensity of training provided by multinational corporations has a positive impact on the efficiency of local firms.

To better identify the nature of FDI spillovers, the study is augmenting the firm-level data for the two countries to measure the links between domestic and foreign firms. The objective is twofold: first, to identify the extent and nature of vertical and horizontal flows between firms of know-how, technology, technical assistance, quality control, and skills upgrading; and second, to investigate the effects of links of varying forms and intensity on the technical efficiency of firms. When completed, this research should provide developing country policymakers and Bank staff with new insights into the nature of FDI spillovers, the role of interfirm links and industry clusters in technology diffusion and skills upgrading, and potentially useful policy instruments for promoting these links and boosting growth in technical efficiency.

Responsibility: Private Sector Development Department—Hong Tan (htan@worldbank.org) and Geeta Batra.

Completion date: June 1997.

Reports:

Tan, Hong, and Geeta Batra. 1995. "Technology Spillovers from FDI: Evidence from Mexico." PSD Working Paper. World Bank, Private Sector Development Department, Washington, DC.

_____. 1996. "Enterprise Training, Technology and Productivity in Malaysian Manufacturing." World Bank, Private Sector Development Department, Washington, DC.

Market Access Bargaining in the Uruguay Round: What Did Developing Countries Get for the Concessions They Gave?

Ref. no. 680-10C

Since the General Agreement on Tariffs and Trade (GATT) came into force in 1948, reciprocal reductions negotiated at the GATT rounds have been the principal means by which the industrial countries have reduced their import barriers. In contrast, many developing countries have implemented significant unilateral liberalization. This research examined the value of such unilateral liberalization in the Uruguay Round reciprocal bargaining.

The research addressed two main questions: What was the trade coverage of concessions made and received by developing countries? And in this exchange, did the binding of a unilateral concession have the same value as the binding of a reciprocal concession? The research tabulated and evaluated the tariff concessions made and received by developing countries at the Uruguay Round, and used regression analysis to compare the value of cuts with the value of bindings. Data for the analysis came from the GATT Integrated Data Base, which reports the official results of the Uruguay Round.

Developing countries agreed to concessions on about $86 billion of their imports and received concessions on about $141 billion of their exports. The "excess" concessions received by developing countries reflect a number of factors whose effects could not be separated. Among these factors are the value of the unilateral tariff reduc-

tions developing countries made and the value of the concessions they made in other areas of the Uruguay Round negotiations, such as services and intellectual property protection. Another important factor is the sense of community spirit that emerged in the later stages of the Round. An informal standard that each industrial country should cut its tariffs by 33 percent, and each developing country by 20 percent, had much effect on the final outcome.

While it was not possible to identify the value of unbound unilateral reductions, it was possible to show that unilateral reductions bound at the Uruguay Round were as valuable as reciprocal concessions agreed to there.

The main conclusion of this research is that unilateral liberalization does not disadvantage a country in the GATT negotiations—so an upcoming reciprocal negotiation is no reason to delay a unilateral liberalization that makes economic sense. Binding such a unilateral liberalization at a GATT round is as valuable in obtaining access to foreign markets as is an agreement to undertake the liberalization.

Responsibility: International Economics Department, International Trade Division—Michael Finger (Internet address mfinger@worldbank.org) and Francis Ng. With Kwok Chiu Fung, University of California, Santa Clara.

Completion date: December 1995.

Report:

Fung, Kwok Chiu, and Francis Ng. 1996. "Negotiations in the Uruguay Round: Did Unilateral Reformers Get Their Due?" World Bank, International Economics Department, Washington, DC.

Analytical Perspectives on Aid Effectiveness in Africa

Ref. no. 680-18

This project consists of two theoretical papers exploring the analytical links between aid and policy formation. The first paper, on policy conditionality, argues that a theory of policy persistence is needed for long-run policy conditionality to make sense. It then develops a lobbying model in which temporary policies induce policy-specific investments that then "lock in" the policies. The paper discusses the implications of the analysis for the design of conditionality programs.

The second paper, on aid, taxation, and development in Sub-Saharan Africa, surveys cross-country empirical evidence and theory on the damaging effects of high and uncertain taxation of capital in Sub-Saharan Africa. It develops a theoretical model in which an endogenous tax rate affects the composition and growth of investment in a political equilibrium that captures key features of African systems of personal rule. The model is used to study the role of aid conditionality in creating restraints on future policy, under the assumption that donors act as the agents of the recipient country's private sector. The analysis formalizes currently popular views about the importance of political economy and helps to explain the recent shift from economic to political conditionality. The paper argues that effective design of policy conditionality requires an understanding of domestic political institutions and their evolution.

Both papers attempt to formalize political aspects of conditionality that are extremely important in practice but have received little analytical attention in the economics literature. They are expected to contribute to more rigorous policy discussions of aid conditionality and to encourage the adoption of explicit models of political economy in analytical work.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Christine Jones (cjones4@worldbank.org). With Stephen O'Connell, Swarthmore College; Christopher Adam, Oxford University; and Stephen Morris and Stephen Coate, University of Pennsylvania.

Completion date: December 1996.

Reports:

Adam, Christopher, and Stephen O'Connell. 1996. "Aid, Taxation, and Development in Sub-Saharan Africa." World Bank, Policy Research Department, Washington, DC. Draft.

Coate, Stephen, and Stephen Morris. 1996. "Policy Conditionality." World Bank, Policy Research Department, Washington, DC. Draft.

Is Finance a Barrier for Small and Medium-Size Enterprise Exports in Mercosur?

Ref. no. 680-39

Exports have more than tripled among the four original members of Mercosur (Argentina, Brazil, Paraguay, and Uruguay) since 1990. Large firms have led this growth, while small and medium-size enterprises (SMEs) have lagged behind. This research examines the extent to which access to credit, particularly from commercial banks, affects the ability of small firms in Mercosur to take advantage of export opportunities created by the regional trading bloc.

When a regional trading bloc is created, small exporters may benefit more than larger firms. By reducing transaction costs associated with exports, trading blocs reduce the minimum profitable size for export orders, enabling smaller firms to begin to trade. But in Mercosur the largest exporters increased exports more than did SMEs between 1990 and 1994.

The limited availability of credit for SMEs in Mercosur, especially bank credit, may be a factor in their poor

export performance. While SMEs can finance small domestic orders with internal resources and with short-term credit from their input suppliers, the nature of export orders increases the importance of bank credit, which has longer maturities and is not tied to a specific input purchase.

To evaluate the effect of credit on SME exports in Mercosur, this study conducted a survey in the four original member countries of about 350 firms in manufacturing and services. All firms were in the formal sector, with an average of about 40 full-time employees and assets of less than $3 million. The questionnaire covered export behavior, use of formal finance, general characteristics (age, size), and credit transactions with banks and suppliers. The survey data were used in ordinary least-squares and two-stage least-squares regression analysis.

Preliminary results indicate that access to bank credit is positively correlated with SMEs' export performance, as measured by the share of sales generated by exports. In ordinary least-squares regressions where the export performance of the firm was the dependent variable, the share of credit from banks tested both positive and significant, indicating that greater access to bank finance has a positive effect on exports. When specific types of bank finance were tested in regressions, foreign lines of credit for capital goods imports showed one of the strongest relationships with export success. Among types of short-term credit, only discounting of documents, such as factoring, had a positive effect on exports. But this effect was not statistically significant. The share of credit from suppliers was negatively correlated with export performance.

When the sample was divided into two groups—firms with relatively high export intensities (more than 25 percent of sales from exports) and those with lower intensities—bank credit appeared to be more important for those with fewer exports. This could be due to the importance of bank credit in the early stages of exporting, when firms are starting to develop a foreign market presence.

Another research question that can be explored with the survey data concerns the way in which banks evaluate small business customers in Mercosur. A growing literature on the U.S. small business credit market discusses the importance of the bank-business relationship for SME access to credit. Aspects of the bank-business relationship that could influence the credit decision include the number of years a firm has worked with a bank, the frequency of contact and the personal relationships between bank and firm officials, and the types of services and credit that a firm has received from a bank. The results from preliminary empirical tests indicate that elements of the bank-business relationship, such as frequency of contact, do affect access to credit for SMEs in Mercosur, although perhaps less so than in the U.S. small business credit market.

The importance of the bank-business relationship to credit availability is a significant finding, given trends in Mercosur that may weaken these ties. Consolidation in the financial sectors of Mercosur nations has reduced the number of cooperative banks, state banks, and development institutions that traditionally have been important sources of credit for SMEs. While efficiency concerns may dictate greater concentration in banking services, the effect of this process on SMEs needs to be monitored. Also important are the findings on the link between access to credit and export success. They show that reductions in tariffs and other duties may not be sufficient to stimulate increases in trade if other distortions are not addressed.

This research will be presented at conferences and seminars in the region and will form part of the Mercosur study directed by Latin America and the Caribbean, Country Department I, Country Operations Unit 1, and the International Economics Department, International Trade Division. The survey database will be made available to interested researchers at the conclusion of the research project.

Responsibility: Latin America and the Caribbean, Country Department I, Public Sector Modernization and Private Sector Development Division—Margaret Miller (Internet address mmiller@worldbank.org), and Country Operations Unit 1—Homi Kharas; and Policy Research Department, Finance and Private Sector Development Division—Gerard Caprio. With Beatriz Alonzo; Virginia Moori, CEPAL; Hi-Tech International; CERES; Jairo Procianoy; Gladys Benegas; and CEPAL.

Completion date: November 1996.

The Impact of Exchange Rate Movements on Domestic Prices in Developing Countries: Testing for the Role of International Discipline in Domestic Markets

Ref. no. 680-43C

It has often been assumed in recent years that liberalizing trade would suffice to produce competitive performance in domestic markets. But how much might the absence of serious domestic competition policy limit the benefits to an economy of trade liberalization? To find out, this study examined three developing countries—Colombia, Morocco, and the Republic of Korea—to determine the link between exchange rate movements and domestic producer pricing. It looked at evidence on exchange rate influences on domestic prices because this should indicate the ability of trade liberalization to

"discipline" anticompetitive pricing in domestic markets and thus allow evaluation of the substitutability of trade and antitrust policy in promoting competitive domestic markets. The study produced estimates of the average degree to which international openness disciplines domestic markets in the three countries and of determinants of differences among industries in the effectiveness of this discipline.

The study used industry-level data on annual producer price indexes (expressed relative to manufacturing wages) for 17–25 industries and 7–23 years in each country; real effective exchange rate indexes; and real GDP data. The price index data for Colombia and Morocco were obtained from a recent World Bank project, and the Korean data from Bank of Korea statistics. The macroeconomic data are from the International Monetary Fund's *International Financial Statistics* and World Bank sources. The industry-level data are from a variety of World Bank and other country studies.

The study expected to find that the pass-through of exchange rates into prices of domestic goods would be less than complete, but significantly greater than that for larger, industrial economies. It also expected to find that barriers to entry and the role of imported intermediate goods would affect this pass-through differently across industries. Generally, it did find incomplete pass-through into domestic prices in all three countries, and greater international influences than in industrial economies for Colombia and Korea.

An important common thread in explanations of varying effects across industries in the three countries is that entry and entry barriers seem to matter in the transmission of exchange rate changes to domestic prices. This suggests that policies designed to encourage entry would increase the effect of trade liberalizing measures on competition. The econometric findings (and brief descriptive country study discussions) support the view that even in small countries heavily dependent on trade, increased openness to imports (as reflected in exchange rate movements) has only limited influence on the domestic prices of import-competing goods. To increase the impact of imports on domestic prices, governments may need to adopt domestic competition or antitrust policies.

The findings were presented at a workshop in March 1996.

Responsibility: Private Sector Development Department—R. Shyam Khemani (Internet address skhemani @worldbank.org). With Robert Feinberg and Jesmin Rahman.

Completion date: June 1996.

Report:

Feinberg, Robert. 1996. "The Impact of Exchange Rate Movements on Domestic Prices in Developing Countries: Testing for the Role of International Discipline in Domestic Markets." World Bank, Private Sector Development Department, Washington, DC.

Revenue Consequences of Trade Reform

Ref. no. 680-93

Trade liberalization can cause fiscal problems, especially in countries where tariffs are a major source of revenue. Many economists have discussed this issue, generally taking an aggregative and macroeconomic perspective. But projecting the probable effects of trade reform is difficult because of the lack of detailed data linking imports and revenue collections. This problem is particularly important in cases where high tariff rates exist in combination with a pervasive system of exemptions and quantitative restrictions.

This project is intended to support improved design and implementation of trade reform programs by exploiting new data that have recently become available in a standard format for a large number of developing countries. The new data come as a result of a customs administration system, ASYCUDA, that was developed and implemented by UNCTAD. Roughly 76 countries have adopted the system since 1985, and 14 more are in the process of doing so. The data include all the information from the customs entry documents and an exhaustive coding of the system of rates and exemptions, including historical changes.

The study will collect data from the ASYCUDA system for a few countries that are undertaking or are likely to undertake trade reforms, and put the data in a form that is readily accessible for researchers. This work will provide baseline data to ensure that the opportunity to do retrospective analysis has not been lost by the time the reforms are completed.

The project is in some respects a demonstration project. Four of the countries that have been selected for the study are likely to undertake reforms as members of free trade areas with common external tariffs. Each of these countries faces challenges representative of those facing the other members of its trade group, many of which also have the ASYCUDA system. The project could therefore be extended to other countries in a way that will support the coordinated development of regional trade agreements.

The process for capturing the data involves several steps. First, the structure of the main files from the ASYCUDA system must be determined. These vary slightly from country to country, but are essentially the tax rate file, the exemption code file, and the customs entry file. The first two are taken in their entirety, while extractions are made from the customs entry file and

redundant and confidential information is screened out. The result is a set of Unix or Prologue files. These files are converted to DOS, and the data are then loaded into a database program (Foxpro) and screened for errors. The Foxpro files and the programs developed for cleaning and manipulating them form a database for each country that can be added to over time and used as a data source for further research.

Responsibility: International Economics Department, International Trade Division—John Nash (Internet address jnash@worldbank.org). With Ronald D. Hood, Ron Hood Associates; and Daniel Radack.

Completion date: June 1998.

A Strategic Approach to Asset and Liability Management in Developing Countries

Ref. no. 681-23

The World Bank and investment bankers regularly provide advice to developing countries on asset and liability management. But that advice often is nonoptimal or simply wrong. Although many tactical tools for active risk management in developing countries have been developed in the past decade, a framework for developing a strategy that incorporates country-specific factors has lagged far behind. Typical approaches to asset and liability management exclude trade flows, for example, resulting in strategies that are unrelated to any measure of the country's earnings potential and that ignore the natural hedges in the import and export sector.

This project will develop tools and guidelines that incorporate country-specific factors, including trade flows, to assist developing countries in devising an asset and liability management strategy. It will develop a general model that will include trade flows and estimates of the sensitivity of imports and exports to commodity prices, interest rates, and exchange rates. It will carry out a study of the application of the methodology and model to a few developing countries, emphasizing significant paradigm shifts over existing methodologies. And it will develop a training program and implementation plan for transferring the methodology and model to interested developing countries.

The project will draw on the extensive work inside and outside the Bank in risk management, financial engineering, determination of optimal currency composition, stochastic optimization, and modeling systems. It also will draw on a prototype model incorporating many of the key asset and liability management issues. Although much of the technology has already been developed, additional work will be needed to effectively apply the technology to the asset and liability problem. In particular, there is a need for additional work on solution techniques to address problems on a small computer platform, for estimation of behavioral relations characterizing the various stochastic differential equations, and for postoptimality analysis to gain additional insight into the solutions.

To facilitate its use as a risk management tool, the model will be made flexible enough to allow a wide family of formulations, but kept numerically tractable and able to readily accommodate modifications of policy objectives and related constraints. This will aid its transfer and adaptation to interested developing countries and assure that the model would be treated as a tool for decisionmaking, not as a substitute for it.

Responsibility: Europe and Central Asia, and Middle East and North Africa Technical Department, Private Sector Development and Finance Group—Stijn Claessens (Internet address sclaessens@worldbank.org); Information and Technology Services Department, Information Engineering Unit—Jerome Kreuser; and Financial Operations Department, Office of the Director—Lester Seigel. With Roger J. B. Wets, University of California, Irvine.

Completion date: January 1998.

The "Overborrowing Syndrome": What Is the Role of Foreign Portfolio Capital Inflows?

Economists have been trying to discover the major factors that contributed to the Mexican peso crisis—factors that many believe are not unique to Mexico. The phenomena characterizing the recent Mexican experience, sometimes referred to as the "overborrowing syndrome," were preceded by large foreign portfolio capital inflows, suggesting a causal relationship between foreign portfolio capital and "overborrowing."

This study developed a testable model explaining why moral hazard in the domestic banking sector, with a liberalized capital account attracting external portfolio capital, can result in unsustainable overborrowing on world capital markets. By leading domestic and foreign agents to expect that the future technology level will be higher than it will be in reality, the domestic banking system encourages inefficient investment in domestic industry and overspending by households.

The model is supported by significant statistical results. The empirical analysis tested expectations about future technology levels in different country groups with different shares of portfolio capital in total foreign capital inflows. It showed that the major Latin American countries, which had the highest portfolio capital share in the late 1980s and early 1990s, are almost certainly overestimating their future technology level.

Responsibility: International Economics Department, International Economic Analysis and Prospects Division—Robert Lynn (Internet address rlynn@worldbank.org). With Xu Cheng, Columbia University.

Completion date: November 1995.

Report:

Cheng, Xu. 1995. "The 'Overborrowing Syndrome': What Is the Role of Foreign Portfolio Capital Inflows?" World Bank, International Economics Department, Washington, DC.

Characteristics of Capital Flows

This study examined the behavior of four major components of international capital flows in 15 developing and industrial countries and evaluated the extent of their differences. The goal was to answer the following question: Does the composition of international capital flows matter?

The study assumed a simple model that describes capital flows very generally in terms of latent variables. It used this model to show how the hypothesis that the different categories of capital flows have the same characteristics can be expressed in terms of restrictions on a vector autoregression. The vector autoregression framework was the focus of the empirical work. All data were drawn from the International Monetary Fund's *Balance of Payments* and *International Financial Statistics.*

The results show that the composition of international capital flows indeed may matter. While the study found some univariate similarities among the flows, it shows that those apparent similarities mask important underlying differences. Striking differences in the behavior of the component flows arise in general specifications that allow the flows to interact. The study found, for example, that the behavior of a country's international short-term investment appears to be sensitive to changes in all other types of its international capital flows, including direct investment, but its direct investment appears to be relatively insensitive to such changes in other flows.

In the links across countries there is further evidence that short-term investment is more sensitive than direct investment. A particularly telling example is found in the response to changes in capital flows to Mexico. A disturbance in Mexican short-term investment is quickly followed by similar changes in the flows to other Latin American countries. But there appears to be little effect from a disturbance in direct investment, implying that, for these countries, only short-term investment suffers much from the "tequila hangover." The finding that short-term investment appears to respond more dramatically to disturbances in other capital flows and in other countries than does direct investment provides empirical support for the conventional notion that short-term investment is "hot money" and direct investment is not. The results thus suggest that direct investment has more desirable properties than short-term investment, a finding that has implications for policies designed to attract capital flows. The study's finding of meaningful distinctions in the properties of different capital flows points to a need for further research on the sources of these differences.

Responsibility: International Economics Department, Development Data Group—Punam Chuhan (Internet address pchuhan@worldbank.org), and International Finance Division. With Helen Popper, Santa Clara University; and Gabriel Perez-Quiros, University of California, San Diego.

Completion date: January 1996.

Report:

Chuhan, Punam, Gabriel Perez-Quiros, and Helen Popper. 1996. "International Capital Flows: Do Short-Term Investment and Direct Investment Differ?" World Bank, International Economics Department, Washington, DC.

Managing Commodity Booms and Busts

This research project examined the experiences of several commodity-dependent developing countries in managing commodity booms and busts and drew policy recommendations from the lessons learned from these experiences. Perhaps the biggest single danger in a commodity boom is policymakers' assuming that the price rises are permanent. The economies of developing countries are heavily dependent on commodities. Primary commodities, including energy, account for nearly half of export proceeds and a sizable share of government revenues. When these revenues increase dramatically, governments are often tempted to make long-term spending commitments based on what turn out to be short-term price rises (as in the longest and strongest commodity boom in the 1970s). Moreover, the increases in foreign exchange earnings that usually accompany higher commodity prices can lead to an excessive and prolonged appreciation of the real exchange rate. This, in turn, can make some tradables less competitive and ultimately lead to a decline in domestic production in other sectors.

By definition, booms are short-term phenomena, and their duration is often anybody's guess. Moreover, bumper years are usually followed by busts that typically leave real commodity prices—and so government revenues—lower than before the boom. Such uncertainties make planning difficult. Even so, a number of broad policy measures have been tried to make revenue flows more predictable and to avoid the onset of Dutch dis-

ease—where changes in revenue affect the supply of foreign exchange and, in the case of a boom, lead to excessive appreciation of the exchange rate. These policies include adopting a prudent fiscal and monetary stance, easing trade and capital account restrictions, hedging commodity price risks, accumulating foreign reserves, and reducing foreign debt.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Panos Varangis (Internet address pvarangis@worldbank.org), Takamasa Akiyama, and Donald Mitchell.

Completion date: January 1996.

Report:

Varangis, Panos, Takamasa Akiyama, and Donald Mitchell. 1995. *Managing Commodity Booms—and Busts.* Directions in Development Series. Washington, DC: World Bank.

Trade Liberalization and Technology Transfer

Many developing countries restrict imports of used goods through import bans, import licensing requirements, or higher tariffs than on new goods of the same type. These restrictions are designed to protect domestic industries from low-priced imports. But import restrictions on secondhand capital equipment limit the ability of domestic firms to obtain low-cost technology for labor-intensive, low-skill, small-scale production methods suited to factor endowments, available labor skills, and market size in developing countries.

This research developed a model to explain a firm's choice between new and used machinery. The model incorporated technological progress and labor skill constraints, as well as the more traditional factors such as wages, interest rates, and the rate of productivity decline as machines age.

The study used the model as the basis for empirical work that examined U.S. exports to 26 developing countries of new and used machines in 38 six-digit commodity classifications of metalworking machinery. The results indicated that technological factors and skill constraints play a more significant part in the choice between used and new machinery than the more traditional factor price differentials.

This finding suggests that restrictions on imports of used machinery hurt domestic firms by distorting their investment decisions. This argument has been made before, on the grounds that firms are forced to use new equipment that uses a higher ratio of capital to labor than would be optimal given local factor prices. This research points to a second, and perhaps more important, source of loss: restrictions on imports of used capital equipment force or encourage firms to opt for more expensive, new "high-tech" equipment that is less appropriate to the mix of skills available to the firm and to the size of domestic markets. This finding further bolsters arguments against bans or restrictions on imports of used goods.

Responsibility: International Economics Department, International Trade Division—Wendy Takacs (Internet address wtakacs@worldbank.org). With Giorgio Barba Navaretti, University of Milan; and Isidro Soloaga, University of Maryland. The Italian Trust Fund and Fondazione Eni Enrico Mattei, Italy, provided funding for the research.

Completion date: January 1996.

Reports:

Barba Navaretti, Giorgio, Isidro Soloaga, and Wendy Takacs. 1996. "Appropriate Technology, Technical Change, and Skill Constraints: Evidence from U.S. Exports of New and Used Machines." World Bank, International Economics Department, Washington, DC.

_____. 1996. "Bargains Rejected? Developing Country Trade Policy on Used Equipment." In D. Dimon, I.G. Tomlinson, and S. Nichols, eds., *Competitiveness in International Business and Trade.* Laredo: Texas A&M International University Press.

Competitive Strategies for Oilseed and Vegetable Oil Producers

The world oilseed and vegetable oil market is undergoing changes that call into question the present strategies of producing countries. On the demand side, consumption patterns and the relative prices of vegetable oils are changing as a result of the health concerns of consumers. On the supply side, changes in government policy are set to have a powerful impact on producers and processors. This study evaluated the market and its structure to discover the cost-competitiveness of participants and how this competitiveness is being altered by such factors as new economic conditions, advances in productivity, shifts in consumption patterns, and changes in government policy and international trade regimes.

On the basis of production and processing costs in several countries, the study analyzed production profitability and the response to changes in input prices and exchange rates. It also reviewed how government policies affect profitability and production in several countries. And it developed projections of future demand and supply balances and prices in the oilseed sector.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Merlinda Ingco (Internet address mingco@worldbank.org). With LMC International.

Completion date: April 1996.

Report:

Ingco, Merlinda. 1995. "Changes in the Trade Policy Environment: Implications for Marketing Policies and Strategies in the Oilseeds and Vegetable Oils Markets." Paper presented at International Fishmeal and Oil Manufacturers Association Annual Conference, September 10–11, Chile.

Currency Crashes in Emerging Markets: An Empirical Treatment

This study addressed several questions: Are currency crashes in developing countries a result of similar policy mistakes—or of myriad unfortunate shocks? Can they be predicted ex ante with standard economic indicators? Do countries react to crashes in similar ways, or do the policy responses vary? What are the implications for the "optimal" composition of external finance?

The study used two methods: event-study analysis and standard regression analysis. Most of the data were extracted from the World Bank's *World Data* (CD-ROM) and the International Monetary Fund's *International Financial Statistics* (CD-ROM); data on aggregate real output were obtained from the OECD.

Preliminary findings are that currency crashes tend to occur when the growth of output is low, the growth of domestic credit is high, and foreign interest rates are high. A low ratio of foreign direct investment to debt is consistently associated with a high likelihood of a crash. These findings support the Bank's policy advice on prudent macroeconomic management to reduce the risk of financial disruptions.

Responsibility: International Economics Department, International Finance Division—Kwang W. Jun (Internet address kjun@worldbank.org). With Jeffrey Frankel and Andrew Rose, University of California, Berkeley.

Completion date: May 1996.

Commodity Risk Management

Exposure to commodity price volatility continues to bedevil many developing countries and economies in transition. Commodity price volatility affects state budgets and company cash flows and makes future revenues less predictable. Countries in the process of liberalization expose domestic market participants to international price volatility. Many governments internalized this external price volatility in the past. But with market liberalization, domestic market participants need to be able to apply market-driven hedging instruments to reduce their exposure. Several countries are establishing commodity markets for price discovery and hedging.

This research examined issues of commodity risk management, to provide support to the International Economics Department's technical assistance efforts in this area. It investigated the use of risk management instruments during market liberalization, reviewed ways for small farmers and traders to gain access to risk management instruments, and showed an important link between trade finance and risk management. Finally, it identified basic preconditions for setting up commodity exchanges in developing countries.

Research and practical experience in Bank projects have shown that risk management is crucial for the survival of a nascent private sector in commodity trade. Market liberalization reforms may be implemented before institutions or systems for price risk management are in place. Failure to address the need for risk management can endanger those reforms.

Many farmers and local traders might be too small to have access to risk management instruments. One solution to this problem is for local private intermediaries (large traders, exporters, local banks) or even the government to pool risk. Governments now tend to use market-based instruments to hedge the assumed risk rather than internalize it as they had done in the past (such as in Canada, Mexico, and the United States).

Links between risk management and trade finance are important because they can improve access to credit and lower its cost. Risk management tools can assure that the value of a crop used as collateral for a loan will not decline, thereby reducing the riskiness of the loan. While banks often advance 50–60 percent of the value of a crop if the crop is unhedged, they can advance up to 80–90 percent if the crop is hedged. Warehouse receipts also can play an important role in agricultural trade finance, mobilizing local and foreign capital by serving as legally binding collateral to banks and other financial intermediaries.

The results of the research were disseminated at seminars on warehouse receipts financing and commodity risk management in Poznan and Gdansk, Poland, in September 1995 for Polish banks, agricultural trading companies, and farmers, and at a seminar held in Washington, DC, in December 1995 for staff of the Bank's Africa Regional Office. Results also were disseminated through a technical assistance mission to Uganda in November–December 1995 to assist the coffee sector in establishing an appropriate environment for a warehouse receipts financing system and commodity risk management.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Panos Varangis (Internet address pvarangis@worldbank.org), Donald Larson, Takamasa Akiyama, and John Baffes. With Tom Scott, Sparks Companies, Inc.; Charles Johnson; Surendra

Kolecha; Sudhakar Satyanarayan; Jack Carter; and Ralph Walker. The Federal Office for Economic Affairs, Switzerland, provided financial assistance.

Completion date: June 1996.

Reports:

Claessens, Stijn, and Panos Varangis. Forthcoming. "Commodity Risk Management in Developing Countries." In M. Papaioannou and G. Tsetsekos, eds., *Derivative Instruments and Hedging Strategies for Emerging Capital Markets*. Dow Jones Irwin.

Satyanarayan, Sudhakar, Elton Thigpen, and Panos Varangis. 1995. "Hedging Cotton Price Risks in Francophone African Countries." *Rivista Internazionale di Scienze Economiche e Commerciali* 42(3):189–201

Global Economic Prospects-Related Research

Global Economic Prospects and the Developing Countries is an annual report prepared by the World Bank's International Economics Department. The series, now in its sixth year, provides an annual assessment of global economic prospects as they affect developing countries. It also analyzes the links between developing countries and the world economy, particularly in trade, capital flows, and commodity markets. As background to *Global Economic Prospects*, research is carried out by Bank staff and consultants on a variety of topics.

The 1995 report focused on the increasing integration of developing countries into the global economy, highlighting the opportunities and challenges that arise from this integration. Research for the 1996 report started from the observation that the pace of integration of developing countries over the past decade has varied widely. While some developing countries have rapidly expanded their engagement in world trade and capital markets, many others have not. Some have even become less integrated in the global economy.

Research shows that integration matters because there is an association between growth performance and integration. Fast growth tends to promote a more open economy because of policies common to both, and thus lagging integration is a sign of underlying policy deficiencies. In addition, integration can be a means to higher growth through better resource allocation, greater competition, technology transfer, and access to foreign savings. Many of the countries that are lagging in global integration are among the poorest.

Developing countries that have lagged in opening to world trade are often deterred by perceptions of trade barriers. But some of these fears are exaggerated. For example, tariffs are lower now than at any time in the post–World War II era. Nor does being a commodity exporter preclude improvements in productivity and diversification: many commodity-exporting countries have been among the high-growth, fast-integrating economies. But there is still scope for concerted action by the international community to remove some of the real obstacles to trade liberalization that are external (for example, the spread of antidumping practices, agricultural protection, and, for the time being, the Multifibre Arrangement).

Globalization and its impact on developing countries raise a number of policy and research issues, which we are now beginning to understand more clearly. This research represents part of the ongoing work of the International Economics Department to address these issues.

Responsibility: International Economics Department, International Economic Analysis and Prospects Division—Uri Dadush (Internet address udadush @worldbank.org), Ashok Dhareshwar, Jalaleddin Jalali, Robert King, Shigeru Otsubo, Mick Riordan, and Milan Brahmbhatt. With Edward Graham, Institute for International Economics; Veronique Kessler; Michael Kuimhot; Claude Marie-Louis Leroy; Kim Murrell; Michael Pomerleano; Matthew Slaughter, Dartmouth College; Nikola Spatafora; Tetsuo Umemura; Andrew Warner; Kumiko Imai; and Ken Itakura.

Completion date: June 1996.

Report:

World Bank. 1996. *Global Economic Prospects and the Developing Countries 1996*. Washington, DC.

Regional Economic Integration in Southern Africa: The South African Impact

The first objective of this project was to establish the direction of South Africa's trade—unknown until recently because of data limitations—and to form hypotheses about its determinants. It then investigated what effect South Africa's offer under the Uruguay Round would have on southern Africa. An important concern relating to the reintegration of South Africa into the regional economy is polarization—the tendency for industry to cluster in the larger and richer areas of a region. The study assessed whether polarization is likely to occur in the event of trade liberalization and the integration of South Africa with its surrounding region. Finally, the research explored the options in integration for South Africa.

The project collated and documented raw direction-of-trade data for 1989–93 and, using these data and data for South Africa's trading partners, estimated export and import direction-of-trade equations. The results show that the regional economic groupings in southern Africa have not played a significant role in the direction

of trade. There also is tentative evidence that the lifting of sanctions has helped South African exports. Import shares were found to be unaffected by regional groupings in Africa but to be positively correlated with countries that have larger populations. Distance had a negative effect on South African exports but little impact on import shares.

Responsibility: International Economics Department, International Trade Division—L. Alan Winters (Internet address awinters@worldbank.org). With Merle Holden.

Completion date: June 1996.

Report:

Holden, Merle. Forthcoming. *Economic Integration and Trade Liberalization in Southern Africa: Is There a Role for South Africa?* World Bank Discussion Paper. Washington, DC.

Regional Trading Arrangements

Nearly every country in the world is in a regional trading arrangement or considering joining one. Many are asking the World Bank to analyze the effects of their own and their neighbors' arrangements on their economies. Other countries are asking whether regional arrangements represent a stepping stone toward multilateral trade liberalization—or a millstone around its neck.

This research analyzed selected aspects of the effects of regional trading arrangements, preparatory to commencing a major program of work in fiscal 1997.

"Small is beautiful." A common assertion is that regional trading arrangements among countries that trade extensively with one another are more likely to be beneficial than those among countries that trade little with one another. This is far from assured, at least from the viewpoint of static analysis. Offering a partner trade preferences results in a loss of tariff revenue and an increase in import prices. These effects are larger the greater the (initial) import flow to which they apply. This study explored these effects in detail and showed that they are likely to be important for small developing countries with relatively high protection.

Regionalism as politics. Economists frequently attribute political benefits to regional trading arrangements. This ongoing work asks why "economic diplomacy" is chosen as a means to seek political ends, how frequently it is chosen relative to other means, and whether trade preferences are the appropriate economic policy for creating links between countries.

Regionalism and the rest of the world. An important concern for some countries is that they may suffer disadvantages from other countries' mutual trade preferences. A set of papers explored the analytical basis for examining such fears and concluded that almost no research has tackled this issue correctly. The usual focus on changes in the volume of exports that excluded countries send to member countries is largely misguided. This work attempted to use more appropriate techniques, concentrating on excluded countries' terms of trade.

Regionalism versus multilateralism. One of the most important questions about regionalism is whether regional trading arrangements foster progress toward multilateral free trade or frustrate it. The literature on this subject has exploded in the 1990s. This study undertook a synthetic and interpretive survey of the field.

The Euro-Mediterranean agreements. The European Union has negotiated—and is negotiating—association agreements with several Mediterranean countries. The International Economics Department's International Trade Division has analyzed several of these agreements quantitatively—mainly using computable general equilibrium models. The results are mixed, and they depend heavily on the Mediterranean partners' most-favored-nation tariffs and nontrade distortions.

Responsibility: International Economics Department, International Trade Division—L. Alan Winters (Internet address awinters@worldbank.org).

Completion date: June 1996.

Reports:

Bastian, J., W. Wallace, and L. Alan Winters. "Trade Preferences as Politics." World Bank, International Economics Department, Washington, DC.

Konan, D., and K. Maskus. 1996. "A Computable General Equilibrium Analysis of Scenarios for Trade Liberalization Using the Egypt CGE-TL Model." World Bank, International Economics Department, Washington, DC.

Schiff, Maurice. "Small Is Beautiful: Preferential Trade Agreements and the Impact of Market Size, Market Share, Efficiency, and Trade Policy." World Bank, International Economics Department, Washington, DC.

Schiff, Maurice, and L. Alan Winters. "Modelling the Political Payoffs to Regional Trade Preferences." World Bank, International Economics Department, Washington, DC.

Tarr, David. 1996. "Economic Implications for Turkey of a Customs Union with the European Union." Policy Research Working Paper 1599. World Bank, International Economics Department, Washington, DC.

_____. Forthcoming. "Increased Competition and Completion of the Market in the European Union: Static and Steady-State Effects." *Journal of Economic Integration.*

_____. Forthcoming. "Morocco's Free Trade Agreement with the European Union: A Quantitative Assessment." *Economic Modelling.*

Winters, L. Alan. 1996. "Intégration Européen et Bien-Être Économique dans le Reste du Monde." *Économie Internationale* 65.

_____. 1996. "Regionalism and the Rest of the World: The Irrelevance of the Kemp-Wan Theorem." CEPR Discussion Paper 1316. Centre for Economic Policy Research, London.

_____. "European Integration and Economic Welfare in the Rest of the World." World Bank, International Economics Department, Washington, DC.
_____. "Regionalism versus Multilateralism." World Bank, International Economics Department, Washington, DC.
Winters, L. Alan, and W. Chang. "Integration and Non-Member Welfare: Measuring the Price Effects." World Bank, International Economics Department, Washington, DC.

Uruguay Round Evaluation

This project encompassed a number of studies to evaluate the consequences of the Uruguay Round for developing countries. Some of these studies involved the development of new methodologies—to evaluate the welfare benefits of tariff bindings when protection rates vary over time, to evaluate the benefits of China's proposals for trade liberalization in the context of its accession to the World Trade Organization, and to monitor the agricultural trade liberalization under the Round.

The principal findings of the project point to more substantial gains from the Round than were at first recognized. The extensive tariff bindings agreed to substantially increase the welfare benefits of the Round by reducing both the average rate of protection and the variability of protection. Estimates of the gains from China's offers almost doubled when account was taken of the reductions in the variability of protection at the disaggregated level.

This project carried out a substantial program of dissemination, including presentations to such major conferences as the Trade Policy Forum of the Pacific Economic Cooperation Conference and the World Bank's regional conference on South Asia.

Responsibility: International Economics Department, International Trade Division—Will Martin (Internet address wmartin@worldbank.org), L. Alan Winters, Merlinda Ingco, Michael Finger, and David Tarr. With Dale Hathaway, National Center for Food and Agricultural Policy; Joseph François, World Trade Organization; and Thomas Hertel, Purdue University.

Completion date: June 1996.

Reports:

Bach, C., Will Martin, and J. Stephens. 1996. "China and the World Trade Organization: Tariff Offers, Exemptions, and Welfare Implications." *Weltwirtschaftliches Archiv* (September).
Hertel, Thomas, C. Bach, B. Dimaranan, and Will Martin. 1996. "Growth, Globalization, and Gains from the Uruguay Round." Policy Research Working Paper 1614. World Bank, International Economics Department, Washington, DC.
Martin, Will. 1996. "The Abolition of the Multifibre Arrangement and Its Implications for Fiber Markets." Paper presented at conference, the World Trade Organization and the Uruguay Round Agreement: Implications for South Asian Agriculture, Kathmandu, Nepal, April 22–24.
Martin, Will, and L. Alan Winters. 1995. "Trade and Developing Economies." In *International Review of World Trade 1996.*
_____. 1995. "The Uruguay Round: Widening and Deepening the World Trading System." World Bank, International Economics Department, Washington, DC.
_____. 1996. "An Economic Assessment of the Uruguay Round Agreement on Agriculture." Paper presented at 40th Annual Conference of the Australian Agricultural Economics Society, Melbourne, February 11–16.
_____. 1996. "The Uruguay Round: A Milestone for the Developing Economies." In B. Bora and M. Pangestu, eds., *Priority Issues in Trade and Development: Implications for the Asia-Pacific Region.* Singapore: Pacific Cooperation Council.

Can Capital Controls Work?

Since the Mexican peso crisis in December 1994, short-term international capital movements have been seen as a destabilizing phenomenon that governments in emerging economies should avoid. In this context capital controls in place in Chile and Colombia, two economies that have performed relatively well compared with others in Latin America, have attracted interest, and other countries in the region have introduced capital controls since the Mexican crisis.

Although there has been much theoretical discussion about the desirability or nondesirability of using capital controls, there is little empirical basis for evaluating their effectiveness. This research evaluated the effectiveness of the capital control mechanisms in place in Chile and Colombia, to add to the knowledge about how such policy instruments actually function. Using regressions, the study assessed how the imposition of capital controls in Chile and Colombia has affected some key macroeconomic variables—such as the real exchange rate and domestic interest rates—that are usually affected by capital flows. It chose this approach because economic authorities normally justify the imposition of capital controls by their need to influence these key macroeconomic variables.

Preliminary findings suggest that capital controls of the type used in Chile and Colombia—reserve requirements on external borrowing—are ineffective in altering the total volume of capital inflows. But they do appear to have some effect in shifting the composition of flows toward longer maturities, which may reduce the vulnerability of the recipient country to shocks in the short term.

The results suggest that in the short run capital controls can be effective in altering the composition of

flows and therefore could be used as a second-best policy—but only as a temporary measure. The effectiveness of capital controls decreases over time, and in the medium and long term they impose important economic inefficiencies.

The results of the research were presented at several conferences in Santiago and Bogotá.

Responsibility: International Economics Department, International Finance Division—Leonardo Hernández (Internet address fhernandez@worldbank.org). With Salvador Valdés-Prieto, Catholic University, Chile; and Mauricio Cardenas, Fedesarrollo, Bogotá.

Completion date: July 1996.

Reports:

Cardenas, Mauricio, and Felipe Barrera. 1995. "On the Effectiveness of Capital Controls in Colombia." Paper presented at Eighth Inter-American Seminar on Economics, National Bureau of Economic Research and Fedesarrollo, Bogotá, November 16–18.

Valdés-Prieto, Salvador, and Marcelo Soto. 1996. "New Selective Capital Controls in Chile: Are They Effective?" Paper presented at Latin American Econometric Society Meeting, Rio de Janeiro, August.

Grants and Debt Forgiveness in Africa: A Descriptive Analysis

The lack of private financial flows to Sub-Saharan Africa in recent years has made the region increasingly dependent on official development assistance (ODA), financial flows from donor countries through grants or highly concessional lending. Meanwhile, as the major donor countries have faced increasingly tight budget constraints in recent years, aid has been declining.

Ensuring the most efficient and effective use of the scarce aid funds thus becomes critical. Recognizing this need, and the need of the poorest countries for additional resources to finance growth and cope with heavy debt burdens, bilateral donors in recent years have been providing more grants and forgiving debt, bilaterally and through the Paris Club.

This research evaluated those initiatives on the basis of the limited experience during 1989–93 and provided a descriptive analysis of the effect on the recipient countries of different aid efforts and aid channels. The research focused on the potential tradeoff between pure grants and ODA debt forgiveness, limiting the analysis to the 32 African countries in the Special Program of Assistance (SPA). Formed in 1988 by the international donor community and the participating African countries, the SPA coordinates external support for reform programs that are undertaken by low-income, debt-distressed countries in the region.

The analysis first compared countries that have received significant debt forgiveness in recent years with those that have not, and then compared the experience of each country group in two different periods: 1984–88 and 1989–93 (debt forgiveness surged in the second period). The research addressed issues of the allocation, use, and impact of grant flows. The analysis, descriptive rather than analytical, focused on the effect of receiving grants or debt forgiveness on the recipient countries' import capacity. The main conclusions are as follows:

- Grants allowed SPA countries to expand their import capacity significantly in the decade 1984–93. In fact, grants and import capacity—inclusive of international reserves accumulation—have both been increasing since 1984. But despite the increasing share of concessional lending in recent years, the total indebtedness of these countries has not declined.
- When the study sorted the 32 SPA countries into three groups by amount of debt forgiveness received, it found that the group that received most of the debt forgiveness also received a large share of pure grants. Usual economic criteria do not satisfactorily explain the distribution of debt forgiveness among the three groups.
- Unlike grants, debt forgiveness on its own has not enabled the SPA countries to expand their import capacity. Even for the largest recipients, debt forgiveness has not contributed directly to increasing import capacity.
- As grants have increased, private creditors have been withdrawing money from SPA countries. At the same time, however, multilateral donors have come in with increased financial transfers.

Responsibility: International Economics Department, International Finance Division—Leonardo Hernández (Internet address fhernandez@worldbank.org) and Saori Katada.

Completion date: July 1996.

Report:

Hernández, Leonardo, and Saori Katada. 1995. "Grants and Debt Forgiveness in Africa: A Descriptive Analysis." World Bank, International Economics Department, Washington, DC.

Sustainability of Private Capital Flows to Developing Countries: Is a Generalized Reversal Likely?

Since 1989 there has been a sharp increase in private capital flows to developing countries. But interest rate increases in industrial countries in the past two years and the recent Mexican crisis have reopened the questions of how sustainable these flows are and what policy responses a government needs to implement when facing an adverse external shock to avoid a reversal of

flows. The sustainability of flows is a particularly important issue for developing countries that remain highly indebted and are completing necessary economic reforms. For these countries, a generalized reversal of flows could have serious disruptive effects and might even derail the reforms.

This research addresses the issue of sustainability, identifying the driving forces behind the recent surge in private flows, assessing the relative importance of these forces, and investigating the possibility that they could move adversely in the future. Because the surge in private capital inflows since 1989 has coincided with a period of both domestic policy reform in the developing world and low international interest rates, there is debate about whether the surge is driven primarily by domestic (pull) or external (push) factors. If it is driven by pull factors, domestic policies are the key to ensuring sustainable capital inflows, and if by push factors, an increase in international interest rates would cause a reversal of these flows.

To explain private capital flows to developing countries, the research used a partial adjustment model in which both domestic and external explanatory variables are defined. The model was estimated using panel data for 1986–93 for 22 developing countries, including countries that have benefited from the new wave of private capital flows and countries that have not. In addition, the study compared the means of several economic indicators for the two groups of countries.

The results provide evidence that domestic factors matter in explaining private capital flows. So countries can expect to continue receiving capital flows as long as their domestic policy reforms continue on the right track—that is, as long as they increase domestic savings, use the flows to increase their investment rates and thus improve their long-term prospects, and increase the growth rate of their exports.

The findings also imply that countries that have not received significant foreign capital could increase their private capital inflows if they implement the structural reforms that will allow them to export, save, and invest at higher rates. Reducing their foreign debt could also help in attracting foreign private investors.

The research also assessed the potential risk for developing countries of facing a major crisis (like the debt crisis of 1982–83) during the 1990s because of external factors—mainly an increase in international interest rates. It concludes that this is very unlikely in the short to medium term, suggesting that developing countries can act to reduce the possibility of a generalized reversal of flows, even after the Mexican crisis.

The project is undertaking analysis along the same lines for a larger set of countries (73) during 1985–94. Preliminary results validate the hypothesis that domestic (pull) factors matter in explaining private capital flows.

The findings of the research were disseminated at the Business Association for Latin American Studies Conference at George Washington University in April 1995 and at the Economic and Financial Cycles and NAFTA International Symposium in Mexico City in June 1995.

Responsibility: International Economics Department, International Finance Division—Leonardo Hernández (Internet address fhernandez@worldbank.org). With Heinz Rudolph, Central Bank of Chile.

Completion date: November 1996.

Report:

Hernández, Leonardo, and Heinz Rudolph. 1995. "Sustainability of Private Capital Flows to Developing Countries: Is a Generalized Reversal Likely?" Policy Research Working Paper 1518. World Bank, International Economics Department, Washington, DC.

Africa and the International Economy

In the mid-1950s Sub-Saharan Africa accounted for 3.1 percent of global exports. By 1990 this share had fallen to 1.2 percent. What are the reasons for this decline? One view is that falling commodity prices and external protection in OECD markets are largely to blame. If so, the solution to Africa's problems would be liberalization of industrial countries' trade barriers. Another view is that Africa's marginalization is primarily due to inappropriate domestic policies that reduced the region's ability to compete. If true, changes in Africa's own policies would be essential to reverse the adverse trade trends. This research attempts to determine which of these explanations is correct.

Using newly collected information on international trade and trade barriers, the study found that loss of international competitiveness played a key role in Africa's declining importance in international trade. If Africa had merely maintained its 1962–64 OECD market shares for its major products, its exports now would be more than double their current value. Also a factor is that global demand for the region's exports grew at a considerably slower pace than that for most other goods. Africa therefore suffered from a two-pronged problem—it experienced declining market shares for its key exports, which were of declining relative importance in world trade.

Empirical evidence provides no support for the proposition that external protection contributed to Africa's marginalization in global trade. The share of African exports subject to nontariff barriers is far lower than that of other developing countries, some of which launched successful, sustained, export-oriented industrialization

drives. In addition, tariff preferences under the European Union's Lomé Convention, or under OECD members' generalized system of preference schemes, provide Africa with more favorable terms of market access than those for many other exporters. Even so, the OECD countries have policy options available that could further enhance market access for African exports.

Responsibility: International Economics Department, International Trade Division—Alexander Yeats (Internet address ayeats@worldbank.org), Azita Amjadi, and Ulrich Reincke.

Completion date: December 1996.

Reports:

Amjadi, Azita, Ulrich Reinke, and Alexander Yeats. 1996. "Did External Barriers Cause the Marginalization of Sub-Saharan Africa in World Trade?" Policy Research Working Paper 1586. World Bank, International Economics Department, Washington, DC.

Amjadi, Azita, and Alexander Yeats. 1996. "Have Transport Costs Contributed to the Relative Decline of Sub-Saharan African Exports?" Policy Research Working Paper 1559. World Bank, International Economics Department, Washington, DC.

African Trade Barriers

Much evidence has accumulated showing a strong positive association between trade policy reform and economic growth. Trade restrictions and domestic policy interventions often create a bias against tradables, especially exports, that prevents economies from achieving otherwise attainable rates of growth. This study attempts to determine whether Sub-Saharan African countries' trade barriers have been an important factor in the poor trade and economic performance that has characterized almost all these countries.

Since detailed, systematic records on trade barriers in Sub-Saharan African countries were unavailable, the research undertook a large-scale data collection effort. It tabulated information on tariffs and nontariff barriers from national customs schedules for 17 African countries and stored it in machine-readable form for further analysis.

This study has found that import barriers in Africa are far higher than those in the developing countries that achieved the highest export growth rates, and appear to be biased against potential export products. African tariffs are more than three times higher than those in the developing countries with the highest growth rates and more than five times higher than those in OECD countries. In addition, more than a third of African imports encounter some form of nontariff trade barrier. These findings suggest that if Africa is to reverse its unfavorable export trends, the region needs to adopt appropriate trade policies to enhance its international competitiveness and to permit African exporters to capitalize on opportunities in foreign markets.

Responsibility: International Economics Department, International Trade Division—Alexander Yeats (Internet address ayeats@worldbank.org) and Francis Ng. Basic data collection was undertaken by UNCTAD in Geneva.

Completion date: December 1996.

Report:

Ng, Francis, and Alexander Yeats. 1996. "Open Economies Work Better! Did Africa's Own Barriers Cause Its Marginalization in World Trade?" Policy Research Working Paper 1636. World Bank, International Economics Department, Washington, DC.

Economic Integration: The Americas

The economic effects of Mercosur, a trade arrangement among Argentina, Brazil, Paraguay, and Uruguay, could be substantial. The new market will encompass 200 million people, a GDP of almost $1 billion, and more than half of Latin America's market. The proposed reductions in tariffs and nontariff barriers under Mercosur are substantial and are expected to expose its member economies to vigorous competition.

Traditional static computations of welfare gains from trade do not predict great benefits from Mercosur. But they address only the effect of tariff changes on the likely pattern of trade. The changes under Mercosur are expected to go far deeper. If Mercosur is a harbinger of a broader philosophy of open trade and freer competition to encourage growth, it would represent a sea change in its members' development strategies and have important implications for the World Bank's country assistance strategies.

This research is intended to develop a better understanding of the implications of Mercosur—to help shape World Bank views on macroeconomic prospects, the constraints of policymaking, and the risks of recidivism. The work highlights key sectoral issues likely to arise with adjustment to the new regime, relating to transport costs, agriculture, and services, as well as regional issues. A hypothesis of the study is that improvements in each of these areas will be required to maximize the hoped-for allocative efficiency gains; they are all elements of "getting the prices right." The work will inform consideration of the kinds of competition policies and institutions that need to emerge to support the new paradigm of competitive, private sector–led development.

This work is oriented less toward government institutions than toward the ongoing local dialogue on

Mercosur. It aims to develop a World Bank position on key issues that can be discussed in broad, strategic terms in each country, and to build knowledge to support the Bank's ability to respond to requests for assistance. For these purposes the project is producing papers on an overview of Mercosur, trade patterns developing in Mercosur, integration and intraregional transport costs, trade in food and agriculture, small and medium-size enterprise finance, professional services, financial services, trade policy, and the scope for harmonization, competition policy, and industrial policies.

The research also has considered Chile's prospective accession to the North American Free Trade Agreement (NAFTA). It assesses the arguments that the trade benefits are likely to be small since both Chile and the NAFTA countries have relatively low trade barriers, but that advantages might arise from locking in Chile's reforms and from increasing the security of its access to U.S. markets. Further work is continuing on Chile's free trade agreement with Mercosur.

Responsibility: International Economics Department, International Trade Division—L. Alan Winters (Internet address awinters@worldbank.org), John Nash, Alexander Yeats, and Maurice Schiff; Policy Research Department, Finance and Private Sector Development Division—Gerard Caprio; Industry and Energy Department, Telecommunication and Informatics Division—Carlos Primo Braga; and Latin America and the Caribbean, Country Department I, Office of the Director—Homi Kharas, Margaret Miller, and Danny Leipziger, Natural Resources, Environment, and Rural Poverty Group—Andres Abramovich, and Technical Department, Public Sector Modernization Unit—Malcolm Rowat and Mike Lubrano. With Julio de Brun and Jose Mauro de Morais.

Completion date: December 1996.

Reports:

Abramovich, Andres. "Mercosur: Role, Performance, and Prospects of Agriculture and the Food Industry." World Bank, Washington, DC.

Amjadi, Azita, and L. Alan Winters. "Transport Costs and 'Natural' Integration in Mercosur." World Bank, Washington, DC.

Frischtak, Claudio, Danny M. Leipziger, and J.F. Normand. "Industrial Policy in Mercosur: Issues and Lessons." World Bank, Washington, DC.

Laird, S. "Mercosur Trade Policy: Towards Greater Integration." World Bank, Washington, DC.

Rowat, Malcolm, and Mike Lubrano. "Competition Policy and Mercosur." World Bank, Washington, DC.

Yeats, Alexander J. "Does Mercosur's Trade Performance Justify Concerns about the Global Welfare-Reducing Effects of Free Trade Arrangements? Yes!" World Bank, Washington, DC.

International Comparison Programme Analysis

Although the dollar will buy more in some parts of the world than others, at identifiable hypothetical exchange rates it would have the same purchasing power everywhere. Comparisons using such purchasing power parities (PPPs) look quite different from those using foreign exchange rates to convert macroeconomic values in local currencies. Analysts and policymakers are increasingly interested in comparing major economic variables among countries, particularly indicators of relative economic size and performance. The International Comparison Programme (ICP) of the United Nations, supported by the World Bank and other international organizations, is an effort to obtain global purchasing power parities for national accounts aggregates and their components.

This related exercise seeks to improve the reliability and coverage of the ICP so as to produce estimates for a new benchmark year, 1993. These results will be used to conduct new research on international productivity and capital measurement, poverty assessment, and the relationship of economic growth to price structures. The analysis also will compare these expenditure-based estimates with production-based PPPs generated by other research programs with which the Bank is associated.

The detailed PPP database is compiled using surveys of national expenditures and related prices. This can give insights into price and quantity structures and alter traditional views of shares of government and capital formation in real terms. These analyses may support or refute hypotheses about economic performance and the relationship of structural price change to growth. The use of PPPs makes it less ambiguous for policymakers to evaluate the capacity of the national economy to develop, and to assess the roles of the private and public sectors.

PPPs will be used by the Bank (and other agencies) to measure poverty thresholds (and thus poverty head counts) on an internationally comparable basis. These calculations will be refined by limiting the contents of consumption baskets to items typically consumed by the poor, measured at the prices poor people pay. The intention is to generate not only economywide PPPs but also poverty PPPs—all from the same detailed database. This research project is carrying out price comparisons for specific poverty groups in seven African countries and will use the results to conduct more detailed poverty analyses.

Analyses using ICP data also are looking at such key issues as technological development and productivity convergence in manufacturing across countries related to the speed of international integration and patterns of

industry specialization (and associated concerns of privatization). Another area of inquiry is change in price structure related to economic growth.

This effort to develop wide-ranging, disaggregated ICP information can influence the Bank's work to resolve critical development questions. Most academics and officials using Bank data accept the superiority of ICP techniques for interspatial analysis involving values in different currencies that subsume different price components. For example, economic performance cannot be properly compared among the transition economies and between this group and industrial countries without extensive reference to PPP measures at all levels of economic activity. Recent work on China from both the production and the expenditure side, as well as comparisons within the country, demonstrate the enormous scope for improving core statistics and research.

Responsibility: International Economics Department, Development Data Group—Michael Ward (Internet address mward@worldbank.org), Sultan Ahmad, Yonas Biru, and Yuri Dikhanov. With D. Nuxol, Virginia Polytechnical Institute; D. S. P. Rao, University of New England, Australia; E. W. Pincard, Urban Development Group; and P. Oyewole, Howard University.

Completion date: December 1996.

Trade Policy, Incentives, and Resource Allocation in Indian Agriculture

An earlier research project systematically measured the net impact of the many government interventions that affect the profitability of agricultural crops in India. Consultant studies, most covering 1980/81 to 1989/90, quantified the effects of export and import restrictions, import duties and export taxes, the activities of parastatals, and input subsidies in several of the main producing regions in India. In addition, the research compared agricultural incentives with incentives to manufacturing industries.

This project is bringing together the results of the earlier research, extending some aspects back to 1964/65 and forward to 1992/93 to capture the effects of the rupee devaluation of 1991 and the important trade and other reforms that began in July 1991. It also incorporates quantitative estimates of the effects of India's agricultural and manufacturing incentive policies on the exchange rate from 1970/71 to 1992/93, including a simulation of the likely effects over this period of the removal of export restrictions for rice, cotton, and wheat.

The research is being synthesized in a book, and the detailed underlying data will be presented in separate monographs. In addition, a number of papers are being prepared on special topics.

Responsibility: International Economics Department, International Trade Division—Garry Pursell (Internet address gpursell@worldbank.org). With Ashok Gulati and Anil Sharma, National Council of Applied Economic Research, New Delhi; and Anju Gupta.

Completion date: December 1996.

Reports:

Pursell, Garry. 1994. "Indian Agriculture: Some Evidence on Anti-Agriculture Bias." Paper presented at conference, South Asian Economic Development, Australian National University, November.

_____. 1996. "Indian Trade Policies since the 1991–92 Reforms." World Bank, International Economics Department, Washington, DC.

_____. 1996. "India: Trade Policy, the Exchange Rate, and the Domestic Terms of Trade for Agriculture." World Bank, International Economics Department, Washington, DC.

Pursell, Garry, and Anju Gupta. 1996. "Trade Policies and Incentives in Indian Agriculture: Background Statistics and Protection and Incentive Indicators, 1965–95." World Bank, International Economics Department, Washington, DC.

Rosenblatt, David, Garry Pursell, Anju Gupta, and Benoît Blarel. 1996. "Protection, the Exchange Rate, and the Taxation of Agriculture in India." World Bank, International Economics Department, Washington, DC.

Sharma, Anil. 1996. "Indian Agricultural Trade Liberalization and the Uruguay Round Agreement." Paper presented at conference, the Uruguay Round Agreement: Implications for South Asian Agriculture, Kathmandu, April.

Sharma, Anil, and Garry Pursell. 1995. "Food Grains, Pulses, Oilseeds, and Cotton in India: The Potential Impact of Unilateral Trade Liberalization." World Bank, International Economics Department, Washington, DC.

Private Capital Flows and Financial Integration

The surge in private capital flows in the 1990s and the Mexico crisis have focused attention on the growing importance of such flows to developing countries and the challenges they pose. At the request of the Board, the Development Economics Vice Presidency is undertaking this special study on the implications of the growing role of external private capital in developing countries.

Cyclical factors have contributed to the recent surge. But this study is concerned with the important structural forces that are driving private capital flows and resulting in the growing financial integration of developing countries. This process of financial integration is expected to continue so that private capital flows will play a growing role in developing countries, though with potential volatility. The premise of the study is that, on balance, financial integration offers significant

benefits for developing countries, but reaping these benefits requires a set of policy and institutional preconditions. Since initial conditions vary among countries, and since establishing the prerequisites takes time, developing countries face an array of policy and institutional challenges in managing the process of financial integration.

The study aims to provide a better understanding of the factors driving financial integration and to draw policy lessons on managing the process. The main questions that it addresses are as follows:

- What are the principal factors driving private capital flows and the process of financial integration? What can we conclude about the sustainability of and prospects for private capital flows? What implications does the changing international context, including the growing role of institutional investors, have for the behavior of flows?
- What are the main benefits and risks associated with financial integration?
- How have countries dealt with the main macroeconomic challenges associated with growing financial integration—overheating, vulnerability to large reversals, and continuing volatility of flows? What policy lessons can be drawn on the instruments and mix of macroeconomic policies?
- What has been the role of the financial sector during the process of financial integration, and how is it affected by this process? How should countries manage the simultaneous tasks of external financial integration and domestic financial sector reform?
- What are the implications of financial integration for domestic capital market reform? In particular, what are the most important steps that countries can take to attract portfolio investment while addressing their own concerns about potential instability?

Commensurate with its breadth, the study uses a variety of approaches. It is undertaking a review of earlier findings and ongoing work, surveys of market participants (including pension and mutual funds), and empirical analysis ranging from econometric tests of specific hypotheses to less rigorous cross-country analysis. Since an important objective is to assess cross-country experience and lessons, the study draws on about a dozen full and partial country case studies based on a common analytical framework.

Responsibility: International Economics Department, Office of the Director—Amar Bhattacharya (Internet address abhattacharya@worldbank.org) and Pedro Alba, and International Finance Division—Swati Ghosh and Leonardo Hernández. With Peter Montiel, Oberlin College; Holger Wolf and Ian Giddy, New York University; Bahodir Atahodjaev, Brandeis University; Alistair Boyd; Philip Brock, University of Washington; Jose de Gregorio, Ministry of Finance, Chile; Persephone Economou; Morris Goldstein, Institute for International Economics; Ashok Khanna, Johnson Khanna Associates; Naoko Kojo, Churchill College; Gabriel Perez-Quiros; Michael Pomerleano; Maria Scattaglia; and Kleiman International Consultants.

Completion date: March 1997.

Components of Successful Commodity Exports

An economy's dependence on primary commodities is often associated with low income and poor development performance. The World Bank's *Global Economic Prospects and the Developing Countries 1996* (Washington, DC, 1996) found that many commodity-dependent countries have lagged in global integration; slow integration too is closely related to low income growth. Pessimism has surrounded commodity dependence since the 1950s and the development of the Prebisch-Singer thesis. This thesis—that because demand for commodities is income inelastic, it is difficult for developing countries to achieve high export growth by focusing on primary commodity exports—gained renewed prominence in the 1980s, when commodity prices collapsed.

In response to the pessimism, many commodity-dependent countries might adopt strong anticommodity, pro-industry policies without duly considering their comparative advantages—as many Latin American countries did after the Prebisch-Singer thesis first appeared. Such policies are likely to fail, as many of the import substitution policies adopted by the Latin American countries did. In addition, these policies tend to reinforce other policies in commodity-dependent countries that already tend to have an urban bias. Because of these important policy implications, this study examines the validity of the commodity dependence pessimism in some depth, both theoretically and empirically.

Despite the commodity pessimism, many commodity-dependent countries have achieved high growth rates in total merchandise exports and in per capita income through commodity exports. And many individual commodity sectors have showed spectacular production and export growth in developing countries. These facts cast some doubt on the validity of commodity dependence pessimism.

The study also will undertake both theoretical and empirical analysis to identify the reasons that commodity sectors in some developing countries have failed to develop.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Takamasa

Akiyama (Internet address takiyama@worldbank.org) and Nanae Yabuki.

Completion date: May 1997.

Report:

Yabuki, Nanae, and Takamasa Akiyama. 1996. "Is Commodity Dependence Pessimism Justified?" Policy Research Working Paper 1600. World Bank, International Economics Department, Washington, DC.

Agricultural Trade Liberalization and Food Security

The changes that are under way in the international trade and policy environment will have far-ranging consequences for the food and agriculture sector and for food security. Domestic policy responses to these changes will influence food security in both the short and the long term. These policy changes are occurring in a dynamic context of changing comparative advantage in agricultural production arising from population and income growth and changes in technology and resource constraints. Countries that have undertaken policy reforms and adjustment in the right direction have been much better positioned to cope with short-term shocks and take advantage of opportunities from more open markets than countries that have not done so.

This study evaluates the extent of trade and market liberalization carried out by industrial and developing countries during the post–Uruguay Round regime. It examines existing trade barriers and domestic protection, quantifies the pre– and post–Uruguay Round applied rates of protection, and projects the effect of liberalization on production, consumption, and price levels through 2005. The study also analyzes the effect of the projected increases in world prices on low-income food-deficit countries. And it assesses the implications of liberalization for the food sector and food security by looking at changes in terms of trade, domestic output, food consumption, and incomes.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit, and International Trade Division—Merlinda Ingco (Internet address mingco@worldbank.org).

Completion date: June 1997.

Developing Countries and Government Procurement

Government procurement in most countries accounts for a substantial share of the total demand for goods and services, especially when purchases of public enterprises, regulated monopolies, state and regional governments, and municipalities are included. The Government Procurement Agreement (GPA) is intended to subject government procurement to international competition. As part of the Uruguay Round, the GPA was renegotiated, but signing it was not obligatory, and only nine economies besides the European Union and the United States did so. Only one of the signatories was a developing country.

That so many countries, including nearly all developing countries, did not sign the GPA suggests that the costs were perceived to exceed the benefits. One objective of this research is to study how procurement markets function in a sample of developing countries so as to better understand the costs and benefits of procurement policies as actually applied. Against this background, the research will analyze the economics of the GPA's rules and disciplines and explore what might be done to expand developing country membership. For this purpose the project is carrying out two small exploratory studies of procurement policies and practices in Brazil and India, and plans similar studies for several other developing countries. In addition, the World Bank's project files are being surveyed to see what light they throw on developing country procurement policies, and papers are being written on the experience with the GPA in industrial countries.

The exploratory studies of developing countries are investigating the availability of data for more extensive studies. If it appears to be feasible, a larger program of research will be initiated involving detailed studies on procurement policies and practices in five or six developing countries. This program would focus on the economic costs and benefits of adopting policies compatible with the GPA.

Responsibility: International Economics Department, International Trade Division—Garry Pursell (Internet address gpursell@worldbank.org) and L. Alan Winters; and Europe and Central Asia, and Middle East and North Africa Regions Technical Department—Bernard Hoekman. With Bibek Debroy; Helson Braga, ABRASPE, Brazil; and Marie-Helene Le Manchec.

Completion date: June 1997.

Reports:

Braga, Helson, and Marcelo Piancatelli. 1996. "Government Procurement in Brazil." World Bank, International Economics Department, Washington, DC.

Debroy, Bibek. 1995. "Indian Government Procurement Practices." World Bank, International Economics Department, Washington, DC.

Debroy, Bibek, and Garry Pursell. 1996. "Government Procurement Regulations in India." World Bank, International Economics Department, Washington, DC.

Hoekman, Bernard. 1995. "Evaluating Global Procurement Markets and Multilateral Rules: Data Needs and Availability." World Bank, Europe and Central Asia, and Middle East and North Africa Regions Technical Department, Washington, DC, and Centre for Economic Policy Research, London.

Methodologies for Analyzing Exchange Rate Misalignment in Developing Countries

A central problem in empirical macroeconomics in low-income countries is to determine when and by how much the exchange rate is misaligned. Decisions to devalue or to implement any exchange rate policy other than a clean float require both measuring the actual real exchange rate (RER) and estimating the equilibrium RER. In addition, the first question that policymakers ask when considering a devaluation is what its effects would be on inflation, the RER, and output growth. Quantitative answers to these questions are essential for implementing exchange rate policy and for designing accompanying reforms.

During the dialogue over the devaluation of the CFA franc, staff of the World Bank's Africa Regional Office and Policy Research Department did substantial work on exchange rate misalignment in the CFA countries and related issues. The importance of being able to assess exchange rate misalignment was reinforced by the exchange rate crisis in Mexico.

The objective of this research project is to set out, for use by Bank economists and others, practical methodologies for assessing exchange rate misalignment in low-income developing countries where data, time, and professional capacity are limited. The research draws together methodologies from disparate sources and documents empirical innovations in applying them.

The research addresses three methodological questions that are central to effective exchange rate management: how to define and measure the actual RER, how to estimate the equilibrium RER, and how to quantify the likely impact of a nominal devaluation on the RER, inflation, and output.

The study is organized in three parts. The first part examines alternative concepts and measures of the actual RER to determine how accurately it can be measured in low-income developing countries. It makes a comparative analysis of the effects on different methodologies of empirical factors—such as parallel market rates, unrecorded trade, and incomplete national accounts—that are common in low-income countries.

This work, largely completed, shows that movements in RER indexes must be carefully interpreted when the home country is experiencing trade liberalization, fluctuations in its terms of trade, or different productivity growth rates in its trading partners—or where there are significant parallel markets, unrecorded trade, or shifts in trade patterns. In particular, when the terms of trade or trade policy changes significantly, the RERs for imports and exports will behave quite differently. Thus a single RER for traded goods may obscure what is happening to relative prices, and calculating separate RERs for imports and exports should become standard practice. Divergent movements in different RER indexes can often be consistently interpreted, but the analyst needs to pay attention both to the theoretical relationships among the indexes and to data problems in their empirical measurement.

The second part of the study assesses alternative methodologies for determining the equilibrium RER. It discusses the use of the parallel market rate, an updated version of the resource balance target–trade elasticities methodology, econometric estimates, and computable general equilibrium and macroeconomic models to estimate the equilibrium RER. The third part of the study establishes the stylized facts concerning the effects of exchange rate movements on inflation, the RER, and output and develops simple methodologies for quantifying these effects.

Work on these two parts of the project, still ongoing, has shown that updated versions of traditional partial equilibrium methodologies can provide useful estimates of misalignment. It is often feasible to complement these estimates with more sophisticated general equilibrium estimates. Methodologies for determining the nominal exchange rate adjustments required to achieve a given realignment of the RER are more rudimentary, however, and will often be the most problematic part of the policy analysis.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Lawrence Hinkle (Internet address lhinkle@worldbank.org), Public Economics Division—Shantayanan Devarajan, and Poverty and Human Resources Division—Lant Pritchett; West Central Africa Department, Country Operations Division—Ted Ahlers, and Office of the Director—Ingrid Ivins; Western Africa Department, Country Operations Division—Bruno Boccara and Fabien Nsengiyumva; and International Economics Department—John Baffes. With Ibrahim Elbadawi, African Economic Research Consortium; Nadeem Ul Haque, International Monetary Fund; Steven Kamin, U.S. Federal Reserve Board; Peter Montiel, Williams College; and Steven O'Connell, Swarthmore College.

Completion date: June 1997.

Reports:

Ahlers, Theodore O., and Lawrence E. Hinkle. 1995. "Estimating the Equilibrium Real Exchange Rate: An Updated Resource

Balance Target/Trade Elasticities Approach." World Bank, Policy Research Department, Washington, DC.
Boccara, Bruno, and Fabien Nsengiyumva. 1995. "Short-Term Supply Response to a Devaluation: A Model's Implications for Commodity-Exporting Developing Countries." Policy Research Working Paper 1428. World Bank, Western Africa Department, Washington, DC.
Devarajan, Shantayanan. 1996. "How Overvalued Was the CFA Franc? Estimates of Real Exchange Rate Misalignment with a Simple General Equilibrium Model." World Bank, Policy Research Department, Washington, DC.
Ghei, Nita, and Lawrence Hinkle. 1995. "Devaluations, Inflation, and the Real Exchange Rate: The Stylized Facts and a Simple Consistency Model." World Bank, Policy Research Department, Washington, DC.
Ghei, Nita, and Steven B. Kamin. 1996. "The Use of the Parallel Market Rate as a Guide to Setting the Official Exchange Rate." World Bank, Policy Research Department, Washington, DC.
Haque, Nadeem Ul, and Peter J. Montiel. 1996. "Long-Run Real Exchange Rate Changes in Developing Countries: Simulation from an Econometric Model." World Bank, Policy Research Department, Washington, DC.
Hinkle, Lawrence E., and Fabien Nsengiyumva. 1995. "External Real Exchange Rates: A User's Guide to Concepts, Measurement, and Interpretation." World Bank, Policy Research Department, Washington, DC.
_____. 1995. "Internal Real Exchange Rates: A User's Guide to Concepts, Measurement, and Interpretation." World Bank, Policy Research Department, Washington, DC.
_____. 1995. "The Relationship between the External and Internal Real Exchange Rates: Competition, Productivity, and the Terms of Trade." World Bank, Policy Research Department, Washington, DC.
Pritchett, Lant. 1995. "The Three Pessimisms: Exchange Rates and Trade Flows in the CFA Zone." World Bank, Policy Research Department, Washington, DC.

Real Exchange Rate Misalignment

The objective of this project is to estimate the historical path of equilibrium real exchange rates for seven Latin American countries—Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela—for the years 1960–94. The methodology of estimation is based on the concepts of time-series integration and cointegration. The proposed model relates the real exchange rate to productivity changes in the tradable sector, international terms of trade, net foreign asset holdings, and trade openness. The equilibrium real exchange rate is then identified with the real exchange rate that maintains a long-run, stationary relationship with its proposed determinants.

Once the study estimates the path of equilibrium exchange rates, it can assess the degree of misalignment of the real exchange rate, whether official or market-determined. Further, analyzing the dynamic behavior of the real exchange rate in an error correction model, the study can assess the time needed to adjust to equilibrium and thus evaluate the need for central bank intervention in the foreign exchange market.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Norman Loayza (Internet address nloayza@worldbank.org). With Fernando Broner, Massachusetts Institute of Technology.

Completion date: December 1997.

Trade and Labor Standards

This project addresses the new and highly controversial issue of whether labor standards should be adopted by the World Trade Organization. It undertook a short desk study to identify the issues and to formulate an initial position, followed by a more detailed study.

Responsibility: International Economics Department, International Trade Division—Will Martin (Internet address wmartin@worldbank.org) and L. Alan Winters. With Keith Maskus, University of Colorado.

Completion date: June 1998.

Report:

Maskus, Keith. 1996. "Global Labor Standards and International Trade Policy." World Bank, International Economics Department, Washington, DC. Draft.

World Trade Organization Rules, and Controlling Recidivism

At the Uruguay Round developing countries took a significant step toward integrating themselves into the body of rules and obligations of the General Agreement on Tariffs and Trade (GATT). These countries were visibly more active than they had been in bargaining for market access.

Equally important, the Uruguay Round has increased the importance for developing countries of the parts of the GATT that provide guidelines for the use of subsidies, antidumping measures, customs valuation, and other administrative dimensions of international trade. Membership in "codes" that provided detailed obligations on these matters had been optional, and most developing countries did not participate. But the Uruguay Round agreement took the form of a "single act," so a country does not have the option of subscribing to some parts of it but not to others. For developing countries, these rules and disciplines are a two-edged sword.

On the one hand, they do provide procedural disciplines; but on the other, the procedural disciplines have proved in practice to impose limited substantive restrictions on the trade restrictions a government might impose.

This project includes continuing work to separate those restrictions allowed by the GATT that make economic sense from those that do not. It has focused on the use of export subsidies and antidumping measures by developing countries. Its objective has been to identify processes within the GATT rules for imposing "exceptional" import restrictions that make economic sense—that add more to the national economic welfare than they take away. The main conclusion has been that the domestic users of a product on which an import restriction has been imposed should have the same standing in the decisionmaking process as the domestic producers who would be protected.

Responsibility: International Economics Department, International Trade Division—Michael Finger (Internet address mfinger@worldbank.org). With John Croome.

Completion date: June 1998.

Reports:

Finger, Michael. 1995. "Antidumping: Everything You Always Wanted to Know But Were Afraid to Ask." Paper presented at the World Bank seminar series, Current International Trade Issues for Africa, Washington, DC, October.

_____. 1995. "WTO Structure and the Enforcement of Trade Norms." Paper presented at the Columbia Law School symposium, Multilateral Trade Regimes in the 21st Century, New York, November.

_____. 1996. "Antidumping in Developing Countries." Background paper for *Global Economic Prospects and the Developing Countries 1996*. World Bank, International Economics Department, Washington, DC.

_____. 1996. "Liberalization by Example." Paper prepared for the Subcommittee on Trade, U.S. Congress, April.

_____. 1996. "Should Developing Countries Introduce Antidumping?" World Bank, International Economics Department, Washington, DC.

_____. 1996. "Subsidies, Countervailing Duties, Variable Levies . . . Everything You Always Wanted to Know But Were Afraid to Ask." Paper presented at the World Bank seminar series, Current International Trade Issues for Africa, Washington, DC, April.

Making Aid Work

To maximize the poverty impact of foreign aid (defined broadly as all financial and technical assistance provided to developing countries), assistance strategies must be periodically reassessed. Aid, to be effective in both its advice and its instruments, must match the rapid and varied economic and political changes countries face.

This research task is an effort to integrate new research and findings into an assessment of aid effectiveness. The research will focus on several issues: the mix of advice and lending services, the structure and role of macroeconomic and sectoral policy conditionality, the mix between project financing and sector investment projects, the role of in-country institutional capacity, and the design of new kinds of projects and new modes of financing, such as more participatory and demand-driven projects (as in social funds). The goal is to produce a policy-relevant report that will bring together the knowledge from research done both inside and outside the Bank and to formulate concrete recommendations for the future design of aid.

While some original research to provide background for this task has been completed, the synthesis effort has just begun. A preliminary report is expected in September 1997.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—David Dollar (Internet address ddollar@worldbank.org), Poverty and Human Resources Division—Lant Pritchett, and Public Economics Division—Vinaya Swaroop.

Completion date: July 1998.

Analytical Approaches to Debt Sustainability

A group of low-income countries, most in Sub-Saharan Africa, have experienced serious difficulties in servicing their external debt. The international community has responded through debt rescheduling, concessional financing, the provision of additional resources, and, finally, debt stock reduction under the Naples terms of the Paris Club. Nevertheless, many of these countries continue to face excessive debt burdens, which may limit their ability to undertake the difficult reforms required to achieve macroeconomic stability and improve the efficiency of their economies. The goal of this research has been to increase our understanding of how high levels of debt affect developing countries' prospects and to improve the tools available for measuring the impact of debt restructuring agreements on a country's debt profile, balance of payments, and fiscal accounts.

The research developed a framework for measuring the debt burden facing heavily indebted poor countries, based on reasonable assumptions about prospects for key macroeconomic variables and after taking into account the likely impact of debt restructuring under existing precedents. This standard projections framework generates estimates of debt and debt service payments based on the debt stock and projected debt ser-

vice payments from the World Bank's Debtor Reporting System, macroeconomic projections by Bank country economists, and assumptions about the restructuring of debt and debt service under Paris Club precedents (as well as likely terms of restructuring from other bilateral creditors). The evaluation of the debt burden is based on indicators known to be associated with difficulties in servicing debt, including a ratio of the present value of debt to exports exceeding 200 percent and a debt service to export ratio exceeding 20 percent. Scenarios are developed to judge the sensitivity of the results to deviations from the base case projections (for example, declines in exports or growth).

Further work in this project will focus on integrating fiscal accounts into the analysis, developing indicators measuring the vulnerability of the conclusions to changes in the projections, and developing a more user-friendly version of the projections framework, using Excel software.

Responsibility: International Economics Department, International Finance Division—Fred Kilby (Internet address fkilby@worldbank.org), Nawal Kamel, Ning Zhu, Sudarshan Gooptu, William Shaw, Robert Powell, Sergei Shatalov, and Gholam Azarbayejani.

Reports:

Claessens, Stijn, Enrica Detragiache, Ravi Kanbur, and Peter Wickham. 1996. "Analytical Aspects of the Debt Problems of Heavily Indebted Poor Countries." Policy Research Working Paper 1618. World Bank, International Economics Department, Washington, DC.

World Bank. 1996. "Analytical Aspects of the Debt Problems of Heavily Indebted Poor Countries and Debt Sustainability Analysis for the Heavily Indebted Poor Countries." Report SecM96-94. International Economics Department. Washington, DC.

Domestic Finance and Capital Markets

Term Finance: Theory and Evidence

Ref. no. 679-62

Many credit market interventions assume a scarcity of long-term credit and attempt to correct this deficiency. This research investigates the assumptions underlying such interventions: Do industrial firms in developing countries suffer from a shortage of long-term credit? And does differential access to long-term credit have implications for firm investment, productivity, and growth? It addresses these questions using a cross-country data set (Global Vantage and IFC Corporate Finance) representing the largest publicly traded firms from 30 countries; and databases from selected countries (Colombia, Ecuador, India, Italy, the United Kingdom, and the United States), each covering several hundred to several thousand firms.

By studying the differences between long-term debt levels in industrial and developing countries, the project pinpoints the underlying causes of these differences and highlights the institutional and firm characteristics that seem to be associated with the undersupply of term finance. It also adds to the understanding of the role of term finance in firm productivity, investment, and growth, showing why availability of term finance is important.

Analysis of both sets of data shows that there are systematic differences in the use of long-term debt between industrial and developing countries. In industrial countries firms have more long-term debt and hold a greater share of their total debt as long-term debt. The observed difference in debt composition between industrial and developing countries can be explained econometrically by firm characteristics, tax implications, macroeconomic factors, financial development, government subsidies, and legal and institutional factors. Firms appear to try to match the maturity of their assets and liabilities. Small firms often cannot get term credit. Having access to less term finance tends to hinder firm performance, though when credit is subsidized, this result is reversed.

Initial results were disseminated at a June 1996 conference with about 80 participants.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Gerard Caprio (Internet address gcaprio@worldbank.org) and Asli Demirgüç-Kunt; and Financial Sector Development Department—Dimitri Vittas. With E. Samsonova; A. Tanzi; Charles Calomiris, University of Illinois; Douglas Diamond, University of Chicago; Fidel Jaramillo, Multiplica, Ecuador; James Kuhn; Vojislav Maksimovic; Sandra Ospina; Raghuram Govind Rajan; Fabio Schiantarelli; Vivek Srivastava; Thekla Halouva; Qinghua Zhao; and Luigi Zingales.

Completion date: June 1997.

Reports:

Calomiris, Charles, Thekla Halouva, and Sandra Ospina. 1996. "Debt Maturity Structure and Firm Performance: The U.S. versus Colombia." World Bank, Policy Research Department, Washington, DC.

Demirgüç-Kunt, Asli, and Vojislav Maksimovic. 1996. "Financial Constraints, Uses of Funds, and Firm Growth: An International Comparison." World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Institutions, Financial Markets, and Firm Debt Maturity." World Bank, Policy Research Department, Washington, DC.

Diamond, Douglas W. 1996. "Liquidity, Banks, and Markets: Effects of Financial Development on Banks and Maturity of Financial Claims." Policy Research Working Paper 1566. World Bank, Policy Research Department, Washington, DC.

Jaramillo, Fidel, and Fabio Schiantarelli. 1996. "Long-Term Debt in Ecuador: Access and Effect on Firms' Performance." World Bank, Policy Research Department, Washington, DC.

Schiantarelli, Fabio, and Alessandro Sembenelli. 1996. "Determinants and Consequences of the Maturity Structure of Firm Debt: The Cases of the U.K. and Italy." World Bank, Policy Research Department, Washington, DC.

Schiantarelli, Fabio, and Vivek Srivastava. 1996. "Debt Maturity and Firm Performance: The Case of India." World Bank, Policy Research Department, Washington, DC.

Vittas, Dimitri. 1996. "Contractual Savings and Term Finance." World Bank, Financial Sector Development Department, Washington, DC.

Country and Currency Risk in the Mexican Market

Ref. no. 679-66C

Financial instruments are priced to reflect the risks that they contain. Two risks of particular importance to investors in emerging markets are currency risk—the

risk that a change in the exchange rate will erode an investor's home currency return—and country risk—the risk that macroeconomic or political factors will prevent repayment. This research examined the impact that those two factors have had on Mexican government debt and in doing so provided information about how international markets assess and price risk in emerging markets.

Mexico provides an interesting opportunity for examining currency and country risk both because of the events that took place in 1993–94 and because for the past few years the government has issued government debt instruments that permit explicit calculation of the currency and country risk premiums that the government must pay to investors. Tesebonos, which are effectively denominated in dollars, provide a direct measure of the country risk premium that investors demand relative to a similar U.S. government instrument. Cetes, denominated in pesos, carry both currency and country risk, but the country risk premium that can be calculated from the Tesebono market allows a separate currency risk premium to be measured.

The project examined the statistical properties of these two premiums and linked them to other market factors. Because the instruments are available for different maturities, a term structure of premiums also is available, and the research examined the usefulness of this term structure in forecasting future premiums.

The project found a substantial difference in the behavior of the country and currency risk premiums, both in levels and in term structures. Currency risk premiums are generally larger and more volatile than country risk premiums. In addition, there is a positive term premium for country risk, but a negative term premium for currency risk. The study found that country risk premiums conform to the expectations hypothesis, whereas currency premiums do not. In addition, both premiums are linked to volatility innovations in the Mexican stock market. Finally, the study found no evidence that the markets anticipated the devaluation of the peso in December 1994.

Responsibility: International Finance Corporation, Economics Department—Jack Glen (Internet address jglen@ifc.org). With Ian Domowitz and Mark Coppejans, Northwestern University; and Ananth Madhavan, University of Southern California.

Completion date: June 1996.

Bank Regulatory Regimes

Ref. no. 680-36

As recent episodes suggest, banking regulation can play a key role in financial crises. Economic losses in a sector can undermine bank solvency and thereby spill over into other sectors of the economy, and declining bank capital can undermine depositor confidence. One role of bank regulation is to establish effective policies that can minimize spillover and contagion effects.

This research examines bank regulation over relatively long time frames, focusing on periods when spillover and contagion effects were common features of banking. It also incorporates cross-country comparisons of successful regulatory policy, with the goal of developing policy alternatives for developing countries—alternatives sensitive to the country-specific context of regulation.

The study focuses on three industrial countries: Canada, the United Kingdom, and the United States. These three countries share cultural similarities, but have evolved very different regulatory structures, creating natural policy experiments that can be used to examine the success of regulation over relatively long periods. The historical experience of these countries is replete with banking crises, making their historical experience directly relevant for developing countries.

The study characterizes the regulatory regime in each of the three countries and uses data on individual banks to analyze the success of policy in each regime. It also constructs a framework for analyzing developing country policy problems and uses it to develop policy recommendations for developing countries. To examine the efficacy of the proposed regulatory framework, the study constructs and analyzes a developing country database.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Gerard Caprio (Internet address gcaprio@worldbank.org). With Anthony Saunders, New York University; and Berry Wilson, Federal Communications Commission.

Completion date: September 1996.

Derivatives Markets and Risks in Emerging Economies

Ref. no. 680-45

Derivative instruments, increasingly used in developed markets, are now spreading to emerging markets. Their potential contribution to efficiency and economic performance is enormous. Derivatives can expand risk management capabilities, improve credit allocation and risk sharing among economic agents, reduce the transaction costs of achieving desired risk profiles, increase the pricing efficiency of financial markets, and provide new instruments for dealing with contractual and informational problems. In addition to these benefits, introducing derivatives in a market also poses several potential risks. Some of the risks have been exaggerated in the popular press; others are real.

To ensure that emerging markets both fully benefit from derivatives and avoid their risks, policymakers need to understand the preconditions for developing a successful derivatives market and the sources of risk. They also need to know what safeguards and surveillance mechanisms can be used to contain the risks.

This study aims to contribute to the knowledge of these issues by looking at derivatives markets in both emerging and developed markets. It examines the process through which derivatives are introduced in an emerging market, and describes several dimensions of risk for the economy and for the investor. And it reviews the necessity for surveillance and safeguard mechanisms.

In both emerging and developed markets the research has collected data on the types of derivatives traded and their characteristics, the evolution of derivatives trading in each of the exchanges, and the volume of trading for each type of derivative. In addition, the research has collected information on the structure of each derivatives exchange (membership, ownership, regulations), the trading or market-making system used, the system used for clearing operations, and the structure of the clearing house. The study has obtained the data from existing data sources about derivatives markets and through a survey sent to each exchange.

The research uses cross-sectional analysis of variables that describe activity in derivatives markets to examine possible differences in derivative instruments across emerging and developed markets. It also uses analysis of variance procedures and *t*-differences in means for several variables. And it analyzes differences between emerging and developed derivatives markets.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Panos Varangis (Internet address pvarangis@worldbank.org). With George Tsetsekos, Drexel University; and Tom Scott, Sparks Companies, Inc.

Completion date: September 1996.

Investment Activity in the Corporate Sector

Ref. no. 681-25

Despite the pivotal role that the public sector plays in economic development, most observers would agree that private investment is a powerful source of economic growth. This research project will examine the investment activities of a set of private sector corporations in 12 developing countries. Using a corporate finance database compiled by the International Finance Corporation's Economics Department, the study will compare the efficiency with which corporations use their physical and financial assets by analyzing the amount of capital employed, the size of the operating margins that those assets produce, and the value of the capital-asset ratio, all relative to corporations in other developing and industrial countries. The results will allow characterization of the assets held by corporations in developing countries and the efficiency with which those assets are used.

The research will shed light on the nature and degree of competition facing firms in different countries and show how competition changes over time as a result of changes in the environment in which firms operate.

Responsibility: International Finance Corporation, Economics Department—Jack Glen (Internet address jglen@ifc.org). With Ajit Singh, Cambridge University.

Completion date: September 1997.

Saving in Developing Countries

Ref. no. 681-36

Over the past three decades the world has witnessed a large and growing divergence in savings rates. The gap between industrial and developing country savings rates has widened since the mid-1970s. And there has been dramatic divergence in the developing world: savings rates have doubled in East Asia, stagnated in Latin America, and collapsed in Sub-Saharan Africa. These disparities have been closely reflected in growth performances: with higher savings rates has come higher income growth.

Ensuring an adequate supply of savings is a central policy objective for reasons other than the direct growth effect. A national savings ratio broadly in line with an economy's investment needs is key to reducing its vulnerability to unexpected shifts in international capital flows. In conditions of increasing international financial integration, high domestic saving helps ensure macroeconomic stability. Yet little is known about the relative effectiveness of different policies in encouraging saving, even for policy measures that have often been advocated because of their positive effect on saving, such as pension system reform or financial sector liberalization.

This research project addresses three broad questions: Why do savings rates differ so much across countries and time periods? How much do higher savings rates contribute to growth? And what policy measures are most effective in raising national savings rates?

The project is structured in five components. The first will construct an international macroeconomic database on saving and related variables. Using new information from national accounts and household surveys, the second will seek to explain differences in saving across space and time and the link between saving and growth. The third component will focus on the effects of

specific policies on saving, using a cross-country comparative approach. The fourth will assess the savings performance of different countries to draw lessons from policy experience. The last component will provide a policy-oriented synthesis of the main results and lessons from the research.

The research methodology will be based both on relatively narrow analytical frameworks derived from intertemporal optimization and on broader models not derived from first principles but encompassing a number of alternative consumption and savings motives. Empirical applications of the analytical models will use both microeconomic and macroeconomic data. The aggregate data for the cross-country studies will be drawn from the savings database. The empirical models and data coverage will vary across studies, depending on data availability and the need to tailor the samples to the questions under investigation.

The project will contribute to Bank operational work in several ways. Clarification of what drives saving and how saving relates to growth will assist in policy diagnosis and the selection of policy targets. The quantitative assessment of the relative effectiveness of different policies in promoting saving will aid in the selection of policy tools, clarifying which instruments are likely to have the biggest effect under different circumstances. This will help to determine the priority and sequencing of reform measures. Finally, the development of empirically validated savings functions with firm analytical foundations will contribute to the formulation of country analyses, projections, and strategies.

The research findings will be disseminated to Bank country economists through a conference and a seminar on savings policies, to policymakers in developing countries through regional conferences in Latin America and Eastern Europe or the former Soviet Union, and to the broader development community through articles in Bank and academic journals and a volume of collected papers.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—Norman Loayza (Internet address nloayza@worldbank.org), Luis Servén, and Wanhong Hu, and Finance and Private Sector Development Division—Gerard Caprio; and East Asia and Pacific, Country Department II, Country Operations Division—Aart Kraay. With Klaus Schmidt-Hebbel, Central Bank of Chile; Angus Deaton and Christina Paxson, Princeton University; Faruq Kahn, Harvard University; Andrew Samwick, Dartmouth College; Patrick Honohan, Economic and Social Research Institute; Jonathan Ostry and Alejandro López, International Monetary Fund; Fabio Schiantarelli, Boston College; Peter Montiel, Williams College; Antonello Scorcu and Lucio Picci, Universitá de Bologna; Orazio Attanasio, University College of London; Carmen Reinhart, University of Public Affairs; Dani Rodrik, Columbia University; and Ijaz Nabi.

Completion date: December 1998.

The Informal Sector and Microfinance Institutions of West Africa

High population growth rates, shrinking public budgets, urban migration, and negative economic growth have all increased the demand for jobs in West Africa. This increased demand cannot be met by the formal or public enterprise sector, and the informal sector has absorbed much of the shock of the economic contraction in the region. As a result, the informal sector in West African countries is quite large, accounting for roughly a third to a half of GDP and a third to three-quarters of employment.

This study profiled the informal sector in 12 West African countries, identifying the characteristics of microentrepreneurs and their enterprises, key constraints to enterprise growth, and the types of assistance programs in place. The study also analyzed nine microfinance institutions recognized as effective and assessed their outreach and sustainability on the basis of recognized best practice.

The 12 country studies were based primarily on desk studies, with field visits to Burkina Faso, Cape Verde, Guinea-Bissau, Mali, and Mauritania to verify and update information. The nine institutional appraisals were based almost entirely on field research by Bank staff and consultants, who spent considerable time at each institution talking with managers, visiting local branches, interviewing clients, and reviewing financial data.

The country profiles confirmed that the West African informal sector is large and growing, particularly in urban areas, although the sectoral concentration in trade, services, and production varies across countries. Women are important informal sector participants in all 12 countries. Key constraints in the informal sector include saturated and stagnant markets, inadequate access to credit and savings services, weak technical skills, inadequate information, and poor infrastructure. Microentrepreneurs rely mainly on family, friends, moneylenders, and *tontines* for financial services. Microenterprise assistance programs, although numerous, are unevenly distributed throughout the region and of varying quality.

The appraisals of the microfinance institutions gave the institutions high marks for outreach, finding that most provide financial services to very poor, underserved people in remote areas. The scale of operations generally has remained small, in part because most institutions are less than five years old and in part because of the difficulties of scaling up in sparsely populated areas.

The quality of financial services offered is high: loan terms and conditions are tailored to the needs and capacities of clients; borrowers can obtain small loans using simple procedures; and requirements for loan security, character-based guarantees, collateral, and savings deposits are appropriate for local conditions. The nine institutions reviewed fare less well on indicators of sustainability. Revenues cover on average 30–40 percent of operating expenses, high administrative costs inflate transaction costs, and the expenses of employing expatriates often drain program funds.

The research raised four critical issues. First, the large size of the informal sector in West Africa indicates its importance as a major employer in the region and thus its critical role in development efforts. Second, governments could provide important support to the informal sector by creating a friendly environment for microfinance institutions. Interest rate ceilings, unnecessarily high minimum capitalization requirements, and undue restrictions on deposit mobilization undermine microfinance institutions' ability to become financially viable. Third, the research raises questions about the potential of microfinance institutions to attain financial sustainability in regions such as West Africa, where population density is low and physical infrastructure poorly developed. And fourth, the case studies raise issues about the proper role of expatriates in microfinance programs.

Responsibility: Western Africa Department, Industry and Energy Division—Silvia Sagari and Sarah Sipkins; and Private Sector Development Department—Leila Webster (Internet address lwebster@worldbank.org), Peter Fidler, Ira Lieberman, Pierre-Olivier Colleye, Ousa Sananikone, Anne-Marie Chidzero, Angela Walker, Bita Hadjimichael, Arvind Gupta, Andrew Stone, and Wilson Peiris; Africa Technical Department, Private Sector Development and Economics Division—William Steel; and West Central Africa Department, Trade and Finance Division—Peter Watson. With Simel Esim, M. Dutch, and Doug Salloum.

Completion date: August 1995.

Report:

Webster, Leila, and Peter Fidler, eds. Forthcoming. "The Informal Sector and Microfinance Institutions in Western Africa." World Bank, Western Africa Department and Private Sector Development Department, Washington, DC.

Toward a Payment System Law for Developing and Transition Economies

At particular stages of financial sector development, converting the traditional, manually processed payment system into an electronic fund transfer system supports sound financial market development by improving the certainty and timeliness of payments. When a party transforms, through electronic means, its claim against a bank into another party's claim against a bank, the product of wire transfer processing is a distinctly legal concept. One of the World Bank's tasks in helping client countries develop wire transfer systems is to provide technical advice on setting up the legal framework governing payment transactions.

This study examined the interactions among the main pillars of law that should govern large-value credit transfer systems, focusing on the essential principles of the U.S. legal regime for such systems. It also examined the legal foundations of large-value credit transfer systems and the importance of certainty, efficiency, and fairness in fund transfer law. In the context of a case study it discussed five key legal rules: a rule defining the scope of the law; a rule establishing when the rights and obligations of parties to a fund transfer are triggered; a receiver finality rule; a rule assigning liability for interloper fraud; and a money-back guarantee rule, coupled with provisions on discharge. Finally, it identified strategic concerns affecting the drafting of a fund transfer law.

Responsibility: Financial Sector Development Department—Setsuya Sato (Internet address ssato1 @worldbank.org). With Raj Bhala, College of William and Mary.

Completion date: September 1995.

Report:

Bhala, Raj. 1995. *Towards a Payments System Law for Developing and Transition Economies.* World Bank Discussion Paper 299. Washington, DC.

Financial Structures and Development

Countries differ in financial structure (types of financial instruments and financial institutions) and in the size of the financial sector relative to the economy. But how do financial systems change as economies develop? This research measured and studied the evolution of financial structures in a sample of 48 industrial and developing countries over the past three decades.

The purpose of the research was to document how financial structures differ across countries and how they evolve with economic development. To allow a comparison of financial structures at different benchmark dates, the study compiled a data set on financial institutions for each country in the sample through time. Data were collected on assets of different types of financial intermediaries—central banks, deposit money banks, nonbank financial institutions, insurance companies and pension funds, and development banks. Where

possible, distinctions were made between private and public ownership and between domestic and foreign ownership.

The research documented that, moving from poorer to richer economies, the size of the financial system increases; the role of the central bank diminishes, while the importance of commercial banks, nonbank financial institutions, and stock markets grows; and the financial system allocates more credit to the private sector as a share of GDP. Further, the data support the view that at low levels of development commercial banks are the dominant financial institutions. But as economies grow, specialized financial intermediaries and equity markets develop and prosper.

The results of the study should help country economists diagnose anomalies in their countries' financial systems compared with countries at similar levels of economic development. Future work in this area will investigate how differences in financial structure affect economic growth, at both macro and micro levels.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Asli Demirgüç-Kunt (Internet address ademirguckunt @worldbank.org) and Ross Levine. With Bo Wang.

Completion date: December 1995.

Report:

Demirgüç-Kunt, Asli, and Ross Levine. 1996. "Stock Markets, Corporate Finance, and Economic Growth: An Overview." *World Bank Economic Review* 10(2):223–39.

Clearance and Settlement Systems for Securities: Critical Design Choices in Emerging Market Economies

Between 1989 and 1995 various public and private sector groups issued six major reports addressing risk and efficiency issues in clearance and settlement. These reports have largely shaped the clearance and settlement process, which ensures stable and efficient financial markets. In particular, the recommendations in the Group of Thirty's 1989 report for nine basic improvements in clearance and settlement practices have since become critical benchmarks for both domestic and international securities markets.

Many markets, however, continue to be plagued by serious settlement problems, including delays in processing transactions, high transaction and financing costs, poor information, uncertain legal conditions, and significant credit and liquidity risks. If securities markets are to be an efficient and safe channel for attracting and mobilizing capital, market participants and government officials need to continue to work toward improving clearance and settlement practices.

This research project addressed three fundamental questions: Why is the clearance and settlement process important? What are the basic institutional characteristics and transaction flows involved in the clearance and settlement of securities? And what are the key structural and functional aspects of a securities clearing organization?

The research focused on the clearance and settlement of debt and equity instruments between broker-dealers and between broker-dealers and their institutional customers. It also examined structural and institutional issues that appear to be critical for a well-functioning clearance and settlement process. Although the research focused primarily on the experience in the United States, it also reviewed alternative institutional and functional arrangements for clearing and settling securities transactions.

Responsibility: Financial Sector Development Department—Setsuya Sato (Internet address ssato1 @worldbank.org). With Jeff Stehm, U.S. Federal Reserve System.

Completion date: April 1996.

Report:

Stehm, Jeff. 1996. *Clearance and Settlement Systems for Securities: Critical Design Choices in Emerging Market Economies.* World Bank Discussion Paper 321. Washington, DC.

Bank Insolvency

The World Bank and other multilateral development institutions regularly become involved when banking systems are in financial distress, yet little research has been done to investigate the associated problems. This research addressed the issue of bank insolvency: Does it matter? What should happen when banks are insolvent? And when do bank crises become systemic?

If banking crises are important events, it is crucial to know what produces them, why determining causality in this area is so difficult, and what kind of indicators predict their occurrence or at least should put authorities on the alert. This study investigated these issues, developed criteria for judging the success with which countries have handled bank insolvency, graded the countries in its sample, and reviewed cases illustrating more and less successful responses. The study compiled data for this research from Bank reports and other documents in the public domain, and through interviews with financial sector experts familiar with the insolvency episodes that have occurred since the mid-1970s.

The findings reveal that both macroeconomic and microeconomic factors have been important causes of bank insolvency and that few governments have handled

bank insolvency well. In the more successful cases governments adopted regulatory frameworks providing more appropriate incentives.

Further research is planned that will focus on the political economy of how governments deal with bank insolvency. That research will focus on case studies of more and less successful episodes to develop lessons for policymakers and Bank officials on how best to handle insolvency and what indicators to look for in deciding when reforms are likely to be effective.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Gerard Caprio (Internet address gcaprio@worldbank.org) and Philip Keefer.

Completion date: June 1996.

Report:

Caprio, Gerard, and Daniela Klingebiel. 1996. "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking?" In Michael Bruno and Boris Pleskovic, eds., *Proceedings of the World Bank Annual Conference on Development Economics 1996.* Washington, DC: World Bank.

Saving in Colombia

During 1990–94 Colombia undertook structural reforms in foreign trade, foreign investment, labor markets, financial markets, and public utilities. The reforms were meant to foster growth. But they were accompanied by a significant decline in private saving and an increase in public consumption. Given the links between growth and saving, that called into question the success of the structural reforms in fostering growth.

This research assessed the effect of the structural reforms on private and national saving and investigated whether the apparently low level of private saving in the 1990s might merely reflect data inadequacies. The research was based on the Colombian national accounts, which have been constructed since 1950.

Because the national accounts were constructed during 1950–69 using a different methodology than that adopted in 1970, the study first constructed a consistent national accounts database starting in 1950. It also adjusted the database to correct for some of the inadequacies of the Colombian national accounts. Taking advantage of this new and consistent data set, the study estimated several consumption functions. It extended the traditional permanent income hypothesis to capture possible misspecifications such as financial liberalization, income uncertainty, nonseparability in the utility function between private and public consumption, and the effects of demographic changes.

The study found that the sharp drop in private saving in the 1990s is a result of a decline in private disposable income and, to a lesser extent, of consumption growth. Private disposable income has been steadily declining since the 1950s because of tax increases, and the trend strengthened in the early 1990s because of a reduction in the gross operating surplus of corporations. Contrary to the usual hypothesis, the research showed that until 1993 the trade reform did not cause a stock adjustment of durable goods, so the behavior of durable goods cannot be blamed for the decline in the private savings rate. And it showed that private consumption has had a relatively small effect on national saving, and financial liberalization only a weak effect on the growth of consumer spending. The study showed that the main determinants of private consumption are income, precautionary saving, public consumption, and real interest rates, which have a large negative effect on private consumption. Public consumption seems to complement household spending. As a consequence, given the large increases in wages in the judicial and military sectors in the 1990s, its negative effect on national saving was reinforced.

The research showed that the national savings rate, adjusted by capital gains, remained constant in the 1990s despite the decline in the private savings rate. But it could have been higher with stricter fiscal and monetary policies. In the early 1990s monetary policy led to negative real interest rates, and public consumption rose by 5 percent of GDP during the first part of the decade.

Responsibility: Latin America and the Caribbean, Country Department III, Country Operations Division 1—Ernesto May (Internet address emay@worldbank.org). With Alejandro López; Carolina Gómez; Martha Misas; Hugo Oliveros; Norberto Rodríguez; and Banco de la República, Bogotá, Colombia.

Completion date: June 1996.

Reports:

López, Alejandro. 1996. "Savings and Structural Reforms in Colombia in the 1990s: Basis for New Quantitative Work." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

_____. 1996. "Why Did Colombian Private Saving Decline in the Early 1990s?" World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

López, Alejandro, Carolina Gómez, and Norberto Rodríguez. 1996. "La Caída de la Tasa de Ahorro en los Años Noventa: Evidencia a Partir de una Base de Datos para el Período 1950–93." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC, and Banco de la República, Bogotá, Colombia.

López, Alejandro, and Ernesto May. 1995. "Colombia Case Study." In Klaus Schmidt-Hebbel and Luis Servén, eds., "Saving in the World: Puzzles and Policies." Vol. 2. World Bank, Policy Research Department, Washington, DC.

López, Alejandro, Martha Misas, and Hugo Oliveros. 1996. "Understanding Consumption in Colombia." World Bank, Latin America and the Caribbean, Country Department III, Washington, DC, and Banco de la República, Bogotá, Colombia.

Finance and Growth

Is the financial system important for economic development? This research critically reviews and synthesizes the literature on the links between financial systems and economic development.

Although important debate continues, the research finds strong conceptual and empirical support for the view that financial systems influence economic development in significant ways. Financial systems mobilize savings, evaluate firms and allocate capital based on those evaluations, exert corporate governance, facilitate risk management, and ease transactions. Economies with financial systems that efficiently and abundantly supply these functions have stronger growth prospects. And evidence suggests that countries with larger banking systems and more liquid stock markets enjoy faster capital accumulation rates, larger productivity gains, and quicker overall growth rates than countries with less developed financial systems.

On the policy front, financial economists' opinions on financial repression are converging. Because the financial system serves important functions for the nonfinancial sectors of the economy, many financial economists argue against financial repression—taxes, interest rate controls, and directed credits. Much greater policy debate continues on issues of what constitutes sound supervisory and regulatory policies.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Ross Levine (Internet address rlevine@worldbank.org).

Completion date: December 1996.

Reports:

Levine, Ross. 1994. "Government Insurance and Financial Intermediaries: Issues of Regulation, Evaluation, and Monitoring." In Shakil Faruqi, ed., *Financial Sector Reforms, Economic Growth, and Stability: Experiences in Selected Asian and Latin American Countries.* Washington, DC: World Bank.

_____. 1995. "Does the Financial System Matter?" In Monica Aparicio and William Easterly, eds., *Economic Growth: Theory, Institutions, and International Experience.* Bogotá: Banco de la Republica, in cooperation with the World Bank.

_____. 1996. "Financial Development and Economic Growth: Issues and Agenda." World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Financial Functions, Institutions, and Growth." In A. Harwood and B. Smith, eds., *Sequencing Financial Sector Development and Reform: Major Themes and Issues.* Washington, DC: The Brookings Institution.

_____. 1996. "Foreign Banks, Financial Development, and Economic Growth." In Claude Barfield, ed., *International Trade in Financial Services.* Washington, DC: American Enterprise Institute.

_____. 1996. "Unresolved Issues in the Relationship between Finance and Development." In N. Hermes and R. Lensing, eds., *Financial Development and Economic Growth: Theory and Experiences from Developing Countries.* London: Routledge.

Internationalization of Emerging Capital Markets: Cross-Country Experience

This study explores the following questions: What are the major characteristics of emerging capital markets that have recently been internationalized? Did the market opening help or hurt domestic market performance? And what are the policy lessons for developing countries that have not yet fully liberalized their capital markets?

The study assesses changes in key market indicators before and after the market opening, using data from the International Finance Corporation's Emerging Markets Database and specific country and market data sources in 10 emerging market economies. Preliminary results suggest that most of these emerging capital markets saw their performance improve after the liberalization of foreign investment.

The study's findings provide further support for Bank operations in capital market development. The cross-country experience documented in the study should facilitate Bank policy dialogue with developing countries that have not yet implemented market liberalization programs.

Responsibility: International Economics Department, International Finance Division—Kwang W. Jun (Internet address kjun@worldbank.org). With Amitava Sardar, Columbia University.

Completion date: December 1996.

Report:

Jun, Kwang W., Amitava Sardar, and Gary Kleiman. 1996. "Internationalization of Emerging Capital Markets: Cross-Country Experience." World Bank, International Economics Department, Washington, DC. Draft.

Deposit Insurance

Most countries provide some form of protection for bank deposits. Arrangements for deposit insurance vary in design. There are formal systems that guarantee deposits explicitly. And there are implicit systems—

where participants take it for granted that the government will step in if there is a crisis. Explicit systems vary in their coverage, in their membership type (voluntary or mandatory), in their funding and premium structure, and in their management. Some but not all deposit insurance institutions are responsible for supervising the institutions they insure. While most policymakers consider deposit insurance a stabilizing tool that spares countries from banking crises, a growing literature emphasizes the destabilizing effects of deposit insurance systems, which end up exacerbating the crises that the systems were meant to prevent.

This research will analyze the impact of deposit insurance systems empirically and theoretically. The empirical work will seek to provide evidence on the links between deposit insurance schemes of different types and the stability of the financial system. Looking at cross-country data, the research will investigate whether having a certain type of deposit insurance scheme makes banking crises more likely, recovery more difficult, and recurrence unavoidable. To the extent that data are available, the research also will investigate the impact of deposit insurance on bank efficiency and riskiness.

The theoretical part of the research will synthesize the considerable existing work on deposit insurance and reach a policy conclusion on the optimal design of deposit insurance schemes. Given the amount of policy advice the Bank provides on deposit insurance and the lack of consensus in this area, the results of the project will be very relevant for operations.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Asli Demirgüç-Kunt (Internet address ademirguckunt @worldbank.org). With Edward Kane, Boston College.

Completion date: December 1997.

Sustainable Banking with the Poor

This research project aims at improving the ability of donors, governments, and practitioners to design and implement policies and programs for building sustainable financing institutions that are effective in reaching the poor. The project is carrying out a series of case studies of microfinance institutions in Asia, Africa, and Latin America that have pioneered innovative approaches for reducing the costs and risks of providing financial services to a large number of low-income clients. The case studies cover a wide range of types of institutions, including commercial banks, specialized banks, nongovernmental organizations, nonbank financial institutions, and government development finance institutions.

The project draws on several disciplines—economics, finance, anthropology—and uses both quantitative and qualitative approaches to analyze why some programs have successfully delivered financial services to the poor while others have fallen short. Success is defined by financial sustainability and by access and outreach. Financial sustainability is measured in terms of key financial performance indicators, including the Subsidy Dependence Index widely used in the Bank. Access and outreach are measured by assessing how far beyond the "frontier of finance" a program has gone to reach those who have been unable to use formal financial services—whether because of gender, income, illiteracy, ethnic identity, geographic location, or lack of collateral.

On the basis of the case studies, the project will produce a sourcebook on sustainable banking with the poor that will distill lessons for policy formulation, program design, and implementation. In collaboration with the Consultative Group for Assisting the Poorest (CGAP), the project also is producing two guides on microfinance. The first is a practical guide designed to assist Bank task managers in the design and implementation of microfinance activities. It presents a step-by-step approach to designing a microfinance loan or loan component, and extensive advice on such nonlending activities as policy dialogue and technical assistance. The second is a technical guide targeted to a much wider audience, including client country governments, financial institutions, donor agencies, and practitioners. It offers a comprehensive overview of the main issues in microfinance and an update on the lessons learned and best practices in the field. The guides should be available in November 1996.

The project has established a seminar series to disseminate best practice and to discuss issues and problems emerging in the rapidly growing field of microfinance. Thus far it has held 15 seminars.

Responsibility: Asia Technical Department, Human Resources and Social Development Division—Lynn Bennett (Internet address lbennett@worldbank.org) and Laura Gomez; and Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Jacob Yaron and Carlos Cuevas. The Royal Ministry of Foreign Affairs, Norway; the Swiss Development Cooperation; and the Ford Foundation are providing funding for the research.

Completion date: December 1997.

Reports:

Bennett, Lynn, and Carlos Cuevas, eds. 1996. *Journal of International Development* 8(2). Special issue on sustainable banking with the poor.

World Bank. 1996. "A Worldwide Inventory of Microfinance Institutions." Agriculture and Natural Resources Department and Asia Technical Department. Washington, DC.

TRANSITION ECONOMIES

Enterprise Behavior and Economic Reform: A Comparative Study in Central and Eastern Europe

Ref. no. 676-99C

Hungary, Poland, and the former Czechoslovakia have been undertaking bold and rapid reforms as they move toward market economies based on private property rights. Crucial to the success of these reforms have been how rapidly industrial enterprises are privatized, how they respond to changing incentives, and what happens to their productivity and efficiency. This project was designed to provide a better understanding of industrial performance and enterprise behavior and their relationship to the changing regime of property rights during the reforms.

The project had several objectives: to follow the progress of the economic reforms in Czechoslovakia (later, in the Czech and Slovak Republics), Hungary, and Poland by monitoring industrial performance at the firm level; to relate firm-level characteristics to performance to gauge the impact of reforms on enterprise behavior; to provide timely advice and feedback from policy analysis to World Bank operational departments; and to strengthen the analytical and policymaking capacities of key government agencies and collaborating research institutes.

The project collected large quantities of firm-level data for 1990–92 from collaborating institutions in each country, which provided access to longitudinal data for all registered firms, and through surveys. The project also conducted two sets of case studies of firms. The first, covering 12–15 enterprises in each country, focused on decisionmaking and institutional factors. The second set, about 40 case studies, focused on change in corporate governance and ownership and its impact on firm behavior.

At a broader level the project used the firm-level data to explore thematic areas relating to enterprise adjustment and behavior in the industrial sector during the transition. Some findings are summarized in the following paragraphs.

Employment, wages, and labor market adjustment. Unemployment is high in all four countries and appears to be persisting despite an upturn in output. Real wages have been rising, reflecting in part growth in labor productivity, which in several countries has reached new highs. The effects of the transition to a market economy are evident in the wage differentiation by region, by industry, and by form of enterprise ownership. But wage differentiation has been insufficient to encourage the formation of appropriate human capital, with firms preferring to rely on the skills of older workers rather than to hire new, lower-skilled workers; this has led to a concentration of unemployment and low-wage jobs among young job-seekers. In several countries wage differentials reflecting differences in skills or in productivity have been constrained by nationwide wage scales and wage controls, such as the *popiwek* in Poland. The role of unions in retarding layoffs or setting wage and employment conditions has been surprisingly limited even in Poland, where the politically influential unions were expected to play a major role.

Enterprise behavior and productivity. Firms have continued to restructure successfully—even those still under state ownership—as evidenced by increases in factor productivity, firms' restructuring of production, and their efforts to find new markets and maintain existing ones. Yet firms' ability to cope with the rapid change and uncertainty has depended in large part on the nature of ownership. Privatization—or even the prospect of privatization—is enough to induce managers to respond strategically to changes in their firm's environment.

Labor productivity has recovered—and even surpassed earlier record levels—as a result of several factors: continued gradual labor shedding, the adjustment of input use to reflect new relative prices, and the movement of resources toward higher-productivity sectors and firms. Ownership has been a positive factor in labor shedding, with managers responsive to owners' desires for higher profits.

In addition to changing input utilization, firms have adjusted their output mix and their marketing strategies. These adjustments are necessitated in part by change in domestic demand—in the mix and quality of goods demanded—and in export demand, with the shift toward Western markets. One way firms have responded is by introducing new products. Firms have also adjusted their marketing strategies in response to changes in distribution channels. Wholesale distribution channels have collapsed, and retail networks, al-

though mostly privatized, lack the liquidity to fully substitute for the wholesale networks. Thus industrial firms' marketing staffs and expenses are growing, a trend that will continue as they expand efforts to penetrate Western markets.

Industrial growth and job creation. Manufacturing output is starting to grow, with growth in output and employment remarkably strong in newly established private manufacturing firms compared with both state-owned and privatized firms. While new firms are fundamentally different from state and privatized firms, the differences between state-owned and formerly state-owned firms are much less marked.

A useful approach in analyzing recovery and growth in transition economies is to look at gross job flows, or job creation and job destruction. In Poland the study found that job creation rates in state-owned industry both before and after the start of transition were comparable to those in Western countries, whereas, not surprisingly, the job destruction rate during the transition has been quite high. In industry the private sector (dominated by new private firms) is much more dynamic than the state sector, with higher rates of both job creation and job destruction. And small firms are more dynamic than large firms, among both state and private firms. Thus the observed dynamism of the private sector may result from size effects—small firms are abundant in the private sector—as well as from ownership effects.

Investment also has started to recover. Preliminary findings show that investment-output ratios are higher in privatized and new private firms than in state-owned firms.

Financial performance, credit, and hard budget constraints. A useful way to frame the investigation of firms' relationship with the three main categories of creditors—suppliers, banks, and government—is in terms of stocks and flows. The "stock question" is, How are credits distributed? Are they concentrated in certain types of firms, such as financially distressed firms? The "flow question" is, How are credits now being allocated? Are large loss-makers cut off from trade credits, bank credits, or government subsidies, including tax arrears?

Determining whether stock problems, flow problems, or both exist is important for policymaking. Policies that impose a stock solution without dealing with a flow problem or ensuring that there is none—for example, working out bad debts to banks while continuing to grant soft credits—will cause the stock problem to recur as the flows build up again. And imposing a flow solution when there is only a stock problem can exacerbate rather than improve the situation.

Preliminary findings provide conflicting evidence on the existence of a stock problem in Hungary and Poland. Although the volumes of both total and overdue trade credit are not unusually large by Western standards, the credits appear to be concentrated in highly unprofitable or indebted firms. But the findings also suggest that there is no serious flow problem: firms do not continue to ship to customers that fail to pay.

The project also made some progress in understanding the stock and flow issues relating to bank credit. It found that bank debt is significantly more concentrated in financially distressed firms in Poland than in Hungary and that such firms hold a disproportionately large share of bank credit. In Hungary, by contrast, not only are unprofitable firms not receiving large flows of cash from banks, cash flow is actually going from these firms to the banks. And in Poland new private firms are not, on average, "starved" of bank credit, as some analysts had feared they might be.

Transition economies in Central and Eastern Europe generally have been successful in cutting subsidies to firms. But the "soft budget" has reappeared through tax arrears. In Hungary and Poland tax arrears are concentrated in firms in serious financial distress, and these firms are continuing to accumulate tax arrears. The project's results suggest that governments in transition economies tolerate tax arrears for financially distressed firms because these firms, able to cover their basic wage costs and payments to suppliers, are generating positive value added and because reallocation of their labor and capital would be slow, making their bankruptcy and closing down costly in the medium term.

Corporate governance and privatization. Complex forms of ownership are emerging in transition economies. For example, the state often continues to hold an important ownership stake in formerly state-owned firms, usually through a state property agency. In some cases its role as owner is magnified by the holding of "golden shares" that provide a disproportionate say in corporate affairs. In other cases privatization results in large blocks of shares being held by banks or their investment funds, by the firm's workers, or by other firms. Such patterns of holdings are not necessarily undesirable, but they nevertheless have implications for how owners organize and carry out their role.

There is similar ambiguity for new private firms. Many are spun off from, or are subcontractors to, large state-owned firms, and managers from the state-owned firms often figure prominently among their founders and owners. A surprising finding from the Polish survey data is the high market shares reported by small new private firms, but this result is understandable when it is recognized that their "market" is the single large state-owned firm to which they sell.

Early findings demonstrate the important consequences of such governance issues as well as striking intercountry differences. The balance of power between

insiders and outsiders changes with the economic fortunes of the firm. For example, the greater reliance on foreigners for privatization in Hungary than in the Czech Republic has led to important differences in the ability of outsiders to establish control, as evidenced by the ouster of foreign owners or managers from several Czech firms. The role of banks, the government, and other firms—as de jure owners, or as de facto stakeholders by virtue of loans to the firm or of payment of tax arrears—also has an important bearing on managerial autonomy.

The first phase of this initially two-phase project has been completed. The second phase is not likely to go forward because of the closing of the Transition Economics Division.

The project has generated more than 50 papers and two books on case studies. Two edited volumes of selected articles from the project also are planned. In addition, a workshop on enterprise adjustment and behavior in Eastern Europe was held at the Bank in September 1994 to present findings from the research.

Responsibility: Policy Research Department, Transition Economics Division—Inderjit Singh (Internet address ijsingh@worldbank.org). With Marek Belka, Polish Academy of Sciences; Zygmut Bienko, Polish Statistical Office; Joseph Brada, Arizona State University; John Bonin, Wesleyan University; Saul Estrin, London Business School; Jan Fischera, Czech Statistical Office; Stanislaw Gomulka and Mark Schaffer, London School of Economics; Milutin Kristofic, Slovak Statistical Office; Jana Matesova, Czech Management Center; Jan Svejnar, University of Pittsburgh and CERGE/EI; and Adam Torok, Hungarian Academy of Sciences. Collaborating in the project were the Research Center of Central Planning and the University of Lodz, Poland; Research Institute of Industrial Economics at the Hungarian Academy of Sciences, Hungary; Center for Economic Research and Graduate Education (CERGE) at Charles University and the Czechoslovak Management Center, Czech Republic; London Business School; Universidade Catolica Portuguesa, Portugal; and Reforme et Ouverture des Systemes Economiques (post) Socialistes at the University of Paris. The central statistical offices of the Czech Republic, Hungary, Poland, and the Slovak Republic collaborated in providing data, and the Japanese Grant Facility and the government of Portugal contributed funding.

Completion date: June 1996.

Reports:

Belka, Marek, Mark Schaffer, Saul Estrin, and Inderjit Singh. 1994. "Evidence from a Survey of State-Owned, Privatized, and Emerging Private Firms." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Bonin, John, and Mark Schaffer. 1994. "Banks, Firms, Bad Debts, and Bankruptcy in Hungary: 1991–94." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Brada, Josef C. 1993. "Breaking Up Is Hard to Do: The Economics of Creating Independent Czech and Slovak Republics."

_____. 1994. "The Transformation from Communism to Capitalism: How Far? How Fast?"

Brada, Josef C., and Arthur E. King. 1992. "Sequencing Measures for the Transformation of Socialist Economies to Capitalism: Is There a J-Curve for Economic Reforms?" *Economics of Planning* 25(1):37–53. (Also in K. Poznanski, ed., *Stabilization and Transformation of the Polish Economy*, Boston: Kluwer, 1993.)

Brada, Josef C., Arthur E. King, and Chia Ying Ma. 1993. "Industrial Economics of the Transition: Determinants of Enterprise Efficiency in Czechoslovakia and Hungary."

Brada, Josef C., and A.M. Kutan. 1994. "Enterprise Responses to Price and Output Shocks in Transitioning Economies: The Case of the Czechoslovak Machine Building Sector."

Brada, Josef C., and Inderjit Singh. 1994. "Transformation and Labor Productivity in Central and Eastern Europe." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Brada, Josef C., Inderjit Singh, and Adam Torok. 1994. *Firms Afloat and Firms Adrift: Hungarian Industry and the Economic Transition*. Armonk, N.Y.: M.E. Sharpe.

Estrin, Saul, Josef C. Brada, Alan Gelb, and Inderjit Singh, eds. 1995. *Restructuring and Privatization in Central and Eastern Europe: Case Studies of Firms in Transition*. Armonk, N.Y.: M.E. Sharpe.

_____. Forthcoming. *The Adjustment of Firms to the Transition from Plan to Market*. Armonk, N.Y.: M.E. Sharpe.

Estrin, Saul, Alan Gelb, and Inderjit Singh. 1993. "Restructuring, Viability, and Privatization: A Comparative Study of Enterprise Adjustment in Transition."

_____. 1994. "Shocks and Adjustment by Firms in Transition: A Comparative Study." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Estrin, Saul, Alan Gelb, and Inderjit Singh, guest eds. 1993/94. "Eastern European Enterprises in Transition I and II." *Eastern European Economics* (Armonk, N.Y.) 31(5 and 6).

Estrin, Saul, Mark Schaffer, and Inderjit Singh. 1993. "Enterprise Adjustment in Transition Economies: Czechoslovakia, Hungary, and Poland." *MOCT/MOST* (November). (Also presented at the IMF/World Bank Conference on the Macroeconomic Situation in Eastern Europe, Washington, DC, June 4–5, 1992.)

_____. 1994. "The Provision of Social Benefits in State-Owned, Privatized, and Private Firms in Poland." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23. (Also forthcoming in *Social Protection and the Enterprise in Transitional Economies*,

London: Centre for Economic and Policy Research.)

Estrin, Saul, and Lina Takla. 1992. "Reform in Yugoslavia: The Retreat from Self-Management." In J. Selfires, ed., *Industrial Reform in Eastern Europe*. Blackwell.

_____. 1994. "Enterprise Adjustment in Transition: Does History Matter?" Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Gomulka, Stanislaw. 1991. "The Causes of Recession Following Stabilization." *Comparative Economic Studies* 32(2).

_____. 1992. "Economic Reforms in Poland, 1989–91: Aims, Policies, and Outcomes." In A. Clesse and R. Tokes, eds., *Preventing a New East-West Divide: The Economic and Social Imperatives of the Future Europe*. Baden-Baden: Nomos.

_____. 1992. "Economic, Social, and Political Problems in Economic Transformation: The Case of Poland, 1989–91."

_____. 1992. "Polish Economic Reform: Principles, Policies and Surprises." In M. Keren and G. Ofer, eds., *Trials and Transition: Economic Reform in the Former Communist Bloc*. Western Press. (Also published in *Cambridge Journal of Economics* (16):355–72, September 1992.)

_____. 1993. "On the Design of Economic Policy: The Challenge of Eastern Europe." In Horst Siebert, ed., *Economic Growth in the World Economy*. Tübingen: J.C.B. Mohr.

_____. 1994. "Budget Deficit and Inflation in Transition Economies." In V. Barto and M. Schneider, eds., *Stabilization Policies at Crossroads?* Luxembourg: IIAS.

_____. 1994. "Economic and Political Constraints during Transition." *Europe-Asia Studies* 46(1):89–106.

_____. 1994. "The Financial Situation of Enterprises, and Its Impact on Monetary and Fiscal Policies: Poland, 1992–93." *Economics of Transition* 2(2). (Also presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.)

_____. Forthcoming. "The Puzzles of Fairly Fast Growth and Rapid Collapse under Socialism." In H. Park and D. Perkins, eds., *Economic Growth and Social Capability*. New York: Macmillan.

Gora, Marek. 1993. "Industrial Employment Adjustment during Transition: The Case of the Polish Industry."

Hlavacek, Jiri, and Tomas Jandik. 1993. "Generalized Problem of a Producer: A Theory of the Behavior of Firms in Economies in Transition."

Johnson, Simon. 1992. "Private Business in Eastern Europe."

_____. 1993. "Ukraine on the Brink of Hyperinflation."

Johnson, Simon, and Santiago Eder. 1992. "The Prospects of Privatization in the Ukraine."

Johnson, Simon, Heidi Kroll, and Santiago Eder. 1994. "Strategy, Structure, and Spontaneous Privatization." In Vedat Milor, ed., *The Political Economy of Privatization and Public Enterprise in Post-Communist and Reforming Communist States*. Boulder, Colo.: Lynne Rienner.

Johnson, Simon, Heidi Kroll, and Mark Horton. Forthcoming. "New Banks in the Former Soviet Union: How Do They Operate?" In Anders Aslund and Richard Layard, eds., *Reforming the Russian Economy*.

Johnson, Simon, and Oleg Ustenko. 1993. "The Road to Hyperinflation: Economic Independence in the Ukraine, 1991–93."

Jorgensen, Erika A., Alan Gelb, and Inderjit Singh. 1992. "The Behavior of Polish Firms after the 'Big Bang': Findings from a Field Trip." In Arye Hillman and Branko Milanovic, eds., *Transition from Socialism in Eastern Europe: Domestic Restructuring and Foreign Trade*. Washington, DC: World Bank.

Kotrba, Josef, and Jan Svejnar. 1994. "Rapid and Multifaceted Privatization: Experience of the Czech and Slovak Republics." *MOCT-NOMISMA* 4(May):147–85.

Lehmann, Hartmut, and Mark E. Schaffer. Forthcoming. "Productivity, Employment, and Labor Demand in Polish Industry in the 1980s: Some Preliminary Results from Enterprise-Level Data." *Economics of Planning*.

Lizal, Lubomir, Miroslav Singer, and Jan Svejnar. 1994. "Manager Interests, Breakups, and Performance of State Enterprises in Transition." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Richet, Xavier, and Saul Estrin. Forthcoming. "Industrial Restructuring and Microeconomic Adjustment in Poland: A Cross-Sectoral Approach." *Comparative Economic Studies*.

Schaffer, Mark E. 1992. "The Polish State-Owned Enterprise Sector and the Recession in 1990." *Comparative Economic Studies* 34(spring):58–85.

_____. 1993. "The Enterprise Sector and Emergence of the Polish Fiscal Crisis, 1990–92." Policy Research Working Paper 1195. World Bank, Policy Research Department, Washington, DC. (Also forthcoming in *Economica*.)

Singh, Inderjit. 1991. "China and Central and Eastern Europe: Is There a Professional Schizophrenia on Socialist Reform?"

_____. 1991. "Industrial Restructuring in Socialist Economies in Transition: Some Preliminary Observations."

Singh, Inderjit, and Alan Gelb. 1991. "Public Enterprise Reforms in Transitional Economies."

Spinnewyn, Frans, and Jan Svejnar. 1993. "Worker Power, Surplus Sharing, and the Wage-Employment Outcome in Transitional Economies."

Svejnar, Jan. 1994. "Employment and Wage Behavior of Enterprises in Transition." Paper presented at workshop, Enterprise Adjustment in Eastern Europe, World Bank, Washington, DC, September 22–23.

Svejnar, Jan, and Miroslav Singer. 1994. "Using Vouchers to Privatize an Economy: The Czech and Slovak Case." *Economics of Transition* 2(1):43–69.

Torok, Adam. 1993. "Hungarian Industry and the Economic Transition: A Survey."

Viszt, Erzsébet, and Judit Ványai. 1993. "Employment and the Labor Market in Hungary."

Zieleniec, Josef, and Jiri Hlavacek. 1993. "Behavior of a Producer in Transitional Economies."

Impact of Market-Oriented Policy Reforms on Households in Rural China

Ref. no. 677-16

In the 1980s China dismantled the commune system, in which land was communally owned and farmed, and replaced it with the household responsibility system, in which land is leased to and worked by individual households. In the early 1980s agricultural production increased dramatically. No further large increases are expected, however, as it appears that the gains from this new policy have now been reaped.

This research project intends to obtain answers to the following questions: What are the main determinants of the productivity of agricultural households in rural China? Would removal of restrictions on factor markets (credit, labor, and land) produce further increases in agricultural output? How has the household responsibility system affected income distribution, and what are the principal determinants of the variation in incomes across rural households in China?

Answering these questions requires detailed household-level information, data that are rare for China. This project collected data from about 1,000 households in 30 villages in Hebei and Liaoning provinces in the summer of 1995. The research will be based on microeconomic models of rural household behavior.

The results are expected to shed light on two broad policy questions. First, what would be the effect on productivity of further liberalization of the rural economy (that is, ending restrictions on hiring of labor, private provision of credit, and buying, selling, and renting of land)? And second, what avenues are available for further reducing poverty in rural China?

Responsibility: Policy Research Department, Poverty and Human Resources Division—Paul Glewwe (Internet address pglewwe@worldbank.org). With Loren Brandt, University of Toronto; and Scott Rozelle, Stanford University. The National Academy of Sciences, United States, and the International Development Research Centre, Canada, are providing funding.

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Study of Land Reform and Farm Restructuring in Russia

Ref. no. 678-58C

In Russia, as in many of the former Soviet republics, farm restructuring is proceeding under the share system. Participants in the reform program (workers, pensioners, and other rural residents) receive a paper share of land and farm assets and then must decide what to do with the shares during further reorganization. Options include leaving the collective farm or joining with others to form a business with the assets of the former farm.

This study evaluated changes in asset ownership, farm structure, and producers' behavior resulting from farm restructuring in Russia. The study consisted of a second round of survey work, following a first round conducted at the end of 1992. The survey included about 2,500 farm managers, farm employees, and private farmers in five provinces of Russia. The second round, conducted in early 1994, resampled some of the participants in the first round, but most of those it surveyed were new to the study.

The study evaluated macroeconomic and sectoral developments that affect the performance of farms. It also looked at changes in the legal framework for land reform through early 1996.

The first round of the study showed that the reform program had not achieved substantial restructuring of state and collective farms, even though most farms had registered under one of the new forms of enterprise. The second study confirmed that little substantive restructuring has taken place. Implementation of the share system alone appears to be insufficient to achieve change in farm structure or behavior. Problems impeding further restructuring include lack of understanding of how to move beyond distribution of paper shares, an inhospitable macroeconomic environment, poor sectoral incentives, and lack of start-up capital for new businesses.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Karen Brooks (Internet address kbrooks @worldbank.org). With Zvi Lerman, Hebrew University. The Agrarian Institute, Russia, contributed staff time and data.

Completion date: December 1995.

Report:

Brooks, Karen, Elmira Krylatykh, Zvi Lerman, Aleksandr Petrikov, and Vasilii Uzun. 1996. *Agricultural Reform in Russia: A View from the Farm Level.* World Bank Discussion Paper 327. Washington, DC.

The Dynamics of Poverty in Rural China

Ref. no. 678-79

Panel data (data tracking the same households over time) for developing countries are rare. Yet the need for such data is great for a number of reasons. The vagaries of rain-fed agriculture bring issues of risk and transient poverty to the fore, and transient poverty is also an

important issue in the economic transition and adjustment that many of these countries have been undergoing. Conventional data are less than ideal for informing policy decisions in such settings.

This project has constructed a large new panel data set for four provinces of rural China from a time series of household surveys from 1985 to 1990. Conducted by China's State Statistical Bureau, these surveys repeatedly resampled a large number of households. The four provinces selected range from a prosperous coastal region (where reforms have brought rapid gains) to far less prosperous, lagging inland areas. The data appear to be of good quality by prevailing standards.

The data have allowed investigation of many research issues. In addition to creating the data set, the project has focused on an important subset of these issues. In particular, it has investigated the dynamics of poverty in rural China during 1985–90; the determinants of both the persistent and the transient components of household consumption; and the performance of public and private arrangements for poverty relief, and the implications of that performance for future antipoverty policies. This research is the first systematic investigation using household-level data of the transitions into and out of poverty in rural China during a period of economic reform and growth.

The project involves close collaboration with China's State Statistical Bureau, both in constructing the data set and in drawing on the results of the research, to help the bureau put on a firm footing future poverty monitoring efforts using these and other data.

Results of the research have directly informed two tasks in Bank operations, the Southwest China Poverty Reduction Project and ongoing economic and sector work on income distribution in China.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Martin Ravallion (Internet address mravallion@worldbank.org), Shaohua Chen, and Jyotsna Jalan.

Completion date: December 1996.

Reports:

Chen, Shaohua, and Martin Ravallion. 1996. "Data in Transition: Assessing Rural Living Standards in Southern China." *China Economic Review* 7(1):23–55.

Jalan, Jyotsna, and Martin Ravallion. 1996. "Transient Poverty in Rural China." Policy Research Working Paper 1612. World Bank, Policy Research Department, Washington, DC.

Fiscal Reform in Poland

Ref. no. 678-96C

In 1989 Poland adopted a fast-track approach to the transition to a market economy. This approach has had particular success in price liberalization, currency convertibility, and private sector development, and Poland was the first country in the region to record real GDP growth since reform began. Balancing the budget has remained a difficult exercise, however. A surplus was recorded in 1990, under the impact of a strong stabilization package, but 1991 and 1992 were difficult years, and though there was an economic recovery in 1993 and 1994, there was also a change of government.

This research assessed the difficulty of managing the budget in a period of economic transformation. It evaluated Poland's budgetary policy against the objective of creating an efficient market economy, taking into account financial constraints and short-term social pressures.

The first phase of the research compared the budget structure of Poland with those of other transition economies, OECD countries, and the economies of Asia and Latin America for which reliable data could be found. Cross-section regression analysis was used to explain the determinants of the tax and expenditure structures of these economies. The transition economies showed budgets similar in size to those of the OECD countries, despite their lower per capita incomes, but high social security taxes and outlays.

The second phase of the study concentrated on social expenditure in Poland. The main hypothesis was that the liberalization of the economy, in addition to imposing unavoidable restructuring costs on firms, enabled firm insiders to exploit the generous pension system by retiring enough people—at state expense—to allow an increase in the wages of the remaining employees. This strategy was aided by the general uncertainty about the productivity of the workers, mounting unemployment, and the social status and income protection enjoyed by retirees. This hypothesis is supported by data on retirement and real pensions, as well as by studies of the wage-setting process. Although temporary use of early retirement could be justified by the need for economic restructuring, the retirement system as currently structured poses an important threat to the health of the budget and the functioning of the labor market.

Finally, the research assessed the net contribution of different sectors of the economy to the budget. Although fragmented and incomplete data made this task difficult, it was possible to infer a great deal from the enterprise and national accounts data that were available. It is apparent that the tax reforms have been effective at generating more revenue from a broader base. The contribution of the private sector is growing, but a Western European–style trend of net transfers in favor of agriculture seems unavoidable.

The study confirms the importance of the fiscal reform undertaken so far. It shows the dangers of allowing the pension burden to continue to grow as a result of

growth in the number of retirees and the generous benefits that some earn. And it shows the need for caution in the tendency to emulate the size and structure of Western European budgets too soon, without having reached a comparable income level.

Responsibility: Research Advisory Staff—Boris Pleskovic (Internet address bpleskovic@worldbank.org). With Alain de Crombrugghe and Barbara Fakin, University of Namur, Belgium; and Jeffrey Sachs, Harvard University. The Center for Social and Economic Research, Poland, contributed staff time, travel expenses, and data analysis.

Completion date: October 1995.

Reports:

de Crombrugghe, Alain. 1995. "The Insider-Wage Hypothesis and the Polish Budget." University of Namur, Belgium.

_____. 1996. "The Main Budgetary Facts: Poland 1989–94." University of Namur, Belgium.

_____. 1996. "The Wage and Pension Pressure Hypothesis and the Polish Budget, 1989–93." University of Namur, Belgium.

de Crombrugghe, Alain, and Barbara Fakin. 1995. "Patterns of Government Expenditure and Taxation in Transition versus OECD Economies." Case Studies and Analyses 45. (Also issued as Cahiers de la Faculté des Sciences Economiques et Sociales 162, University of Namur, Belgium, 1996.)

de Crombrugghe, Alain, Boris Pleskovic, and Jeffrey Sachs. 1996. "Adjusting the Budget to the Economic Transformation."

The Interaction of Politics and Economic Policy in the Period of Postsocialist Transformation

Ref. no. 679-37C

Although there is a close connection between politics and economic reform in postsocialist transformation, there have been few systematic analyses of their interactions. This study analyzed those interactions from three directions: political preference, as revealed in the actual policy changes; the sources of political support for a government's programs and of opposition to them; and the degree of consensus on (as contrasted with the "pushing through" of) key reforms.

The study carried out a systematic survey of reform experience in Hungary, which presents a marked contrast with the other Visegrad countries (the Czech Republic, Poland, and the Slovak Republic). It compared declared program objectives with outcomes and brought together data on electoral trends and other political aspects (for example, public opinion polls) with data on economic outcomes.

Responsibility: Policy Research Department, Transition Economics Division—Alan Gelb (Internet address agelb@worldbank.org). With Janos Kornai, Collegium Budapest and Harvard University.

Completion date: August 1995.

Report:

Kornai, Janos. 1995. "The Hungarian Road: A Historical Case Study on the Political Economy of the Reform and Post-Socialist Transition." World Bank, Policy Research Department, Washington, DC.

Housing Sector Reforms and Macroeconomic Adjustment in Transition Economies

Ref. no. 679-43C

This study considered the legacy of the socialist system of housing allocation and its effects on market reforms. It also considered how these reforms are affected by macroeconomic adjustment, labor market policies, and housing policy, particularly with respect to privatization.

The research was based primarily on a data set from the first round of the World Bank–funded 1992 Russian Longitudinal Monitoring Household Survey. The study supplemented these microeconomic data with data from the World Bank Housing Indicators Program and with data from the Operations Evaluation Department database on the performance of Bank-supported housing finance projects. The study carried out econometric estimates of relationships between housing, income, and household characteristics, using the results to evaluate the effects of distortions inherited from the socialist past.

The study also measured the imputed income from housing and showed how this income cushioned the effects of the increase in inequality during the transition. And it measured the implicit wage tax needed to finance this income. It then used these measures in an intertemporal household utility maximization model, subject to a number of constraints, to model the efficiency losses imposed on households by socialist allocation policy. Finally, it reviewed the cumulative distributional implications of this policy.

The study's results point to several conclusions. The World Bank's experience suggests that the probability of successfully introducing housing finance could increase dramatically and quickly if, for example, stabilization efforts are maintained and further improvements are made in the housing sector environment. The approach to housing policy reform in Russia appears to be more equitable and efficiency-enhancing than that in China.

In contrast to earlier studies, this study found that the socialist housing delivery system had a progressive effect on the distribution of income. For example, when

housing income is not considered in household income, the increase in traditional measures of wage inequality over the transition was one of the largest ever recorded. But when housing income is included, the increase in inequality is reduced significantly. The empirical results also suggest that when adjustment is made for housing income, the prereform income distribution was much more compressed than is commonly thought. Prereform income distribution almost certainly did not have the dispersal characteristics of a Western economy, as some studies of the Soviet economy have suggested. Finally, the findings on housing and income distribution in Russia suggest the importance of considering the legacy of urban sector distortions in the sequencing of market reforms in transition economies.

Responsibility: Transportation, Water, and Urban Development Department, Urban Development Division—Robert M. Buckley (Internet address rbuckley @worldbank.org). With Eugene Gurenko; James Follain, Syracuse University; Michael Alexeev, University of Indiana; and James Alm, University of Colorado.

Completion date: December 1995.

Reports:

Buckley, Robert M., and Eugene Gurenko. "Housing Finance in Transition Economies: When Can It Work?" World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

_____. "Housing Investment and Market Reforms in Russia." World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

_____. "Unwinding the Socialist Wage Package: The Role of Housing in Russia." World Bank, Transportation, Water, and Urban Development Department, Washington, DC.

_____. Forthcoming. "Housing and Income Distribution in Russia: Zhivago's Legacy." *World Bank Research Observer.*

Agricultural Trade in Economies in Transition

Ref. no. 679-69C

Before the transition period the agricultural economies of Central and Eastern Europe and the republics of the Soviet Union were closely linked through flows of products and inputs. Within the Soviet Union trade was managed by central procurement and reallocation among republics. More broadly, throughout the region the agricultural provisions of the trade agreements of the Council for Mutual Economic Assistance governed traditional flows of products with little regard for comparative costs and advantage.

The collapse of traditional agricultural trade and the difficulties associated with reestablishing trade under new institutions and economic signals have compounded the problems of agriculture during the transition. This study examined changes in agricultural trade flows in four former Soviet republics: Belarus, Moldova, Russia, and Ukraine. It assessed factors affecting agricultural trade—such as changes in domestic costs of production relative to world trading prices, policy measures during the transition, and institutional factors—as contributors to the changing pattern of agricultural trade. The study built on country studies of change in productivity at the farm level in Belarus, Moldova, and Ukraine and assessed the contribution of this productivity change to changes in trade flows.

The study provides rough quantitative evidence that trade policy in these countries favored import substitution. The crop sectors are more competitive than livestock sectors, yet major tradable crops have been subject to discriminatory policies that impeded recovery of production.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Gershon Feder (Internet address gfeder @worldbank.org) and Karen Brooks. With Rodney Tyers, Australian National University.

Completion date: December 1995.

Report:

World Bank. 1995. "Agricultural Trade and Trade Policy: A Multicountry Analysis." 4 vols. Europe and Central Asia, Country Department IV. Washington, DC.

Labor Market Adjustment in Estonia

Ref. no. 679-71

Many economies in transition have experienced massive dislocation of workers and painfully high unemployment. Few, if any, will avoid these outcomes. In contrast to Central and Eastern Europe, little is known about recent labor market adjustments in the former Soviet republics. This research seeks to fill that void. Using the data generated by the Estonian retrospective labor force survey of 1995, it will provide hard evidence on the patterns of labor mobility and wage changes during the transition of one former Soviet republic—Estonia. The country not only is implementing distinctive labor market policies, generally in the direction suggested by the World Bank, but also is in the forefront among the former Soviet republics in implementing policy reforms.

The project focuses on three main issues. First, it is investigating the main labor market adjustments by

analyzing the magnitude and the determinants of the flows among labor market states and of direct job-to-job transitions, and the changes in returns to education, experience, and gender. Second, it is identifying workers who are being especially hurt in the transition. Some groups (older workers, less skilled workers) may experience special reemployment difficulties; others (women, minorities) may be especially vulnerable to job loss. These groups may also face disproportionate post-displacement earnings losses. Third, the project is investigating the incentive effects of unemployment insurance. The analysis relies on the estimation of probit, logit, and hazard models for analyzing determinants of labor market transitions, and estimation of earnings functions for analyzing changes in returns to human capital and determinants of workers' reemployment earnings losses.

In fiscal 1996 the study on the evolution of the wage structure was completed. It produced four main empirical findings. First, the relative returns to education rose rapidly during transition, as did the relative employment of more educated workers. The advantages of more education occur for all experience cohorts and across all sectors of the economy. Second, returns to experience rose for most experience cohorts, most rapidly for the young (relative employment also rose for younger workers). Third, women's relative employment share declined in most sectors, but their relative wages increased. Ethnic minorities lost in both employment share and relative wages; some of this decline may be due to rising relative returns to Estonian language ability in most sectors of the economy. Fourth, relative wages declined in sectors with the largest reductions in employment and rose in sectors with the largest gains in employment. The consistency of this pattern of rising relative wages associated with rising relative employment for human capital and ethnic groups suggests a well-functioning labor market responding to demand shocks.

Responsibility: Policy Research Department, Transition Economics Division—Branko Milanovic (Internet address bmilanovic@worldbank.org). With Milan Vodopivec, Institute for Macroeconomic Analysis, Ljubljana, Slovenia; John Haltiwanger, University of Maryland; Peter Orazem, Iowa State University; and Kalev Katus, Rivo Noorkoiv, and Allan Puur, Population Research Center, Estonian Interuniversity, Tallinn.

Completion date: June 1997.

Report:

Puur, Allan, Peter F. Orazem, Rivo Noorkoiv, and Milan Vodopivec. 1996. "Employment and Wage Dynamics in the Estonia Transition, 1989–95." World Bank, Policy Research Department, Washington, DC.

Accelerating Reforms in China's State-Owned Enterprises

Ref. no. 679-79C

State-owned enterprises remain the core of China's industrial sector, even after 15 years of economic liberalization. Earlier characterized by stagnating productivity, state enterprises underwent extensive reforms in the 1980s. The performance of state enterprises improved, but a World Bank study of 1,500 firms (including 900 state enterprises) during 1980–93 showed that they have lagged behind non–state enterprises (Industrial Reforms and Productivity in Chinese Enterprise, ref. no. 675-38). State enterprise losses and government bailouts have been a major cause of inflation.

In response to these problems, the Chinese government has accelerated the reform of state-owned enterprises. In November 1993 it launched an experimental program, the "10,000-1,000-100-10" initiative, in which sets of 10,000, 1,000, and 100 state-owned enterprises would undergo different reforms and 10 municipalities would undertake comprehensive reforms. These reforms include enterprise restructuring, technology upgrading, mergers and consolidations, bankruptcy, and divestiture of social services. As part of work in support of this program, the World Bank is conducting a detailed survey of 167 state enterprises in five of the municipalities that are undertaking comprehensive reforms.

Combining the resulting database with the earlier one covering 900 state enterprises, this study carried out a rigorous analysis of emerging reform issues in China. It investigated the effects of both the earlier and the new reforms on the performance of state enterprises. It assessed the strength of the links between state enterprise losses, the government budget deficit, inflation, and bank credit, and investigated whether the reforms are addressing the soft budget problem. It also looked at how requirements relating to hiring and firing and to the provision of social services are affecting firms' performance. Finally, the study looked at the issue of bias in the selection of firms for reform: Is the government targeting the big loss-makers, or is it avoiding dealing with their problems?

The study collected data from 156 medium-size and large state-owned enterprises in five municipalities.

Responsibility: Policy Research Department, Transition Economics Division—Inderjit Singh (Internet address ijsingh@worldbank.org) and Alan Gelb. With Geng Xiao, University of Hong Kong; and Gary Jefferson, Brandeis University.

Completion date: June 1996.

Anthropometric Measurement, Nutritional Status, and Household Welfare among Preschool Children in Uzbekistan

Ref. no. 679-97C

The conditions under transition in Central Asia have created an urgent need to measure household welfare in the region. Nutritional status is an appropriate indicator for this purpose. It summarizes a variety of influences, including food intake and health history. It provides information on individuals, avoiding the untestable assumption made in income or expenditure analyses that households pool their resources. It avoids the measurement problems posed by monetized measures of welfare, problems that are considerable in Central Asia (for example, in observing and valuing food production consumed in the home). And it provides an absolute measure of welfare that permits cross-country comparison in Central Asia and elsewhere.

This project collected and analyzed anthropometric data on preschool children in Uzbekistan, the most populous of the former Soviet republics in Central Asia. Among the hypotheses it tested are that nutritional status is strongly correlated with household income, is higher among rural households (those engaged in substantial agricultural activity), and varies with type of childcare (home or kindergarten).

The project collected the data through a survey of 1,500 households in three oblasts in June 1995. It used standard definitions of stunting and wasting and tested the hypotheses using both bivariate and multivariate analysis. Preliminary results confirmed expectations: Children in the capital, Tashkent, seem to be best off. But children in the densely populated Fergana Valley are significantly worse off than those in Karalpak, in the Aral Sea region. This difference is especially marked in height for age. As expected, wasting is worst among children of weaning age, with children improving as they get older. The least stunting was seen in the youngest age group.

The evidence the research provides on nutrition and its regional and socioeconomic correlates will contribute to health planning, to a forthcoming Bank project aimed at strengthening rural primary health care, and to the evaluation of an important new targeted social assistance scheme. And the evidence it provides on variation in nutritional status with type of childcare will contribute to the debate on the future of kindergarten provision in Central Asia.

Responsibility: Europe and Central Asia, Country Department III, Human Resources Development Division—Jeni Klugman (Internet address jklugman@worldbank.org). With John Micklewright, European University Institute, Florence, Italy; Suraiya Ismail, London School of Hygiene and Tropical Medicine; H. Hill, London University; and Expert Survey Agency, Uzbekistan.

Completion date: June 1996.

Russia: Government Financial Transfers to the Largest Recipient Enterprises

Ref. no. 679-98

Most Central and Eastern European countries launched market reforms with a high volume of government financial transfers to the enterprise sector. Reducing these transfers was one of the major challenges for the governments of the region in their efforts to stabilize their economies. In Russia the scale of this problem at the start of the market transformation in 1992 was much more severe than anywhere in Central and Eastern Europe. While the government has made significant progress in reducing overall financial transfers to enterprises over the past few years, state financial assistance to enterprises remains substantial. And the remaining transfers are concentrated among a small number of the largest and most well-connected enterprises.

Tackling these transfers will be critical for both macroeconomic stabilization and enterprise reform in the next couple of years, for several reasons. First, these transfers still constitute an unacceptably high proportion of government transfers to the economy and have a significant impact on the budget. Without further reduction and rationalization of these transfers, macroeconomic stabilization cannot be sustained. Second, many of the largest recipient enterprises are "problem" enterprises, and their problems can and will contaminate the rest of the economy through interenterprise arrears and arrears to the banking system. Their performance will have a significant effect on the financial system, especially the banking system. Third, because many of these enterprises are in basic, upstream industries, sometimes with monopolistic market positions, their performance will directly affect the competitiveness and adjustment of many other enterprises. Fourth, these enterprises are usually the largest employers in their regions and localities, so how they are restructured will have important social implications.

This study is analyzing the rationale for and the size and type of this government financial support and examining the options for reducing and rationalizing it. The study includes case studies of 10–15 of the largest recipient enterprises in various regions of Russia, to help determine the causes of loss-making (particularly the impact of such policy measures as price controls, reduced state orders, and the need to maintain social services), obtain information on the type and extent of transfers, and explore the relation of the enterprises

with local and federal authorities. Discussions with enterprises also covered their responses to the reductions in transfers that have taken place and impediments to adjustment. Local authorities were interviewed to determine the extent to which they are replacing federal programs to support enterprises. The case studies also looked at shifts in responsibility for social and public services between enterprises and the local authorities.

Interviews and surveys for the case studies have been completed, and work is under way to analyze and write up the results. A paper summarizing the findings will be available in the autumn of 1996.

Responsibility: Europe and Central Asia, Country Department III, Country Operations Division 2—Qimiao Fan (Internet address qfan2@worldbank.org) and Lev Freinkman, and Moscow Resident Mission—Alexander Morozov; and Private Sector Development Department—Syed Mahmood. With Victor Rassadin; Elena Starostenkova; Tatyana Chetvernina; Stepan Titov; Michail Broitman, Troika-Dialog; Yuri Kuznetsov; Georgy Semenov; and Alla Godunova.

Completion date: October 1996.

Public Expenditure and Health Status in China

Ref. no. 680-13C

China has made dramatic changes during its current period of reform in the way it finances health care. Among these changes have been substantial cuts in rural villages. Before reform, China's "barefoot doctor" approach in its rural areas had been an important model for primary health care worldwide. So it is critical to document and assess the effects of the large, systemwide changes in health care financing in China.

To help in doing so, this research sought to explain health status in China, focusing on the role of public expenditure (and other policy-manipulable variables). Its basic method was to regress a set of health indicators (such as infant, maternal, and overall age-adjusted mortality rates) on traditional public health inputs and publicly financed and provided medical care using data for 29 provinces over 11 years. The public health inputs used include safe water, sanitation, immunization, and infectious disease control efforts, each believed to have public good characteristics or externalities.

Results indicate a strong contribution to health status by such traditional public health inputs as sanitation and water supply. The influence of services that are dependent on consumer demand is more difficult to identify—both for preventive services, such as immunization, and for curative medical care. The fact that public subsidies are at least partly endogenous (that is, they respond to determinants of consumer demand) makes it difficult to distinguish the effects of a health policy from those of income and education.

Results also indicate important effects from immunization, though how much is demand-determined and how much supply-driven is still an open question. With respect to medical care, there is some evidence that provision of services at township (local) hospitals reduces infant mortality rates. Interestingly, this level of service is usually criticized as being of low quality and is used disproportionately by the poor.

Responsibility: Policy Research Department, Public Economics Division—Jeffrey S. Hammer (Internet address jhammer@worldbank.org). With Shaikh Hossain.

Completion date: October 1995.

Determinants of Agri-Food Market Integration in the Transition Economies of Europe and Asia

Ref. no. 680-14C

This study examined the major effects of liberalizing agricultural and food prices in transition economies. It sought evidence of greater integration in important agri-food markets as perhaps the most significant indicator of successful transition from the geographically and administratively fragmented distribution channels that characterized agri-food "marketing" under central planning to a system operating on free market principles. Conceived as a small-scale, flexible, exploratory endeavor, the study focused on a few key agri-food subsectors in Poland.

In the conventional literature *market integration* refers only to spatial market integration. But in transition economies segmentation among different levels in the progression from input supply to production to retailing was so serious that stronger and more responsive links (contractual or organizational) and reduced fragmentation across geographical marketing areas have become major goals of reform. In this context *market integration* assumes an extended meaning. Sectoral integration, linking state and nonstate marketing enterprises through market-based mechanisms, is also a unique and important policy objective in transition economies.

The study used cointegration techniques to extract evidence of spatial, vertical, and sectoral market integration from short-series data. And it used regression-based techniques to evaluate the importance of different economic and structural factors in the degree of integration observed.

To determine whether agri-food markets are integrating vertically, the study estimated the progression

in gross margins—expressed as price ratios—between farmers and wholesaling and processing enterprises, between wholesalers or processors and retailers, and between farmers and retailers. To shed light on change in geographical fragmentation, it undertook a thorough analysis of spatial price relationships and possible determinants. It then examined evidence on market integration between state and nonstate segments.

In contrast to widely held views among policy analysts, the project found that the Polish agri-food marketing system is in general competitive. Anticompetitive behavior and policies are obvious in only a few sectors (such as cereals). Where price leadership can still be exercised (as in meat processing), it operates within fairly wide bands, but is increasingly constrained by the emergence of competition owing to private sector entry.

Price transmission among marketing levels has been observed, an indication that a market mechanism is operating. But the transmission process is influenced by the market structure, where processors are dominant, helping to maintain large margins between procurement and retail prices. The movements of margins for most agricultural goods were influenced more by changes in market risk (especially macroeconomic uncertainty) than by changes in marketing costs. Decreasing macroeconomic uncertainty will reduce the margins to reasonable levels. Spatial market integration also has been observed. Among the factors affecting spatial integration, the limited commercialization at the farm level (measured by the ratio of marketed to total production) is a key obstacle. Increased commercialization is hindered by the small scale of farms.

The study's approach is now being adapted to other transition economies (Hungary, Romania, and Ukraine) to determine the generality of the findings and their usefulness as a general guide for pricing and competition policies in the nascent agri-food markets of Eastern Europe and the former Soviet Union.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Richard Burcroff (Internet address rburcroff @worldbank.org) and Anning Wei; and Europe and Central Asia, Country Department III, Agriculture, Industry, and Finance Division—Mohinder S. Mudahar. With the Agricultural Policy Analysis Office, Ministry of Agriculture and Food, Poland; and William G. Tomek, Cornell University.

Completion date: June 1996.

Reports:

Wei, Anning. 1994. "Are Farm Prices Still Subject to the Manipulation of the State Sector in Poland?" World Bank, Agriculture and Natural Resources Department, Washington, DC.

Wei, Anning, Jerzy Dabrowsky, and Richard Burcroff. 1995. "Evidence of Agri-Food Market Integration: A Case Study of Price Efficiency and Convergence in Poland's Swine and Pig-Products Markets." World Bank, Agriculture and Natural Resources Department, Washington, DC.

Wei, Anning, Waldemar Guba, and Richard Burcroff. 1995. "Evidence of Agri-Food Market Integration: A Case Study of Price Efficiency and Convergence in Poland's Wheat and Flour Products Markets." World Bank, Agriculture and Natural Resources Department, Washington, DC.

____. 1996. "Market Efficiency and Government Policy in Poland's Dairy Sector." World Bank, Agriculture and Natural Resources Department, Washington, DC.

The Consequences of Large-Scale Privatization in Mongolia

Ref. no. 680-27

Mass privatization is one favored method of transferring ownership of state enterprises to the private sector in transition economies. But analytical work on the consequences of mass privatization is only beginning. And most is concentrated on the western rim of Eastern Europe and in Russia, where the issues are quite different from those in the less developed reforming countries with nascent legal and market institutions. Valuable lessons can thus be learned from analyses of the effects of the earliest privatizations in this second tier of reforming countries. Mongolia provides a fitting case study.

This project is collecting and analyzing data on privatized enterprises in Mongolia to examine the channels through which privatization affects enterprise behavior, the significance and speed of these effects, and their relation to ownership structure. This research has three goals: to test hypotheses on the effects of privatization, inform current policy discussions, and generate firm-level information to permit more accurate analyses of Mongolian economic conditions and their implications for World Bank and national policymaking.

The study will examine links between dependent variables and corresponding sets of explanatory variables in a series of econometric analyses, seeking to identify effects attributable to privatization. Three key explanatory variables will be the structure of ownership, the allocation of internal influence among governance bodies, and the time since privatization.

The primary data source will be a survey of about 300 privatized enterprises in Ulaanbaatar and in six provinces. They will include 106 firms surveyed in 1993, allowing a longitudinal analysis of the effects of privatization. Supplementing the survey is an extensive data set on enterprise characteristics and stock market

sales constructed from files of the State Privatization Commission and the Mongolian Stock Exchange.

A new survey instrument has been created that maximizes the amount of information collected for longitudinal analysis (consistent with the 1993 data set) yet takes account of new findings about privatization in the literature as well as changes in the economic and legal and regulatory environment in Mongolia. The survey instrument has been pilot tested and refined.

Two teams of Mongolian interviewers have been created and trained to conduct the survey. The first team, nine economic researchers affiliated with the Mongolian National Academy of Sciences, is conducting the interviews with enterprise general directors. The second, five accountants, is conducting the quantitative portion of the survey in meetings with enterprise financial experts. Local university students will enter the data.

The research will produce papers that combine the results of the tests of theory with suggested policy implications for Mongolia and for comparable countries at earlier stages of reform. Descriptive papers will assess the progress of restructuring in Mongolia based on the survey data, and analytical papers will explore the developments in enterprises that can be attributed to privatization. The results of the survey and its analyses will be used to prepare a policy paper reflecting on choices that Mongolia must make in the coming years.

By revealing areas where current policy has a deleterious effect on enterprise performance, the study will contribute to future policy advice, such as on improvements in the legal and institutional environment. The study will make every effort to make its findings comparable with those obtained in similar World Bank efforts in other countries, to ensure broad policy relevance.

Responsibility: East Asia and Pacific, Country Department II, Country Operations Division—Natasha Beschorner (Internet address nbeschorner@worldbank.org) and Hongjoo Hahm. With James Anderson, Georges Korsun, and Peter Murrell, University of Maryland.

Completion date: June 1997.

Poverty and Targeting of Social Assistance in Eastern Europe and the Former Soviet Union

Ref. no. 680-33

Declining incomes and growing income inequality have led to a rise in poverty in the transition economies of Eastern Europe and the former Soviet Union. Increased poverty causes difficulties for social assistance agencies during periods of fiscal austerity. If social assistance is not provided effectively, scarce resources will be wasted, and chances to reduce poverty missed. Moreover, the countries of Eastern Europe and the former Soviet republics inherited systems of social protection that have proved to be costly, inefficient, and inequitable because they are not targeted to the most needy, but instead have benefited a large portion of the population.

This study will develop options for improving social assistance targeting in these transition economies by investigating who is poor, why they are poor, whether they are being reached by social assistance transfers, and why or why not. It will first construct—using household budget data, most already available in the Bank—a household income and expenditure database for eight transition economies for 1992–93. The database will include variables on level and composition of income and expenditures and on personal and household characteristics (such as education level, place of residence, and ownership of consumer durables). The database, which will consist of about 4 million data points, will be available to researchers in SAS and STATA software.

Using this database, the research will study two topics. The first is determinants of poverty: to make recommendations on improving targeting, we must know whom to target. The study will look at demographic and economic characteristics that explain the presence of poverty to derive robust conclusions on what factors are linked with poverty, how important they are, and whether and why they differ among countries. The conclusions will have direct policy implications for targeting by indicators.

The second topic is the targeting of social assistance. Most social assistance agencies use a certain income cutoff for screening those eligible for social assistance. Taking this cutoff point, the study will investigate whether there are systematic biases against or in favor of certain types of households. For example, if, for a given level of income, a rural household has a lower chance of being helped, that would indicate a pro-urban bias in the system. The cause of this bias—whether, for example, unequal allocation of money between rural and urban areas, or greater prevalence of unrecorded incomes or expenditures in villages—will then be explored further through field visits and collection of relevant information. Policy conclusions about ways to improve the delivery of social assistance will derive directly from the identification of biases. Both analyses will be carried out using various types of regression analysis (probit, tobit, multinomial, level), and Gini and concentration coefficient types of measures.

Responsibility: Policy Research Department, Poverty and Human Resources Division—Branko Milanovic (Internet address bmilanovic@worldbank.org) and Yvonne Ying; Poverty and Social Policy Department—

Jeanine Braithwaite; Environment Department, Social Policy and Resettlement Division—Christiaan Grootaert and Gi-Taik Oh; and Europe and Central Asia, Country Department II, Human Resources Operations Division—Sandor Sipos. With Robert Ackland; Mark Foley; Thesia Gardner, Bureau of Labor Statistics; Sassoun Tsirounian, University of Yerevan, Armenia; Alexandra Posarac; and Maria Balaz.

Completion date: March 1997.

Social Safety Net and Growth: An Analysis of Interactions and Tradeoffs

Ref. no. 680-35C

The sharp economic contraction in Ukraine in recent years has put the social security system under strain by eroding the tax base and increasing need among the most vulnerable. Most proposed solutions have focused on short-term fiscal sustainability, neglecting the possible impact of policy changes on other key economic variables. This study set out to broaden the analysis of the social security system by taking into account the links between the parameters that determine the pension fund balance and those that determine the labor market equilibrium, budgetary equilibrium, savings, and investment.

The study used an analytical framework consisting of an integration of macroeconomic dynamics, labor market behavior, and demographic characteristics with the social security system. It constructed a simple model to establish a consistent base-year scenario for the country, then ran policy simulations under various scenarios to identify the sensitivity of outcomes to particular policy reforms. The research used a comprehensive set of macroeconomic and demographic data, and drew on data from a 1995 household survey for estimates of wages, labor force participation rates, and allocation of time.

The study found that decline in real wages, changes in occupation and in allocation of time between formal and informal activities, and incentives for tax evasion have all contributed to the pressure on the social security system. Although recent policy reforms have addressed the most pressing short-term fiscal issues, they have also created perverse incentives that will lead to financial imbalances in the medium term. Even in the context of economic recovery, the present social security system is unlikely to be sustainable. Reforms could improve incentives in the formal labor market, and a private pension system would complement the public system. The timing of reforms is critical.

The study's findings will be disseminated through seminars and workshops and the Policy Research Working Papers series. The findings also will be used in policy discussions with the Ukraine government on the preparation of a public sector reform loan that will include support for pension reform. The model and computer program will be made available for simulations and use with other country data.

Responsibility: Europe and Central Asia, Country Department IV, Country Operations Division 2—Michelle Riboud (Internet address mriboud@worldbank.org). With Haoquan Chu; Gary Burtless, Brookings Institution; and Sweder van Wijnbergen.

Completion date: June 1996.

Formal Employment and Survival Strategies under Economic Reform in the Former Soviet Union

Ref. no. 680-52

Conventional labor market approaches are inadequate for understanding employment dynamics and strategies in the former Soviet republics. State enterprise workers must often make simultaneous decisions on the extent (and intensity) of their work in the state enterprise, on alternative occupations and sources of income (many of which are informal), and on interhousehold transfers. As a result, complex survival strategies have evolved during the transition. In response to shifting sets of incentives, workers move along a continuum of formal and informal employment and income options, a strategy that has important implications for social and labor market policies.

This study will compare how rapid reform in Latvia, slower reform in Russia, and even slower reform in Ukraine have affected workers. Using a survey methodology developed in Russia and Ukraine, it will investigate what has happened to formal employment and how this is related to people's survival strategies (including their incomes from informal employment and interhousehold transfers). The study will assess the extent to which the recent acceleration of reform in Ukraine leads to outcomes closer to those in Latvia and Russia, which began reforms earlier. It will also determine who is benefiting from reform in these countries. And it will provide insights on the main characteristics of "noncopers"—and thus on effective ways of targeting assistance in transition economies.

The study is expected to contribute to Bank poverty assessments in the region and to the literature. Its results will be widely disseminated through seminars and conferences in Europe, the former Soviet Union, and the United States and through ongoing public economic education programs in Ukraine.

Responsibility: Europe and Central Asia, Country Department IV, Office of the Director—Daniel Kaufmann

(Internet address dkaufmann@worldbank.org) and Debra Tsimbidis. With Simon Johnson, Duke University; Oleh Ustenko, Kiev State Economics University; and Lorena Barberia, Harvard University.

Completion date: October 1996.

Farm Debt and Farm Restructuring in the Former Soviet Union

Ref. no. 680-72

Farm indebtedness and its impact on privatization are a concern in the former Soviet republics, where farms are restructuring through a share system. Under the share system farm workers become owners of shares of assets, including land, and can decide whether to remain together or to exit and reconfigure the assets into smaller production units.

Accumulated debt complicates and inhibits efficient farm restructuring because of the incentives it creates. Farm managers wishing to retain land and other assets have incentives to run up debt because it reduces the likelihood that individuals would exit, taking farm assets (and debt) with them. If farm employees can exit with assets and without assuming debt, the debt will be concentrated in the remaining units. The remaining shareholding enterprises will have fewer assets, a reduced capacity to service debt, and a higher likelihood of financial insolvency.

This research addresses two questions: How severe is the farm debt problem in Russia? And what is the link between the farm debt problem and farm restructuring? The answers are important for the design of agricultural operations throughout the region. Moreover, an improved empirical understanding of the extent and implications of the farm debt problem will enrich the policy dialogue.

The study is conducting a financial analysis of farms in Russia with both descriptive and analytical aspects. The descriptive component involves the development of standard indicators of farm financial position and performance. The analytical work relates financial performance to the determinants of that performance. Farms are evaluated according to their degree of financial stress (liquidity and solvency problems). Data from a 1994 farm survey are linked to financial data collected for this study to identify the characteristics (such as size, location, organizational form, and production profile) of farms with different degrees of financial stress.

The Russian farm financial data set includes about 250 large enterprises and 900 private farms. For the enterprises the data set contains one year of income data (revenues and expenses) and balance sheet data for 1993 and 1994, and for the private farms a statement of revenues and expenses for calendar year 1994.

The reported net indebtedness of agriculture in December 1994 was about 15 percent of total agricultural product, only slightly higher than the debt ratio in industry. Agriculture, like the rest of the economy, faces an unfavorable disparity between payment obligations to suppliers and collections from customers. While farms have 65 days of credit from suppliers, they grant about 75 days of credit to customers (up from about 70 days in the first quarter of 1994). Farm managers and private farmers consistently complain that they are required to pay promptly in advance for inputs but must wait for payment for the products they deliver. But there appears to be no buildup of receivables from customers that need to be financed. The ratio of customer receivables to supplier credit dropped from nearly 100 percent at the end of 1993 to 60 percent in the first quarter of 1995.

That accounts receivable are less than accounts payable points to a potential negative working capital position in Russian agriculture, and casts doubt on agriculture's ability to repay its current debt, typically covered by collections from customers. Evidence of impending repayment difficulties is also provided by the increase in the proportion of overdue payables from 34 percent of all payables to suppliers in January 1994 to more than 50 percent in the first quarter of 1995.

Preliminary results of the analysis of farm financial data for 1994 suggest that debt service was perceived to be a problem primarily because revenues were very low, not because debt was high as a proportion of reported owned assets. If confirmed by further analysis, this finding suggests that low farm earnings and poorly functioning asset markets are creating a perceived debt problem.

Responsibility: Agriculture and Natural Resources Department, Sector Policy and Water Resources Division—Karen Brooks (Internet address kbrooks @worldbank.org). With Glen Pederson, University of Minnesota; Zvi Lerman, Hebrew University; and Oleg Lekhtman.

Completion date: September 1996.

The Reach of Law into the Enterprise in Transition

Ref. no. 680-90

As early as July 1988 Mikhail Gorbachev used the notion of the rule of law as a rallying cry for legal reform in his country. Establishment of the rule of law was similarly espoused as a fundamental goal during the Eastern European revolutions of 1989. It has ranked as high as stabilization and privatization among the priorities of the leading reformers and their foreign advisers.

In a market setting the rule of law is important to governments because it enhances the credibility of

policymakers by placing restraints on their ability to arbitrarily reformulate policies. But it is also critical to firms. Laws provide standards of conduct that can coordinate behavior and reduce transaction costs. Yet despite its importance, the rule of law typically is more elusive than stabilization and privatization.

The purpose of this research is to understand the part that the rule of law plays in economic relationships in Russia and, by implication, in other reforming socialist economies. Using original survey research, it is examining the usefulness of laws and legal institutions to firms in organizing themselves and their relationships with other firms. This work draws primarily on three bodies of law—contract law (including law on secured instruments), antitrust law, and company law.

Collection of data from 1,000 managers and legal experts in 250 firms in six regions of Russia is scheduled to start in September 1996. A pretest of the survey instruments was recently completed, in which 60 managers and legal experts in 15 firms in Yekaterinburg and Moscow were interviewed. Evidence from this pretest suggests several preliminary conclusions.

Firms appear to have fairly good access to information about new laws and to legal institutions in both Yekaterinburg and Moscow. Firms routinely use courts to settle disputes, apparently without large cost to their business relationships. But legal institutions do not appear to provide an adequate foundation for relationships. Court decisions often are not enforced, and norms necessary to increase contract compliance and reduce enforcement costs appear to be inadequate. Firms' routine use of courts appears to be a consequence of historical practice rather than of a deliberate strategy to use law and legal institutions to further the firms' interests.

Despite the availability of legal information, managers and legal experts in firms are unfamiliar with important aspects of contract, antitrust, and company law; in most cases their knowledge of the law cannot be distinguished from random guesses. Respondents are more familiar with historical laws than current ones, confusing the former with the latter.

Moreover, many of the economic institutions that are commonly thought of as ensuring compliance—cross-ownership, common membership on boards of directors, common membership in business associations, and common banks—appear to be absent or unimportant. Market power appears to be diminishing. So mutual economic dependence no longer appears to be an adequate mechanism for ensuring contractual performance. Social institutions commonly thought of as facilitating relationships between managers in different firms—common university affiliation, religion, national or ethnic group, or membership in a civic association—also are either absent or unimportant.

What does the foundation on which interfirm relationships are structured provide? Most contractual relationships appear to be based on historical relationships. Many relationships, particularly newer ones, are supported by the use of payment terms, such as prepayment, generally viewed as costly. Private security firms are widely used for enforcement.

What is the apparent consequence of these institutional problems? No complex transactions were observed, despite an attempt to do so. Thus the absence of social, economic, and legal institutions to support transactions appears to undermine the ability of firms to undertake certain potentially important transactions.

Responsibility: Policy Research Department, Transition Economics Division—Martha de Melo (Internet address mdemelo@worldbank.org) and Randi Ryterman. With Peter Murrell, University of Maryland; Barry Ickes, Pennsylvania State University; Kathryn Hendley, University of Wisconsin; and Valery Makarov and other economists at the Central Economics and Mathematics Institute, Moscow. The National Council for Soviet and East European Research is providing funding.

Completion date: June 1997.

The Cultural Foundations of Economic Reform

Ref. no. 681-18

A central tenet of neoclassical economics is that human initiative arises from the incentives embodied in free markets. Yet other branches of economics, as well as branches of sociology, political science, and psychology, suggest that human initiative cannot be explained on the basis of economic incentives alone. As Adam Smith well understood, economic life is deeply embedded in social life, and it cannot be understood apart from the customs, morals, and habits of the society. In short, it cannot be divorced from *culture*.

As economists seek to explain differences in the economic achievements of different countries, many are turning to explanations centered on culture. One area in which culture might play an important role is in the way a society adapts to economic reform. Attitudes toward political, economic, and judicial institutions are deeply rooted in historical experience and are often slow to change. Yet such attitudes are essential to the success of reform because they are at the foundation of public support both for reform and for the new institutions created as part of the reform process. When attitudes do not support the development and use of the new institutions, the sustainability of reform is called into question.

This research will examine the effect of culture, as embedded in the attitudes of economic agents, on the progress of economic reform in Russia. Specifically, it will examine the role of attitudes in two types of adjustment: adjustment to markets and adjustment to a rule of law. It is expected that the research will find large regional variation in attitudes in Russia, reflecting differences among regions in historical experiences and cultural legacies. This variation is probably yielding important differences in institutional development and in progress in economic and legal reform.

The analysis is based on two sources of information on attitudes toward markets and a rule of law: data collected by the European Community on the attitudes of 400 managers and 100 bureaucrats, and data collected by the World Bank on the attitudes of 60 managers and legal experts in 15 Russian firms.

Data collection for the project was recently completed. Preliminary analysis of the data reveals large regional variation in both attitudes toward and progress in completing market reforms and establishing a rule of law. The analysis also reveals important differences in institutional development across regions. Although these findings suggest the importance of historical and cultural legacies in creating attitudes conducive to reform, further analysis is required to establish more links.

Responsibility: Policy Research Department, Transition Economics Division—Martha de Melo (Internet address mdemelo@worldbank.org) and Randi Ryterman. With Peter Murrell, University of Maryland; Barry Ickes, Pennsylvania State University; Kathryn Hendley, University of Wisconsin; Barbara Weber, Harvard University; and Valery Makarov and other economists at the Central Economics and Mathematics Institute, Moscow. The National Council for Soviet and East European Research is providing funding for data collection.

Completion date: June 1997.

Potential Sources of Growth in Funding for Chinese Agricultural Research

Ref. no. 681-19

Expenditure on agricultural research in China appears to be declining in real terms, while demand for research on ways to increase yields is growing rapidly. Yet in some provinces funding for research has increased. This research addresses two questions: Why is funding increasing in certain provinces, and do these provinces offer lessons for other parts of China on ways to increase funding?

The study will analyze provincial expenditure on research for the past 10 years, and develop and test a political economy model of Chinese investment in research. For its analysis the study will draw on official Chinese data on research expenditures by province, income and wealth by province, tax revenues, rural population, agricultural prices, and agricultural production. It will also use World Bank data on Bank projects and on links between Chinese research institutes and the Consultative Group on International Agricultural Research.

A preliminary examination of recent data on provincial research indicates substantial variation among provinces in research intensity and in growth rates for research spending, suggesting a possibility for good econometric results.

Results will be disseminated through a World Bank seminar; a presentation at the China Center for Agricultural Policy, Chinese Academy of Agricultural Sciences in Beijing; and a World Bank Discussion Paper. The results should support future Bank efforts to develop agricultural research projects in China that build on provincial funding for research. In addition, the project may identify policy changes that the national government could make to encourage provinces to fund more research.

Responsibility: East Asia and Pacific, Country Department II, Rural and Social Development Division—Rapeepun Jaisaard (Internet address rjaisaard @worldbank.org); and Agriculture and Natural Resources Department, Agriculture and Forestry Systems Division—Derek Byerlee.

Completion date: June 1997.

Ownership, Labor Strategies, and Firm Performance in China

Ref. no. 681-22

This study is examining the links between ownership type, labor strategies, and performance in Chinese enterprises. In particular, it will focus on how enterprise ownership affects the flexibility of labor reallocation, and how this flexibility affects performance.

China provides an interesting case for examining these links because the degree of state control varies not only among enterprises, but also over time for the same enterprise. That makes it possible to identify the effect of state control on labor policies and the subsequent impact on enterprise performance.

Although there are many ways to define labor flexibility, this study focuses on how quickly enterprises are able to adjust their employment in response to demand shocks. First, it will generate a set of descriptive statistics summarizing differences in labor adjustment across ownership types and across time. Second, it will use a

panel data set on a large number of Chinese enterprises and econometric analysis to estimate a flexibility parameter, and correlate that parameter with ownership types. On the basis of this parameter it will separate the enterprises into three samples and compare profitability and firm growth in each of these samples. It will also estimate standard production functions for each group. Finally, the study will compare the results from the first two steps with responses from managers on one-time questionnaires.

The study's results will make it possible to compare labor flexibility and its effects across state-owned, collective, and foreign-owned firms in China. And they will shed light on labor policy and firm-level adjustment in transition economies.

The findings will be presented at a conference of the Southern Economic Association to be held in Washington, DC, in November 1996. Regional seminars are also planned.

Responsibility: Private Sector Development Department—Shyam Khemani (Internet address skhemani @worldbank.org). With Julia Lane, American University.

Completion date: June 1997.

Small-Scale Privatization in Kazakstan

This study reviewed Kazakstan's national small-scale privatization program to derive lessons for governments contemplating similar programs. The study reviewed the government's approach in executing the second-stage privatization of small-scale trucking and warehousing enterprises, evaluated the results and the underlying constraints, and provided policy options for consideration by implementing agencies and practitioners in other countries. The study also reviewed small-scale privatization approaches in other former Soviet republics and in Eastern Europe, as well as the first-stage small-scale program that was implemented by the Kazakstan government at the start of the country's reform in 1991.

Kazakstan's small-scale privatization program was designed to be open, fair, and transparent and to improve the opportunities for newly privatized businesses. The program uses a centralized management approach, breaks up large enterprises before privatizing them, uses asset sales rather than liquidation, focuses on outright sales of enterprises rather than privatization of leasehold rights, conducts a public information campaign to educate people about basic principles of privatization and to attract investors, and provides postsale assistance to new business owners.

The performance of the privatization program offers several important lessons. First, the impressive auction results show that a fair, transparent, equitable, and simple auction method can be effectively implemented on a national scale. A centralized approach can be successful, but it requires a forceful central government with the political will to impose effective policy at the local level. Second, it is critical to minimize conditional sales, since restrictive conditions on new owners can be used in extorting money and favors, threatening the very existence of a business. Third, public information campaigns can play an important part in the success of privatization programs. Fourth, postsale assistance can be helpful not only in teaching modern business practices to new business owners, but also in showing the government what is needed to improve the business environment.

Surveys have found significant improvements in the performance of the newly privatized businesses, with higher sales, increased employment, new investments, and increased variety of goods. But businesses continue to confront serious problems, with lack of access to finance the most common problem cited by new owners. Excessive bureaucratic meddling also is often cited. And private businesses often are at a disadvantage relative to state enterprises in obtaining spare parts and basic inputs. Thus while privatization is an important step, postprivatization efforts to address the problems that new business owners face also are essential in meeting the ultimate goal of developing a strong and viable private sector.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Kevin Young (Internet address kyoung @worldbank.org) and Aldo Baietti.

Completion date: July 1995.

Report:

Baietti, Aldo. 1995. "Small-Scale Privatization in Kazakstan." CFS Discussion Paper 114. World Bank, Cofinancing and Financial Advisory Services Department, Washington, DC.

Economic Policy and Enterprise Restructuring in Russia

Russian industry has faced large adverse shocks that have compounded the secular slowdown in productivity that preceded the breakup of the Soviet Union. Firms have been buffeted by a combination of aggregate demand and supply shocks, including those associated with the decline in trade in the Council for Mutual Economic Assistance (CMEA) and among the former Soviet republics. Central government transfers declined significantly in real terms between 1992 and 1994. And the availability of cheap credit has diminished. As a

result of these shocks, industrial production at the end of 1994, as reported in official data, was roughly half the level in 1990.

This project carried out a survey of Russian industrial enterprises that allows a look at the origins of these shocks and at the responses by enterprises. Conducted in July and August 1994, this was the first comprehensive and representative survey of randomly selected Russian enterprises. The selection of the 439 enterprises in the survey was designed to be representative of the industrial sector in Russia and to capture the structural and institutional changes in that sector. The survey covered all the major branches of the manufacturing sector in all economic regions (except Kaliningrad) and included state-owned, privatized or privatizing, and newly established private enterprises. It collected both current and historical (prereform) quantitative and financial data and qualitative information on expectations and strategy.

The survey data make it possible to distinguish between passive restructuring—responses that firms have had to make as a result of these shocks—and longer-term, strategic or positive restructuring—dynamic choices relating to changes in product mix, trading partners, employee skill mix, and so on. In addition, by collecting information before and after privatization, the survey made it possible to control for ownership.

The story that emerged was that firms have begun to restructure. But restructuring has been primarily passive and has generally reduced employment, working hours, and wages. There is far less evidence of more positive restructuring in both state-owned and privatized firms. Although nearly two-thirds of the sample of firms have made major changes in product mix—primarily introducing new products and increasing the number of product types—and many firms have initiated new trading relationships for both inputs and outputs, these shifts are not strongly or consistently correlated with other restructuring decisions, including on employment and wages. Restructuring by enterprises remains limited and varies widely across branches of industry, enterprise sizes, and regions.

Following are some of the specific findings that emerged from the survey:

- Although firms have begun to restructure employment, labor hoarding continues to be a problem.
- Firms have begun to divest or close down social assets, including housing and health care. But the evidence suggests much inertia and continuing problems in the transfer of such functions.
- One of the main reasons that firms have been slow to adjust is the continued flow to them of significant government financial transfers (including budget subsidies and directed credits).
- Government financing remains the main cause of the "soft budget" for enterprises, but commercial bank financing also plays a role. Although the bad debt problem appears not to be widespread, banks continue to capitalize enterprises' overdue payments of interest and principal. And creditor banks' influence on enterprise decisions remains limited.
- Enterprise arrears are a problem less among firms, which have begun to bring their receivables and payables situation under control, than with the government, in the form of tax arrears. These tax arrears are another form of soft budget support to firms.
- Although it is still difficult to detect strategic changes in behavior by privatized firms, it is apparent that managers are very much in control.
- Outside ownership and control of privatized firms is very weak, if not altogether absent. Insiders generally have been able to block outside interference in decision-making. Divesting residual state holdings in privatized firms to strategic investors would help raise the stake of outsiders in privatized firms.
- The impact of competition on firms remains weak, mainly because of the lack of market infrastructure.

A workshop for World Bank and International Monetary Fund staff was held at the Bank on April 11–12, 1995, to review preliminary drafts of papers discussing the findings of the survey. The papers (listed below) were then revised for presentation, along with papers by outside researchers, at a conference for policymakers and researchers in St. Petersburg, Russia, on June 12–13, 1995, organized in collaboration with the Russian government and the Leontief Center.

Responsibility: Europe and Central Asia, Country Department III, Country Operations Division 2—Qimiao Fan (Internet address qfan2@worldbank.org), Une Lee, and Lev Freinkman, and Resident Mission in Moscow—Alexander Morozov and Ruslan Yemtsov; Economic Development Institute, National Economic Management Division—Simon Commander and Sumana Dhar; and Policy Research Department, Transition Economics Division—Randi Ryterman and Gilles Alfandari. With Stoyan Tenev; Marina Krassinova, VTSIOM; Saul Estrin, London Business School; Mark Schaffer, London School of Economics; John Earle, Central European University; Bingsong Fang, Boston University; Andrea Richter, Oxford University; and Larisa Leschenko, Central European University.

Completion date: September 1995.

Reports:

Alfandari, Gilles, Qimiao Fan, and Lev Freinkman. 1995. "Government Financial Transfers to Industrial Enterprises and Restructuring." World Bank, Washington, DC.

Alfandari, Gilles, and Mark Schaffer. 1995. "On 'Arrears' in Russia." World Bank, Washington, DC.

Commander, Simon, Sumana Dhar, and Ruslan Yemtsov. 1995. "How Russian Firms Make Their Wage and Employment Decisions." World Bank, Washington, DC.

Commander, Simon, Qimiao Fan, and Mark Schaffer, eds. Forthcoming. *Economic Policy and Enterprise Restructuring in Russia.* Washington, DC: World Bank.

Commander, Simon, and Une Lee. 1995. "Provision of Social Benefits and the Russian Industrial Firm." World Bank, Washington, DC.

Earle, John, Saul Estrin, and Larisa Leschenko. 1995. "Ownership, Control, and Enterprise Behavior in Russia."

Fan, Qimiao, and Bingsong Fang. 1995. "Are Russian Enterprises Restructuring?" World Bank, Washington, DC.

Lee, Une. 1995. "The World Bank Survey."

Richter, Andrea, and Mark Schaffer. 1995. "Investment Decisions of Russian Enterprises and Prospects for Growth."

Taxation and Revenue Adequacy in the Transition: Observations and Implications from Bulgaria

This research project comprised a collection of papers analyzing different dimensions of government finance in Bulgaria. The study drew general conclusions from the experience of Bulgaria on the financing of government in the transition. Where appropriate, the analytical issues that arose were considered from a political economy perspective—that is, from a perspective that includes concern with why policies were adopted or delayed, and with the relationship between efficiency and income distribution.

The papers in this study also employed income distribution analysis using household budget survey data; inferential methods in estimating the size of the informal sector; case studies of fuel pricing and trade policies; and analyses of the overall reform policies, intergovernmental fiscal relations, social insurance and social assistance, health finance, tax base issues, and structure and performance of a value added tax.

Many aspects of Bulgaria's government finance reform appear relevant for other transition economies. These include fiscal decentralization, the erosion of tax bases and the challenges it poses for tax policy, the informal links between state and private enterprises for the purposes of shifting profits, and financing dilemmas in social insurance and social assistance and health.

Responsibility: Europe and Central Asia, Country Department I, Country Operations Division—Zeljko Bogetic (Internet address zbogetic@worldbank.org). With Arye L. Hillman, Bar-Ilan University, Israel.

Completion date: November 1995.

Report:

Bogetic, Zeljko, and Arye Hillman, eds. 1995. *Financing Government in the Transition: Bulgaria—The Political Economy of Tax Bases, Tax Policies, and Tax Evasion.* A World Bank Regional and Sectoral Study. Washington, DC.

Population Aging and Pension Systems: Reform Options for China

Using an integrated simulation model, this research estimated the scope and speed of population aging in China, the cost of supporting the old, and the impact of different reform options and pension arrangements.

The results show that the scope and speed of population aging in China make the present pension system financially unsustainable, even assuming that GDP grows steadily in the long term. Moving the retirement age back would provide a temporary fix for the current pay-as-you-go pension system but would be politically viable only where there is great demand for labor.

Pension funds could be made more sustainable by increasing GDP growth, raising contribution rates, or gradually reducing benefit rates. But the financial costs and social obstacles of those reform options must be carefully assessed. Fully funded, privately managed pension schemes might be feasible, but require a sound regulatory framework and institutional infrastructure, including financial markets that provide adequate savings instruments and insurance options.

Pension reform is a long-term, multidimensional problem involving economic, social, political, and cultural factors. Governments should not focus only on taxes and transfers to redistribute income to and among the elderly. Real income growth is needed to cope with poverty among the elderly, especially in developing countries.

Experience in Europe and Latin America suggests that China may benefit from moving toward a transparent and decentralized system with (1) a fully funded, portable, defined-benefit pension plan, designed to meet basic needs, and (2) occupational pension plans or personal savings accounts to satisfy demand for maintaining or improving living standards.

Responsibility: Office of the Senior Vice President, Development Economics—F. Desmond McCarthy (Internet address fmccarthy@worldbank.org); and Poverty and Social Policy Department—Kangbin Zheng.

Completion date: May 1996.

Report:

McCarthy, F. Desmond, and Kangbin Zheng. 1996. "Population Aging and Pension Systems: Reform Options for China." Policy Research Working Paper 1607. World Bank, Office of the Senior Vice President, Development Economics, Washington, DC.

Poverty in Russia during the Transition

Russia's transition to a market economy has been accompanied by a sharp increase in the incidence and severity of poverty. Poverty is not a new phenomenon in Russia: when the country entered transition, hidden unemployment was extensive, and a tenth of the population lived below the poverty line. But since then the number of poor households has grown, and by 1993 some 32 percent of the population was living below the revised official poverty line. Over the same period the severity of poverty (the distribution of poverty weighted to reflect the lower welfare of the poorest) increased by 44 percent.

This research traced the effects of transition on households, constructing a dynamic profile of poverty and exploring the labor market aspects in detail. It also investigated the incidence of social programs and the role of private transfers. The project, a collaborative effort involving Russian and Western academics, emerged from the 1995 poverty assessment for Russia.

The analysis was based on the Russian Longitudinal Monitoring Survey conducted between 1992 and 1994, the first large-scale nationally representative survey in Russia. It also drew on official sources of data from the Goskomstat as necessary, as well as other surveys, in particular the VTSIOM national surveys of public opinion and household well-being.

Since the beginning of transition in 1991 Russia has experienced a 40 percent decline in real money incomes and output and a gradual widening in the distribution of income among population groups and regions. High inflation rates through most of the transition have hurt the poor, especially those on administered incomes. Extensive labor market adjustments have followed price and wage liberalization. Real wages have fallen by half since their 1991 peak, and increasing numbers of people have been subject to layoffs and reduced working hours. During 1993–94 only 40 percent of the workforce was being paid in full and on time.

The poor in Russia are primarily families with children, the unemployed, the elderly living alone, and women. The homeless and previously institutionalized people form a small but critical group of poor. As in other European countries in transition, the working poor predominate: some 66 percent of the poor live in households whose head of household is employed. The largest subgroup is households with children, particularly single-parent and young households: generally, the younger and more numerous the children, the more likely that the family is poor. Nearly 85 percent of families with three or more children under six years of age are poor. In Russia, as elsewhere, family size and composition is a strong predictor of a household's poverty status. Unemployment also is strongly linked with poverty, and an estimated 63 percent of households headed by an unemployed person were poor in 1993.

Responsibility: Europe and Central Asia, Country Department III, Human Resources Development Division—Jeni Klugman (Internet address jklugman @worldbank.org). With Professor Rimashevskaya, Russian Academy of Sciences; Natalia Kovaleva and Larissa Zubova, VTSIOM; Mark Foley, Yale University; and Donald Cox and Z. Eser, Boston University.

Completion date: June 1996.

Report:

Klugman, Jeni, ed. Forthcoming. *Poverty in Russia during the Transition.* Washington, DC: World Bank. (Also to be published in Russian.)

Bank-Led Restructuring of Problem Enterprises in Poland

In 1993 Poland embarked on an innovative program to restructure its state-owned enterprises—the Enterprise and Bank Restructuring Program. The goals of the program were to separate unprofitable but viable state-owned firms from their nonviable counterparts, liquidate nonviable firms while minimizing the inappropriate liquidation of viable firms, and promote the speedy restructuring and privatization of potentially viable firms. The program forced commercial banks to address problem loans on their books at the end of 1991 through one of five routes: a nonjudicial bank-led workout with the debtor (under a new conciliation process), a judicial workout, filing for bankruptcy of the debtor, filing for liquidation of the debtor under the state enterprise law, or sale of the problem loan on the secondary market.

The objective of this research is to evaluate the impact of the program on enterprise restructuring and exit. The research emphasizes the links between expected changes in creditor behavior (brought about by other aspects of the program, primarily bank restructuring and privatization) and enterprise performance. It is part of a larger comparative study on modes of restructuring and exit of financially distressed state-owned firms in several transition economies.

The study addresses the following question: To what extent is the bank-led restructuring component of the program leading to appropriate long-term restructuring of the viable firms and closure of the nonviable firms that are participating in the program?

This general question leads to several more specific questions:

- What are the roles and incentives of the stakeholders (banks, other creditors, firm managers, owners, the state) in the program?

- To what extent do successful workout (or conciliation) agreements explicitly provide for new investments, asset sales, conversion of debt to equity, ownership stakes for management or labor, wage concessions, or changes in financial performance? How does an enterprise's characteristics (size, asset composition, current profitability, debt ownership structure) affect the contents of its conciliation agreement? Are the agreements being implemented?
- Under what circumstances do creditors push for liquidation or bankruptcy? Are creditors' interests sufficiently protected in liquidation and bankruptcy?
- What impact does the program have on the hardness of the budget constraint and the subsequent performance of participating firms? On the extent of asset reallocation and privatization in the economy?

To address these questions the study undertook a detailed survey of the characteristics of firms and the outcomes of the process in a sample of 139 firms subject to the program. The sample was stratified to include a significant number in each of the five categories of outcomes and to ensure representation from each region of the country. The questionnaire used in the survey contained detailed questions on the firms' financial and operational performance from 1991 through 1994 and the characteristics of relevant processes under the program.

Analysis of the bank conciliation process and its outcomes through mid-1995 and of the other resolution paths (court conciliation, bankruptcy, state enterprise liquidation, repayment, and sale of debt) has found that the Enterprise and Bank Restructuring Program was an important catalyst in getting banks and enterprises to tackle their bad debt problems. It also has found that the program operated according to legal requirements. The program appears to have been generally able to push better firms into restructuring paths and worse firms into liquidation paths.

But each resolution path operated with serious shortcomings. Although it is perhaps still too early to judge results, the bank conciliation process appears to have led to little restructuring in firms subject to it. The bankruptcy and state enterprise liquidation processes are poorly designed and give creditors and trustees little power or incentive to use them properly. Court conciliation also is poorly and inflexibly designed, and sales of debt are impeded by tax rules and limits on purchasers' use of debt. So while the program is a good start, more work is needed to redesign the underlying reorganization and "exit" mechanisms and to strengthen creditors' and debtors' incentives to use them to restructure the Polish economy.

Responsibility: Policy Research Department, Transition Economics Division—Cheryl Gray (Internet address cgray2@worldbank.org). With Arnold Holle, Boston Consulting Group; and Stephan Krajewski, University of Lodz. The Japanese Trust Fund is contributing funding for the research.

Completion date: December 1996.

Reports:

Gray, Cheryl, and Arnold Holle. 1996. "Bank-Led Restructuring in Poland I: An Empirical Look at the Bank Conciliation Process." World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Bank-Led Restructuring in Poland II: Bankruptcy and Its Alternatives." World Bank, Policy Research Department, Washington, DC.

A Comparative Overview of Transition

The postsocialist transition has now been under way for six years in the countries of Eastern Europe and the former Soviet Union. As countries pursue very different approaches to reform, there is an increasing need for comparative analysis of country experience—to assess the progress of the more advanced reformers and to extract lessons of experience for other countries, some of which are lagging in their reforms. And in such areas as energy, where adjustment involves interdependence among countries, there is a need to take a perspective that goes beyond one country.

This project has carried out a set of comparative research studies to synthesize the adjustment experience of economies in transition. The studies have focused on selected countries in Eastern Europe, the former Soviet Union, and East Asia, depending on the topic. They have looked at the patterns of transition; the role of initial conditions; agriculture, finance, and energy; the role of markets and international trade; the transition toward private ownership; and the impact of transition on households. The studies have all been used as background papers for *World Development Report 1996*, which focused on transition, but also are being published separately.

The studies address these questions: What was the legacy of the previous system? What have been the main adjustment issues in the area concerned? What reform strategies have been followed in the leading countries, and how have they affected firms' behavior and performance? What major policy lessons have emerged? How do sectoral or market reforms interact with one another and with macroeconomic performance? Where are the major unknowns? Where are there still important areas of policy disagreement?

Responsibility: Policy Research Department, Transition Economics Division—Martha de Melo (Internet address mdemelo@worldbank.org), Alan Gelb, Inderjit Singh, Cevdet Denizer, Cheryl Gray, Branko Milanovic, and Randi Ryterman, and Finance and Private Sector

Development Division—Gerard Caprio; Europe and Central Asia, Country Department II, Energy, Environment, Transportation, and Telecommunications Division—Dale Gray. With Bartlomiej Kaminski, Barry Ickes, and Zhen Kun Wang.

Completion date: December 1996.

Reports:

Caprio, Gerard. 1995. "The Role of Financial Intermediaries in Transitional Economies." *Carnegie-Rochester Conference Series on Public Policy* 42:257–302.

Dabrowski, Marek. 1996. "Different Strategies of Transition to a Market Economy: How They Work in Practice." Policy Research Working Paper 1579. World Bank, Policy Research Department, Washington, DC.

_____. "Unsuccessful Attempts to Stabilize the Russian Economy."

_____. "Western Aid Conditionality and the Post-Communist Transition."

de Melo, Martha, Cevdet Denizer, and Alan Gelb. 1996. "From Plan to Market: Patterns of Transition." Policy Research Working Paper 1564. World Bank, Policy Research Department, Washington, DC.

de Melo, Martha, Cevdet Denizer, Alan Gelb, and Stoyan Tenev. Forthcoming. "Explaining Transition: The Role of Initial Conditions in Reforming Socialist Economies." World Bank, Policy Research Department, Washington, DC.

Gray, Cheryl. 1995. "In Search of Owners: Lessons of Experience with Privatization and Corporate Governance in Transition Economies." World Bank, Policy Research Department, Washington, DC.

Gray, Dale. 1995. *Reforming the Energy Sector in Transition Economies: Selected Experience and Lessons.* World Bank Discussion Paper 296. Washington, DC.

Ickes, Barry W., and Randi Ryterman. 1995. "The Organization of Markets and Its Role in Macroeconomic Stabilization during Transition." World Bank, Policy Research Department, Washington, DC.

Kaminski, Bartlomiej, and Zhen Kun Wang. 1995. "External Assistance and Progress in Transition." World Bank, Policy Research Department, Washington, DC.

Kaminski, Bartlomiej, Zhen Kun Wang, and L. Alan Winters. 1996. *Foreign Trade in the Transition: The International Environment and Domestic Policy.* Studies of Economies in Transformation 20. Washington, DC: World Bank.

Milanovic, Branko. 1995. "Poverty, Inequality, and Social Policy." Policy Research Working Paper 1530. World Bank, Policy Research Department, Washington, DC.

Macroeconomic Management and the Transition to the Market in Vietnam

This research addresses three interrelated sets of questions. The first set concerns what policies promote growth, in particular whether the standard recommendation of disciplined fiscal and monetary policies and trade liberalization will have the same impact in low-income countries as in middle-income ones. The second set of questions concerns the pace and sequencing of reform, particularly in transition economies. And the third consists of the political economy issues of how to design a reform program that earns and maintains widespread popular support.

The research investigated these questions through a detailed case study of Vietnam that included some comparison with other countries. Vietnam is an interesting case: among countries with per capita GNP under $500, it has had by far the best performance in per capita growth over the past decade, at nearly 5 percent a year. During this period its poverty rate declined from about 75 percent of the population to about 50 percent.

The research finds that Vietnam's tight fiscal and monetary policies and opening to the international economy had the predicted, positive effect on growth. Bold devaluation and trade liberalization were particularly important for spurring growth during the adjustment period. A key to the economy's success has been the real growth in exports averaging about 25 percent a year.

For political reasons, progress has been most difficult to achieve in reforming state enterprises. The real adjustment that has occurred in the sector has resulted primarily from improvements in fiscal, monetary, and trade policies. Fiscal reforms tightened the budget constraint on state enterprises by eliminating subsidies and streamlining taxes. Tight credit policies reduced indirect subsidies. And trade liberalization spurred competition and adjustment of state firms in the direction of the country's comparative advantage.

From a political economy point of view, stabilization and trade liberalization generated immediate benefits for the large majority of households. That Vietnam was an agricultural economy with a significant informal sector helped in generating a quick supply response to reform. The widespread support for the basic package of strong macroeconomic management and openness to the international economy has subsequently kept the reform program moving, even though some reforms are difficult and face strong opposition.

The findings of this research were reflected in the Vietnam country assistance strategy (October 1995) and have influenced the design of the second structural adjustment credit for the country. Because Vietnam's experience provides strong lessons for low-income countries in Africa and elsewhere, an effort is being made to disseminate these lessons to country economists, and two presentations have been made to the Bank's Africa region. The main results also have been presented at a World Institute for Development Economics Research

(WIDER) conference in Helsinki, the American Economic Association meetings, a seminar at the Economic Planning Agency in Tokyo, and meetings with policymakers in Vietnam.

Responsibility: Policy Research Department, Macroeconomics and Growth Division—David Dollar (ddollar@worldbank.org). With Borje Ljunggren, Swedish International Development Authority.

Completion date: December 1996.

Reports:

Dollar, David. Forthcoming. "Economic Reform, Openness, and Vietnam's Entry into ASEAN." *ASEAN Economic Bulletin.*

Dollar, David, and Borje Ljunggren. Forthcoming. "Macroeconomic Adjustment and Structural Reform in an Open Transition Economy: The Case of Vietnam." In Padma Desai, ed., *Going Global: Transition from Plan to Market in the World Economy.* Cambridge, Mass.: MIT Press.

Welfare during the Process of Transition

Poverty has increased in Eastern Europe and in the former Soviet republics as incomes have declined and income distribution has become more unequal. Because of the general slide in incomes, large portions of the population, including the middle class, have become poor. The new poor include not only unemployed urban workers but also many employed but underpaid skilled workers, administrative staff in enterprises and in government, education and health personnel, pensioners, and single parents. This is not the "residual poverty" that is found in many other countries.

This research project addresses these questions: What social and professional groups have benefited most from the change? Who are the winners and losers in the transition? What happened to income inequality? Who are the new poor? What is the relation between unemployment and emerging poverty? How did wage distribution change? Did returns to education increase? Is universal welfare a financially feasible alternative, and if so, can such support be delivered with the existing social infrastructure?

The study is organized in three parts. First, it is producing an overview of the social policy and social achievements at the end of the socialist period. Second, it is conducting empirical studies of the changes that have occurred since, looking both at the actual outcomes (poverty, wage levels, unemployment, and income distribution) and at the new policies designed to deal with the problems (unemployment benefits, divestment by enterprises of their social support role, better targeting of social assistance, and so on). Third, the research is analyzing the key problems and using cross-country analysis to draw lessons for Bank policy and for policymakers in reforming countries. The most important issues are these: Should universal welfare benefits be introduced? Is means-testing possible if income levels are difficult to gauge? And is self-targeting (for example, through public works) feasible?

The project uses data published by the countries' statistical offices, along with household data for a few countries. It combines descriptive and analytical approaches (testing a number of hypotheses) and uses the technical approaches derived from the analysis of Gini and concentration coefficients.

Some of the findings:

- Income distribution before transition was fairly egalitarian, with little difference in average incomes among social groups.
- Farmers tended to enjoy incomes at least at parity with those of urban workers.
- Urban workers were most affected by the economic decline, particularly by unemployment.
- The private sector's increased share in the economy is associated with greater inequality in the distribution of income.
- Wage distribution, fairly egalitarian under communism, is becoming more unequal, with increasing returns to education.
- Social transfers have no redistributive function because they are almost uniform across income groups.
- The main beneficiaries of the transition appear to be those with a strong private sector orientation and skills in high demand in the market economy.
- The main losers are most industrial workers and mid-level clerical staff.
- Pensioners have been able to hold their ground relative to other social groups.
- Declining incomes and increasing inequality have both contributed about the same to the growth in poverty.

Responsibility: Policy Research Department, Transition Economics Division—Branko Milanovic (Internet address bmilanovic@worldbank.org) and Yvonne Ying. With Carlos Cavalcanti; Nadia Soboleva; Victor Gabor; Luisa Ferreira; Izabela Rutkowska; Carol Graham, Brookings Institution; Alistair McAuley, Essex University, United Kingdom; and Nanak Kakwani, University of New South Wales, Australia.

Completion date: June 1997.

Reports:

Cavalcanti, Carlos. 1993. "Bridging the Poverty Gap in the Former Soviet Union." Research Paper Series 4. World Bank, Policy Research Department, Washington, DC.

Ferreira, Luisa. 1994. "Poverty and Inequality during Structural Adjustment in Rural Tanzania." Research Paper Series 8.

World Bank, Policy Research Department, Washington, DC.
Graham, Carol. 1993. "The Political Economy of Safety Nets during Market Transitions: The Case of Poland." Research Paper Series 3. World Bank, Policy Research Department, Washington, DC. (Also published in Carol Graham, *Democracy, Markets, and the Poor: New Coalitions for Economic Reform*, Washington, DC: Brookings Institution, 1994.)
Kakwani, Nanak. 1994. "Income Inequality, Welfare, and Poverty in Ukraine." Research Paper Series 7. World Bank, Policy Research Department, Washington, DC. (Also published as Policy Research Working Paper 1411, World Bank, Policy Research Department, Washington, DC, 1995.)
McAuley, Alistair. 1994. "Social Welfare in Transition: What Happened in Russia." Research Paper Series 6. World Bank, Policy Research Department, Washington, DC.
Milanovic, Branko. 1992. "Income Distribution in Late Socialism: Poland, Hungary, Czechoslovakia, Yugoslavia, and Bulgaria Compared." Research Paper Series 1. World Bank, Policy Research Department, Washington, DC. (Revised version, "Cash Social Transfers, Direct Taxes, and Income Distribution in Late Socialism," published in *Journal of Comparative Economics* (April):175–79, 1994.)
_____. 1993. "Determinants of Cross-Country Income Inequality: An 'Augmented' Kuznets Hypothesis." Research Paper Series 5. World Bank, Policy Research Department, Washington, DC. (Also published as Policy Research Working Paper 1246, World Bank, Policy Research Department, Washington, DC, 1994.)
_____. 1993. "The Social Costs of Transition to Capitalism: Poland 1990–91." Research Paper Series 2. World Bank, Policy Research Department, Washington, DC. (Also published as Policy Research Working Paper 1165, World Bank, Policy Research Department, Washington, DC, 1993.)
_____. 1995. "Poverty, Inequality, and Social Policy in Transition Economies." Research Paper Series 9. World Bank, Policy Research Department, Washington, DC. (Also published as Policy Research Working Paper 1530, World Bank, Policy Research Department, Washington, DC, 1995.)
_____. 1996. "Income, Inequality, and Poverty during the Transition." Research Paper Series 11. World Bank, Policy Research Department, Washington, DC.
Ying, Yvonne. 1996. "Income, Poverty, and Inequality in China during the Transition to a Market Economy." Research Paper Series 10. World Bank, Policy Research Department, Washington, DC.

Trade Policy in Transition Economies

Integration with the international economy is an essential element of the transition from central planning to a market system. Price distortions, so common under central planning, could only be maintained through formidable trade and foreign exchange controls that divorced the domestic from the international market. Dismantling these barriers promotes efficient domestic resource allocation. International prices pose a competitive challenge to domestic producers and signal the direction for needed structural changes. Trade policy reform allows the link between domestic and international prices and markets, and is thus a key determinant of the pace and scope of the structural change necessitated by the transition.

The principal output of this project in 1996 was a report that summarizes trade performance and the experience with trade policy reform in the former Soviet republics. The report also recommends strategies for increasing their integration with the international economy—strategies that entail actions by the countries themselves as well as by their main trading partners, the industrial countries of the OECD.

The report is based on eight country studies and other analyses prepared by World Bank staff and consultants. It is the first such report that brings together a comparative analysis of experience in a large number of former Soviet republics.

Among the principal findings of the study is that ineffective trade and payment policies have been at the root of the decline in trade, which has been linked to the contraction in output. The heavy economic interdependence of the former Soviet republics has intensified the problem.

Countries that have reformed slowly have often maintained that their strategy will reduce the high cost of transition. In the former Soviet republics, however, the slow adjustment strategy typically has backfired. The slow reformers—such as Belarus, Georgia, Ukraine, and Uzbekistan—have not arrested their output decline and still face most of their adjustment costs. The Baltics, the fastest reformers, have done the most to reorient production and trade, and their near-term growth forecasts are optimistic. In Estonia, where effective trade policies were introduced as part of an overall package of rapid stabilization and economic liberalization, output began to expand in 1993. In Latvia and Lithuania the decline appears to have bottomed out and output began to expand a bit by late 1994. Falling between the two extremes, the Kyrgyz Republic, Moldova, and Russia have introduced trade and other reforms but have not yet arrested declines in output and trade.

The results of the case studies are reflected in cross-country regression analysis that shows that trade reform and reorientation of trade toward the rest of the world have done much to arrest the decline in output usually associated with the transformation from planning to market. Trade policy reform has usually been a

part of broader reforms aimed at liberalization, stabilization, and systemic change.

The findings and recommendations of the country studies have been communicated to the governments in the context of policy dialogue with the Bank on international trade reform, supported in many cases by Bank lending.

Responsibility: International Economics Department, International Trade Division—David Tarr (Internet address dtarr@worldbank.org); and Europe and Central Asia, Country Department III, Office of the Director—Constantine Michalopoulos.

Completion date: June 1998.

Report:

Michalopoulos, Constantine, and David Tarr. 1996. *Trade Performance and Policy in the New Independent States.* Directions in Development Series. Washington, DC: World Bank.

PRIVATE SECTOR DEVELOPMENT AND PUBLIC SECTOR MANAGEMENT

The Policy Effects of Political and Electoral Institutions in Developing Countries

Ref. no. 680-41

Even when optimal economic policies are known, governments often do not adopt them. And even when they do adopt them, the policies often are not credible and trigger only a minimal response from the private sector. This research project explores some of the political and electoral institutions that shape government policy responses and affect their credibility.

The project first synthesizes the policy effects of a broad range of political and electoral institutions, taking into account for the first time the interactions among these institutions in generating policy outcomes. It then examines the influence of electoral and political institutions in Argentina, Chile, Mexico, and Taiwan (China) on electric utility rates and regulatory structures and on budgetary outcomes. These institutions include the president's ability to control the agenda for policy initiatives, the possibility of reversion in policy if no decision is reached, the extent to which electoral rules lead to governments with divided authority, and the resource demands placed on political competitors by the electoral system.

The project uses a case study approach because of the difficulties in getting both economic and political data for a significant cross-section of countries. But there is considerable variation in both institutions and policies across the countries considered. There is also some time-series variation because of significant institutional and policy changes that have occurred in several of the countries.

The study has derived political data from interviews and from the constitutional and statutory requirements for decisionmaking in the case study countries. And it has obtained data on rates and budgets and other economic data from in-country sources.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Philip Keefer (Internet address pkeefer@worldbank.org). With Matthew McCubbins, Stephan Haggard, Matthew Shugart, and Gary Cox, University of California, San Diego; and William Heller, Stanford University.

Completion date: December 1996.

Cross-Country Indicators of Institutional Uncertainty

Ref. no. 680-51

Case study evidence from many developing countries shows that a reliable institutional framework is perceived to be among the most important preconditions for successful private sector development. When asked about problems in doing business, private firms very often name political and policy uncertainty as major obstacles in undertaking new investment projects. But the lack of adequate data has prevented systematic tests of the importance of institutional uncertainty as an impediment to private investment and economic growth.

This research aims at collecting data on the perception of institutional uncertainty by working with multiple choice questionnaires sent to private firms in a considerable number of countries on a regular basis. Its narrow goal is to develop and test a survey instrument that could be used in such mailed surveys. An instrument for private sector surveys on the reliability of the institutional framework could help policy analysts regularly check firms' trust in government and its policies.

The survey instrument will be developed in two steps. First, a draft questionnaire will be used to conduct in-depth interviews with businesspeople in four developing countries. Second, a revised version of the questionnaire will be sent out to a stratified sample of firms in these case study countries to determine whether the questions are clearly understood by the survey respondents.

Preliminary findings based on a nonrandom survey in 28 developing countries show that mailed surveys can produce quantitative indicators that have some explanatory power in growth regressions. In particular, the reliability of laws and regulations in the eyes of private investors turned out to be strongly associated with investment and growth rates.

Responsibility: International Finance Corporation, Economics Department—Guy P. Pfeffermann (Internet address gpfeffermann@ifc.org). With Aymo Brunetti and Beatrice Weder, University of Basel.

Completion date: March 1997.

Regulating Technology Transfer in Agriculture: Impact on Technical Change, Productivity, and Incomes

Ref. no. 680-61

This research continues work, begun in a pilot project, on regulatory barriers that block private technology transfer in agriculture. The pilot research developed a methodology to estimate the effect of regulatory reforms for countries that have reformed and to project the effect of proposed regulatory reforms for countries that have not yet reformed. Using this method, it studied the impact of Turkey's regulatory reforms in the 1980s, testing and confirming the hypothesis that removing barriers to private technology transfer accelerates technical change, boosting productivity and incomes.

The results from Turkey are interesting and suggestive, but they cannot be convincingly applied to all developing countries. This research will further test the hypothesis by investigating the effect of regulatory reforms in Bangladesh and India since the late 1980s and more recently in Zimbabwe. It will also collect and review information on the transfer of seed varieties, especially through private seed companies, to support projections about the effect of regulatory reform on crop yields. Finally, drawing on country studies and other sources, the study will propose and discuss options for regulatory reforms that remove obstacles to private technology transfer while strengthening policies and programs that limit externalities.

Further confirmation of the hypothesis that removing regulatory barriers blocking private technology transfer in agriculture boosts productivity would suggest that the Bank, other donors, and governments should focus more attention on reform of such regulations.

The project's research activities have been designed based on discussions with operational divisions. The project is expected to contribute to Bank activities by improving Bank agricultural policy advice in general and for specific countries and by building capacity within the Bank to address regulatory issues through collaboration with sector and project activities. By subcontracting research activities to local consultants, the project also is expected to build capacity in client countries to address regulatory issues.

Results from both the pilot project and this project are being disseminated through participation in operational missions and through workshops at headquarters and in the field.

Responsibility: International Economics Department, International Trade Division—John Nash (Internet address jnash@worldbank.org). With David Gisselquist; Carl Pray, Rutgers University; Rashid Harun-Ar; and Joseph Rusike. ICRISAT is participating in the research.

Completion date: June 1997.

Reports:

Gisselquist, David. 1996. "A Strategy for Modernizing Agricultural Technology in Ghana." Paper presented at seminar, Agricultural Inputs, Regulations, and Technology Transfer in Ghana, sponsored by the World Bank and the Ministry of Food and Agriculture, Ghana, February.

_____. Forthcoming. "Technology Transfer, Competition, and Trade Liberalization for Low-Risk Pest Management." Trade Expansion Program Occasional Paper. UNDP/World Bank Trade Expansion Program, Washington, DC.

_____. "Toward a Competitive and Modern Seed Industry for Farmers in Southern Africa." World Bank, Southern Africa Department, Washington, DC.

Gisselquist, David, and Carl Pray. "Deregulating Technology Transfer in Agriculture: Impact of Turkey's 1980s Reforms." World Bank, International Economics Department, Washington, DC.

Gisselquist, David, and Jitendra Srivastava, eds. Forthcoming. *Easing Barriers to Movement of Plant Varieties for Agricultural Development*. Washington, DC: World Bank.

_____. "Reform of Seed Regulations: Easing Barriers to Better Seed Variety." Agriculture Technology Note 12. World Bank, Agriculture and Natural Resources Department, Washington, DC.

Efficiency and Equity Implications of Argentina's Privatization of Utilities

Ref. no. 680-65

Initiated in 1989, Argentina's privatization program has been impressive in both speed and coverage. It has been intensively analyzed in the economics literature from two basic perspectives: the macroeconomics—how it affected the public sector's financial position and the current account—and the process—how privatization was implemented. The literature has also assessed its efficiency impact, but only in terms of some general technical indicators. No study has addressed the effects of the reform on other sectors and factor markets and on income distribution.

This research looks at these neglected issues, through simulations of a computable general equilibrium model capturing the full effect of relative changes in goods and factor prices on resource allocation and welfare. The model is based on a social accounting matrix prepared in 1993, the first year in which the new prices had stabilized.

The model includes five income brackets, 21 production sectors, the government, and a foreign sector. The social accounting matrix divides utilities into several categories: gas, power, telecommunications, and water and sanitation. The separation of these sectors is an innovation in Argentina, now possible because the new

regulatory agencies generate most of the relevant information for each sector. This information is complemented by private surveys used to estimate the decomposition of each sector's costs into their components. Another contribution of this research is its explicit modeling of the effect of regulatory policies on the prices of each utility service.

The study now has a reliable database for all utilities, and a model that allows full simulations of the effect of the electricity reform. Initial simulations for the electricity sector suggest that the main winners under the reform in the short run are those in the top and bottom quintiles (the rich through the capital markets and the poor through reductions in quantity rationing). For the other utility sectors the net outcome of the reforms depends on the interactions between direct effects through changes in service prices and access and indirect effects through the labor market as unemployment increases.

The study's findings will be presented at seminars in Argentina.

Responsibility: Latin America and the Caribbean, Country Department I, Infrastructure and Urban Development Division—Antonio Estache (Internet address aestache@worldbank.org). With Omar Chisari and Carlos Romero, Universidad Argentina de la Empresa.

Completion date: November 1996.

Report:

Chisari, Omar, and Carlos Romero. 1996. "Descripcion de la SAM de la Argentina en 1993 con Sectores de Infraestrutura." World Bank, Latin America and the Caribbean, Country Department I, Washington, DC.

African Politics and African Development

Ref. no. 680-86

Development analysts tend to believe that many of Africa's development problems derive from its politics. Yet until now there have been no data to test whether this is true and to investigate how politics might influence Africa's policy choices. This research will supply those data, enabling us to address such crucial questions as these:

- Do different forms of government lead to different rates of investment and growth? For example, are military governments less likely than single-party regimes to attract capital and growth? Are governments installed by coup less likely to preside over high rates of growth than governments installed by election?
- Do different forms of government choose different forms of economic policy? For example, are politically open policies more likely to be economically open as well?

The research will develop detailed information about the political systems in 46 African states for 1975, 1980, 1991, and 1995. It will discern and describe patterns of political and economic variation across countries and over time. It will explore the impact of causal factors on the rates and magnitudes of variation, both political and economic. In particular, it will examine the effect of political differences on variations in economic performance and the effect of variations in economic performance on political change. Among the possible explanatory variables that will be explored are the size of the middle class, differences in measures of instability and violence, and differences in levels of external dependence (measured by rate of external indebtedness). Once the research has identified overall patterns, it will collect qualitative information on about six cases that can offer greater insight into the dynamics of the patterns observed and illustrate the causal mechanisms that generate them.

The data set and a numerical and graphical depiction of the patterns will be published. There also will be a series of working papers and articles exploring the findings and the cases and their broader implications for African policymakers and Bank staff.

Responsibility: Policy Research Department, Finance and Private Sector Development Department—Mary Shirley (Internet address mshirley@worldbank.org). With Robert Bates, Harvard University.

Completion date: June 1997.

Ownership Structure, Corporate Governance, and the Efficiency of Equity Markets: The Case of Publicly Listed Chinese Stock Companies

Ref. no. 681-08

Restructuring state-owned enterprises has been considered key to the success of China's economic reform. This study investigates whether ownership structure has significant effects on the performance of publicly listed companies in China and, if it does, in what ways. The theoretical model is built on three bodies of literature: on privatization, on the role of large institutional shareholders, and on the role of stock markets in corporate governance. The empirical analysis uses firm-level data on 300 corporations listed on China's two stock exchanges and focuses on such issues as the actual ownership mix, shareholder types, and their relations with firms' performance.

Publicly listed companies in China have been increasing in number, and the ownership mix is changing. In 1993, 170 companies were listed on the Shanghai and Shenzhen stock exchanges; at the end of 1995, 323 were

listed. The ownership structure of these companies typically is a mix of five types: state shares, legal person shares, employee shares, individual shares, and B-shares held by foreign investors. (Legal persons are defined as nonindividual entities established in compliance with the company law, such as corporations, state-owned enterprises, joint ventures, and nonbank financial institutions.) In 1993, 35 percent of the outstanding shares of all listed companies were state shares, and 30 percent legal person shares. Individual shares accounted for 25 percent, and the rest were B-shares and employee shares.

Preliminary results based on data from 170 publicly listed companies in 1993 are promising: firms' performance, measured by the ratio of market value to book value, is negatively correlated with the proportion of state shares, positively correlated with the proportion of legal person shares, and insignificantly correlated with the proportion of individual shares.

Several potential explanations and hypotheses will be investigated further, using updated and more detailed firm-level data for 1994 and 1995 that are being collected and prepared in China. Many theoretical and empirical issues need to be addressed in the next stage of survey and econometric analysis, such as the nontradability of state and legal person shares in China and the channels through which legal persons exert control over management. The study also will undertake comparative analysis, looking at experience in other East Asian and transition economies.

Responsibility: Economic Development Institute, Office of the Director—Yan Wang (Internet address ywang@worldbank.org). With Xiaonian Xu, Amherst College.

Completion date: June 1997.

Bureaucratic Structures and Economic Performance in Developing Countries

Ref. no. 681-16

There is ample evidence of the inadequacy of public administration in many developing countries and a strong feeling that this hinders economic activity and government efforts to, for example, reduce poverty and smooth out market imperfections. Professionalization is a key element in recommendations to reform public administration. But there is little evidence about how professionalization affects policy outcomes or economic performance more generally.

This project aims to measure the effect on outcomes of bureaucratic structure, particularly bureaucratic performance and growth. It focuses on two aspects of bureaucratic structure: the extent of meritocratic recruitment into agencies and the possibility for career-building within agencies. Theory suggests that each of these, within certain limits, can restrain corrupt behavior by public officials and encourage them to perform more efficiently.

The project is collecting data on these characteristics of civil service in 35 countries through a minimum of three questionnaires completed by experts in each country. Early results from 55 questionnaires show that, controlling for country income and school enrollment, internal promotion and broader career-building elements of bureaucratic structure and meritocratic recruitment and salary are significantly associated with reductions in independent measures of corruption and bureaucratic delay.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Philip Keefer (Internet address pkeefer@worldbank.org). With James Rauch, University of California, San Diego; and Peter Evans, University of California, Berkeley.

Completion date: December 1996.

The Privatization Experiences of Airports

Privatization in the airport sector has received less attention than privatization in other sectors, yet it is nevertheless a rapidly growing trend worldwide. By early 1994 some form of privatized airport operation existed, was being developed, or was under way in more than 50 countries. Airport privatization has been undertaken in both industrial and developing countries, but in different forms. Generally, industrial countries divest all or partial interest in existing airports or airport authorities, and developing countries use long-term leases and concessions to promote private sector participation in the development of airport facilities while retaining ownership rights.

This study looked at the issues of airport privatization with the objective of increasing the awareness of policymakers and Bank staff about the emerging trends in air transport and its links to global industry. The study began with an overview of the airport sector, defining the nature of the business and reviewing its financial and economic performance. It examined the patterns of changing ownership structures in selected countries and their effects on the performance of airports, and it carried out case studies of airport privatizations in Europe, Latin America, North America, and the Asian-Pacific region. The study also examined the key issues that will concern policymakers and airport managers in the coming decades as airport capacity falls increasingly short and the need grows to develop new and innovative sources of financing in response to strategic shifts in aviation policy. The study included a

comparative analysis of different countries' airport regulatory frameworks and their effect on airport cost and revenue structures, congestion, environmental concerns, and ownership patterns.

The study found that in countries undertaking airport privatization there is in general a need for a coherent, integrated strategy, reduced political interference, and increased transparency. Most airport privatizations have been undertaken in an ad hoc way. Airport divestitures are generally site-specific and rarely occur within an integrated strategy for restructuring and privatizing a national airport system. Countries have generally privatized large, major airports, leaving the nonviable operations to be funded by the government. This approach has enabled governments to foster private investment, but it has also engendered economic and social problems. Whatever form of privatization is selected, if the government's objective is to increase the role of the private sector, there will be a need for a better understanding of airport revenue performance and pricing.

The study provided the analytical underpinnings for a number of loans directed to the privatization of airports in Latin America and the Caribbean and other regions. The findings were discussed at an international seminar on airport infrastructure cosponsored by the Bank and the private sector in Vienna in December 1995 and at international conferences on airport privatization. The findings also will contribute to a Bank policy paper on the aviation sector.

Responsibility: Latin America and the Caribbean Technical Department, Public Sector Modernization Division—Malcolm Rowat (Internet address mrowat @worldbank.org), Anil Kapur, and Albert Amos; and Private Sector Development Department, Private Sector Development and Privatization Division—Ellis Juan. With Aviation Planning Associates, United States.

Completion date: December 1995.

Airport Privatization Study

During the coming years air transport infrastructure will need to be expanded and modernized to accommodate the growing demand for international travel and transport. And developing countries wishing to integrate into the global air transport industry will need to invest substantial resources in airport infrastructure. But increased demands on developing country finances have induced policymakers to seek alternatives to government financing and management of airport infrastructure.

This study analyzed private sector participation experiences in the airport sector. Because the private sector has only recently become involved in the airport sector on any significant scale, it is still too early to draw concrete lessons. But the study provided, principally for developing country policymakers, practical information, context, and strategies to foster private sector involvement in the airport sector.

Drawing on 10 case studies representing different regions and national income levels, the study addressed a number of issues, including privatization mechanisms, regulatory and legal structures, project finance schemes, and cross-subsidization concerns. It derived trends and lessons from these privatization cases. And since airlines are the primary customers of airports, it included a survey of airlines on their perspectives on the involvement of the private sector in providing air transport infrastructure.

The research showed that governments have followed diverse patterns and strategies in privatizing their airport operations. But the case studies consistently identified funding needs for upgrades and expansions, coupled with budgetary constraints. As the private sector increases its participation in the ownership and management of airports, governments will need strengthened institutional capacity to efficiently perform their roles as policymakers and regulators.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Kevin Young (Internet address kyoung @worldbank.org) and Ellis Juan. With Emily Evershed and Aviation Planning Associates. The Privatization Trust Fund contributed funding for the research.

Completion date: January 1996.

Report:

Juan, Ellis. 1995. "Airport Infrastructure: The Emerging Role of the Private Sector: Recent Experiences Based on Ten Case Studies." CFS Discussion Paper Series 115. World Bank, Cofinancing and Financial Advisory Services Department, Washington, DC.

Argentine National Privatization

This study aimed to provide policymakers and practitioners with practical information and guidance for designing and implementing privatization programs. The study reviewed the Argentine privatization program, focusing on five major transactions: the telephone company (ENTel), the electric utility (SEGBA), the gas utility (GdE), the water and sewerage utility (OSN), and the energy enterprise (YPF). The study looked at three phases in each privatization: preparation for privatization, the process and the results of the transaction, and early postprivatization outcomes and impacts.

The main obstacles in implementing national privatization programs include lack of government com-

mitment, lack of a decisionmaking mechanism, inadequate technical and institutional capacity, and lack of financial resources. The Argentine experience of undertaking a large-scale privatization program in a short period shows how these problems can be overcome.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Kevin Young (Internet address kyoung @worldbank.org) and Hafeez Shaikh. With Manuel A. Abdala, Christina Kappaz, Peter Lauter, Alfredo Visintini, and Carlos Corti.

Completion date: May 1996.

Report:

Shaikh, Hafeez. 1996. "Argentina's Privatization Program: A Review of Five Cases." World Bank, Private Sector Development Department, Washington, DC.

International Postal Sector Reform Study

Until recently countries varied little in the way they structured the postal sector. Although change is slowly emerging, in most countries the postal service is still provided by a government-run post, telephone, and telegraph (PTT) administration. Historically, the importance of the postal service in facilitating communication and development has been understated. Partly because of this, the postal sector has remained unaffected while all other areas of infrastructure are being transformed. But countries are increasingly being forced to notice the postal sector because of the long negligence that has led to a crisis situation in the post and because of the dramatic changes in the approach to other infrastructure sectors, especially telecommunications, that force the issue of what is to be done with the post.

In light of the changing environment, the Universal Postal Union and the World Bank undertook a comprehensive study on international postal sector reforms. The main objective of the study was to review major postal sector reforms and extract key policy-related messages for countries considering such reforms. The study examined the postal services of six countries that have implemented postal reform: Australia, Canada, Chile, Singapore, Sweden, and the United Kingdom. In addition, it gathered information on reforms by postal administrations in many other countries, including Papua New Guinea and Tanzania. As a result, the key policy messages that have emerged in the study are based on the experiences of about 35 countries.

The study found that there is a need for reform in the postal sector, a need that is particularly evident and urgent in low-income and middle-income countries. Many countries are adopting enterprise reform in the postal sector, and examples show that this can increase efficiency and enhance service.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Kumar Ranganathan (Internet address kranganathan@worldbank.org). With the Universal Postal Union and Canada Post.

Completion date: June 1996.

Report:

Ranganathan, Kumar. 1996. "Redirecting the Post: International Postal Sector Reform." World Bank, Private Sector Development Department, Washington, DC.

Information and the Organization of Government

This research assumes that information is the key to such organizational questions for public agencies as whether to centralize or to decentralize and whether to contract out or to rely on own-production. The project comprises four studies. The first study, a theoretical investigation, looks at environmental protection and revenue generation. The starting point is a global optimization problem for government in which all problems are solved at once. The study asks whether optimal policies can be implemented by two agencies that do not closely coordinate their policies. The "delegation" result involves a rule for each agency that is similar to rules that apply if there is only one problem and only one agency: pollution is taxed indiscriminately according to pollution damages, commodity taxes refer to demand elasticities only, and both agencies refer to the same shadow price of public revenues.

The second study looks at the effectiveness of health service delivery in rural El Salvador, particularly services delivered by nongovernmental organizations. And it asks what institutional and incentive mechanisms could be useful in governing resource use in the sector. Preliminary findings show that there is little information on the effectiveness of service delivery in the current setting, and that mechanisms that elicit and use such information could improve service delivery.

The third study asked what institutional mechanisms around an environmental protection agency are conducive to its effectiveness. An environmental agency may easily be obstructed by entities around it that are interested in fiscal savings or in giving industries breaks. One solution is to establish a rapport with the beneficiaries of environmental protection, so that obstruction becomes detectable and thus riskier.

The fourth study expands the normative model for project appraisal to allow for appraisal costs, so that it will provide pointers for funding agencies on how to

allocate resources. The study also will include incentive problems associated with appraisal costs. Work on one database of projects has been initiated.

Responsibility: Policy Research Department, Public Economics Division—Gunnar S. Eskeland (Internet address geskeland@worldbank.org).

Completion date: August 1996.

Reports:

Eskeland, Gunnar S. 1996. "Environmental Protection and Revenue Generation: A Delegation Result." World Bank, Policy Research Department, Washington, DC. Draft.

_____. "Rural Health Services in El Salvador: A Managerial Perspective." World Bank, Policy Research Department, Washington, DC.

International Comparison of Railway Privatization

This study assessed the methods used to restructure railways in seven countries that have recently undertaken fundamental rail reform: Argentina, Canada, Great Britain, Japan, New Zealand, Sweden, and the United States (the U.S. "short line" rail industry). The study extracted general lessons from these restructuring experiences, analyzing each case study from three points of view: restructuring process management and institutional setting, restructuring forms, and transaction forms and their alternatives. It also explored the need to redefine—and reinvent—government's role in the sector after privatization.

The study found that a small, dedicated organizational unit vested with sufficient authority, equipped with a diverse set of skills, and made autonomous from the railway is the most effective institutional instrument for effecting fundamental change. Quality leadership and a clear vision of expected outcomes or a definitive charter also are essential. The study also found that vertically integrated railways are anachronisms and that unbundling railway assets greatly increases enterprise value and improves adaptability in service design.

Railway assets, workforces, markets (service networks), and management responsibilities can be divided in a number of ways. But the study's findings suggest that the overriding design principle when restructuring railways should be to design service delivery systems that match the needs of shippers and passengers with minimal additional distraction. In privatizations, the study found that the best sale methods are those matched to the size of the assets being sold and designed to fill in the key missing pieces (management, decisionmaking autonomy, capital, modern technology) needed for profitable operation.

The study has produced a manual for public officials and privatization units charged with reforming state railways that contains practical suggestions on management methods, restructuring techniques, and transaction strategies.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Ronald Kopicki (Internet address rkopicki @worldbank.org) and Kevin Young; and Transportation, Water, and Urban Development Department, Transport Division—Louis Thompson. With Murray King; Jorge Kohon; Transmode Consultants; and Jan Eric Nielsson, Japan Economic Research Institute. The governments of Japan and Sweden contributed funding for the research.

Completion date: August 1996.

Report:

Kopicki, Ronald, and Louis Thompson. 1995. "Best Methods of Railway Restructuring and Privatization." CFS Discussion Paper 111. World Bank, Cofinancing and Financial Advisory Services Department, Washington, DC.

The Third Wave of Privatization: Privatization of Social Sectors in Developing Countries

An increasing number of developing countries have undertaken privatization programs as a key component in efforts to restructure and modernize their economies. Privatization initially concentrated on commercial companies, then infrastructure. A new wave of privatization is now emerging, opening up social sectors—education, health, social insurance—to private management and investment.

Initiatives to increase private sector involvement in social sectors can take the form of private financing, private management, private ownership, or a combination of the three. Although the third wave of privatization is at an early stage, a few developing countries have made efforts to introduce comprehensive private sector participation in social service delivery, with the goal to improve efficiency and equity.

This study aimed to produce guidelines and assess prospects for enhancing private sector participation in the social sectors. It analyzed the constraints to private sector participation and reviewed reform options, identifying opportunities and appropriate points of intervention. And it reviewed successful comprehensive privatization experiences in higher education, health, and pension funds. These case studies provide useful insights and lessons for countries initiating similar privatization exercises.

The key constraints to private sector participation in social sectors are ideological, political, legal, regulatory,

and financial. To increase private sector involvement in social sectors, reform needs to focus on four areas:

- Entry—creating an enabling policy environment with a strong political consensus and a conducive institutional framework.
- Pricing—recovering costs of the service delivered.
- Targeting—providing a safety net for the indigent.
- Regulation—establishing an appropriate regulatory framework for monitoring performance and maintaining quality.

The findings were presented at the Asian-Pacific Privatization Conference held in Islamabad in November 1995, the Latin America and Caribbean Privatization Conference held in Lima, Peru, in January 1996, and the Private Sector Development Forum held in Baltimore in April 1996.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Gerver Torres (Internet address gtorres @worldbank.org) and Sarita Mathur.

Completion date: August 1996.

Report:

Torres, Gerver, and Sarita Mathur. 1996. "The Third Wave of Privatization: Privatization of Social Sectors in Developing Countries." World Bank, Private Sector Development Department, Washington, DC.

Africa Privatization Study

This study has examined privatization in Sub-Saharan Africa, addressing several questions: First, what has been happening in privatization in Africa? How many transactions have occurred, of what type and value, and in what sectors? How much competition is there in the process? And how much progress has been made? Second, what has been the impact of privatization in Africa? Third, what has been the driving force behind the privatization? Fourth, how has privatization been implemented? And finally, what lessons can be drawn from the African privatization experience for policymakers, practitioners, and donors?

To answer these questions, the study developed a database of privatization transactions in Africa covering the period up to December 31, 1995. In addition, it undertook field studies in 10 countries (Benin, Burkina Faso, Ghana, Kenya, Madagascar, Mozambique, Nigeria, Togo, Uganda, and Zambia). The field studies consisted of surveys of a sample of privatized enterprises to obtain information on the privatization process and postprivatization performance; interviews with government departments and divestiture agencies to learn how the programs were developed and are being implemented, what issues have arisen, and how these issues have been tackled; and interviews with other relevant stakeholders, particularly private sector bodies, to learn about their experience and perceptions of the divestiture process. The study also reviewed Bank reports and external publications and maintained a continuous dialogue with Bank task managers in the region.

The main findings of the research are as follows:

- Obtaining consistent and reliable data has been difficult, even within the Bank. Reported data have been unreliable, with many inconsistencies.
- Privatization has been adopted reluctantly and slowly, but it has become more generally accepted and the pace of divestiture has picked up. Divestiture activity is greater than is generally known.
- Privatization has had a small impact on government finances, foreign direct investment, and employment, mainly because of the general policy of first divesting small, relatively insignificant enterprises. This picture is expected to change as the larger, "strategic" enterprises come on stream. At the enterprise level privatization has shown encouraging results; despite some business failures, there is evidence of improving performance. But governments have not yet done a great deal to meet the aim of broadening ownership.
- Governments have not always divested for the stated reasons. Generally, there has been a lack of consensus in favor of privatization, so governments have tended to adopt programs because of a need for financial support from the World Bank, the International Monetary Fund, and donors. As a result, programs have lacked ownership. But this is changing as privatization becomes more widespread and regarded as inevitable.
- Governments have adopted many different approaches for planning and implementing divestiture and a variety of institutional models. Many programs are characterized by poor design and preparation. Most successful appears to be the model used in Zambia, where the program was carefully planned, the program and the privatization agency have full legal backing, the private sector plays a dominant role in privatization, capital market development was planned and implemented alongside the divestiture program, the government is fully divesting its equity interests, and transactions are handled and reported transparently.

What are the lessons for Bank operations, country policymakers, and donors? The findings suggest that privatization programs work best when attention is paid to building consensus through public information and debate; privatization activities are centrally coordinated and the implementing agency has the necessary legal mandate and authority; the process is transparent, which extensive private sector involvement can help ensure; preparation for transactions is thorough; priority is given to privatizing major enterprises to achieve

visible benefits; and government, Bank, IMF, and donor efforts and assistance are well coordinated. The findings also point to the importance of improved data collection and reporting, and of monitoring large privatized enterprises to track the effects of privatization. And they suggest that more could done to ensure that ownership is broadened, to help meet the need for investment capital and improved corporate governance.

The findings will be disseminated through the publication of a report and the case studies, a series of workshops throughout the Africa region, and workshops in the Bank. The project will produce operational guidelines for Bank task managers on monitoring and reporting divestiture. And it will make the Africa privatization database available to interested researchers.

Responsibility: Africa Technical Department, Private Sector Development and Economics Division—Oliver Campbell White (Internet address ocampbellwhite @worldbank.org), Anita Bhatia, and Lucy Fye; External Affairs Department, European Office—Patrice Dufour; and Private Sector Development Department—Anne Castle and Syed Mahmood. With Michel Cramer, Richard Thompson, Hervé Dandois, and Charles Velutinni, IDC; and Noah Mututi, Gil Yaron, Kwaria Boateng, Alistair Milne, Pierre Bide, and Symphorien Akangah, London Economics. The Overseas Development Administration, U.K., contributed funding for the research.

Completion date: September 1996.

Welfare Consequences of Privatization: The Case of Aguas Argentinas

In the past 15 years there has been a major shift in thinking about the appropriate role of the government in the economy. Privatization has been at the forefront of this policy debate. Although there is extensive literature on the subject, it is mostly theoretical and descriptive. Before the World Bank study by Ahmed Galal, Leroy Jones, Pankaj Tandon, and Ingo Vogelsang (*Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, New York: Oxford University Press, 1994), there had been little empirical work addressing major policy questions about privatization. For example, what happens as a result of public enterprise divestiture? Who gains and who loses from privatization? And are privatized firms more efficient?

Galal and his colleagues addressed those questions through detailed case studies and carefully constructed counterfactuals. Their study identified the winners and losers from privatization and estimated the gains and losses of sellers, buyers, consumers, workers, and competitors. The study covered 12 case studies in four countries (Chile, Malaysia, Mexico, and the United Kingdom).

The study developed a methodology to measure the welfare effects of privatization, refining it with each case study. But the methodology was not standardized or documented. In response to requests from Bank operational staff, this project is simplifying, standardizing, and documenting the methodology to make it accessible to more users.

The project also will apply the new, simplified methodology to the concession of water and sanitation services in Buenos Aires, Argentina, to the private enterprise Aguas Argentinas. Although a growing body of evidence shows increased efficiency from privatization in other sectors, little systematic evidence has been gathered on the effects of reform in the water sector. And the peculiarities of the water sector make it difficult to extrapolate to that sector the benefits of privatization in other sectors. Applying the methodology to the case of Aguas Argentinas will provide a valuable benchmark for assessing the welfare effects of reform in the water sector.

As part of the effort to simplify the methodology, the project will develop user-friendly software that will compile the information in *Welfare Consequences of Selling Public Enterprises* and in spreadsheets developed in the earlier study. The software will guide the user in the painstaking task of making all the required calculations and reporting the results. This new software will be tested in the Aguas Argentinas case study. Once the methodology is streamlined and documented, an effort will be made to encourage a broad pool of researchers, including local researchers, to apply it to new cases.

Responsibility: Policy Research Department, Finance and Private Sector Development Department—Lorena Alcazar (Internet address lalcazar@worldbank.org) and Nestor Sulikowski. With Manuel Abdala, Expectativa.

Completion date: September 1996.

Private Means—Public Ends: Private Sector Participation in Caribbean Water Systems

As in many developing countries, the water supply entities in the Caribbean are poorly managed and inefficient. The price of providing water and sewerage services bears no relationship to the cost, with the government usually making up the financial shortfall. But fiscal crises have rendered governments unable to support the increasing operational costs of producing and distributing water and the investments required for rehabilitating and expanding the systems. The water supply entities also face a serious backlog in water pollution control investments. The tourism sector, the main income earning sector for most of these countries, will suffer if water supply and pollution control do not improve, undermining long-term economic growth.

Some countries in the Caribbean have embarked on reforms. But many are still plagued by poor performance and low productivity. There is an urgent need for new approaches to the problems of water supply and sewerage services in the Caribbean.

The objective of this study is to provide the Caribbean countries with an overview of how water sector reforms around the world are addressing the interlinked problems of improving the sector's performance and obtaining financing for investments. It shows that private sector participation in the provision of water and sewerage services can help solve the kinds of problems faced by these countries. And it is intended to initiate a constructive dialogue with Caribbean countries contemplating water sector reform.

The study has assessed recent private activity in the water sector, focusing on the advantages and disadvantages of different options for private sector participation. It has produced a water and sewerage inventory of all countries in the Caribbean to develop a prototype of the basic characteristics of the sector. And from case studies of private participation in water utilities in the Caribbean, it has extracted lessons to guide countries in the region.

The study shows how private sector participation promotes the operational efficiency and commercial viability of water utilities. The models of private participation adopted by countries in the Caribbean demonstrate broadly successful attempts at risk-sharing between the public and private partners. The public sector's role is now more regulatory and protects consumers against abuses of monopoly powers. The private sector's role is to provide stable management, higher efficiency, and improved access to capital. Cooperation between the public and private sectors increases population coverage, improves the quality of service, and reduces water pollution and public health hazards.

Responsibility: Private Sector Development Department, Private Sector Development and Privatization Division—Helen Nankani (Internet address hnankani @worldbank.org).

Completion date: December 1996.

Report:

Nankani, Helen. Forthcoming. "Private Means—Public Ends: Private Sector Participation in Caribbean Water Systems." World Bank, Private Sector Development Department, Washington, DC.

Project Evaluation and Public Expenditure

What is the proper role for project evaluation in today's world, where countries have reduced major economic distortions and are reconsidering the role of the state? This change in circumstances calls for a shift in the emphasis of project evaluation away from a concern with precise rate-of-return calculations to a broader examination of the rationale for public provision. In this context three areas critical to proper project appraisal are the counterfactual private sector supply response, the fiscal impact, and the fungibility of lending.

Counterfactual private sector supply response. Any type of cost-benefit analysis—whether in the public or private sector—requires the project evaluator to specify the counterfactual. Since World Bank projects are public sector projects, the relevant counterfactual involves assessing what the private sector would have otherwise provided. Failure to consider the private sector counterfactual during evaluation biases the lending mix of the Bank away from projects with strong public good characteristics and toward projects with private good characteristics.

Fiscal impact. A reasonable case for public intervention can be made for projects in such sectors as basic infrastructure, primary education, and rural health. Typically in these projects costs are borne by the public sector while benefits are enjoyed by the private sector. But in the absence of nondistortionary, lump sum taxes there is a positive marginal cost of taxation and a premium on public income. Since the Bank has not used such a premium and treats public costs and private benefits equally, it has systematically overestimated the net benefits of these projects.

Fungibility of lending. Project-specific appraisal can at best only assess the rate of return and the acceptability of a project. This is problematic because the project might have been undertaken even without Bank financing. If that is the case, the Bank is actually financing some other project—one *not* subject to appraisal by the Bank—that would not have been in the investment program without Bank financing. This problem arises because financial resources are to some extent fungible.

The goal of this research project is to identify a method for incorporating these three considerations into project evaluation. Papers illustrating these principles in the health and education sectors have been produced, and a paper applying them to the infrastructure sector is forthcoming.

Work on the fiscal impact initially centers on estimating the marginal cost of public funds for a variety of countries by building on existing computable general equilibrium models. This work is being undertaken by another research project (Estimating the Marginal Cost of Public Funds in Developing Countries, ref. no. 680-69), described elsewhere.

The results of the research are being disseminated through Bank training courses and through research papers.

Responsibility: Policy Research Department, Public Economics Division—Sethaput Suthiwart-Narueput (Internet address ssuthiwartnarueput@worldbank.org) and Shantayanan Devarajan, and Office of the Director—Lyn Squire.

Completion date: December 1996.

Reports:

Devarajan, Shantayanan, Lyn Squire, and Sethaput Suthiwart-Narueput. 1995. "Improving the Impact and Efficiency of Lending." World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Improving the Quality of Project Analysis." World Bank, Policy Research Department, Washington, DC.

_____. 1995. "Reviving Project Appraisal at the World Bank." Policy Research Working Paper 1496. World Bank, Policy Research Department, Washington, DC.

Devarajan, Shantayanan, and Sethaput Suthiwart-Narueput. 1994. "Incorporating the Rationale for Government Intervention into Project Analysis." World Bank, Policy Research Department, Washington, DC.

Hammer, Jeffrey S. 1996. "Economic Analysis for Health Projects." Policy Research Working Paper 1611. World Bank, Policy Research Department, Washington, DC.

Jimenez, Emmanuel, Elizabeth M. King, and Jee-Peng Tan. 1996. "Whither Economic Analysis of Education Investments?" World Bank, Policy Research Department, Washington, DC.

Suthiwart-Narueput, Sethaput. 1995. "Project Evaluation and Hypothesis Testing: Incorporating Private Responses in the Analysis of Public Projects." World Bank, Policy Research Department, Washington, DC.

Measuring Political Readiness

Many political actors have incentives to extol the virtues of economic reform. They have such incentives because they may derive benefits from making promises to adopt reforms, such as getting elected or gaining access to World Bank loans. But some political actors have incentives to make promises that they have no incentive to keep. Others may have the incentives, but not the ability, to keep the promises they make. Successful economic reform requires that political actors who can make and keep reform-related promises actually do so.

The objective of this research is to develop a new framework to help analysts draw reliable judgments about political readiness for reform. The underlying question it addresses is, What are the necessary political conditions for successful reform? More specifically, it asks:

- What can we infer from political actors' stated desires for reform? Do they mean what they say when they promise to take the actions necessary?
- If they mean what they say, are they capable of passing and implementing the reform?
- If they mean what they say and can gather the support required to pass and implement the reform, can they sustain the reform?

The first phase of this research will develop a theoretical framework and methodology to address these questions. Building on the work done for the World Bank's 1995 Policy Research Report, *Bureaucrats in Business* (New York: Oxford University Press), and earlier work on credibility and sustainability by the main participants in this study, the research will develop a full theory of political credibility and identify the types of empirical data that are the best indicators of the conditions of political readiness. The second phase of the research will involve systematic and rigorous empirical work to apply the theory to case study countries.

Responsibility: Policy Research Department, Finance and Private Sector Development Division—Mary Shirley (Internet address mshirley@worldbank.org) and Philip Keefer. With Arthur Lupia and Matthew McCubbins, University of California, San Diego; Roger Noll, Stanford University; and Barry Weingast, Hoover Institute.

Completion date: March 1997.

Regional Study: Decentralization Policies in Latin America

This study aims to deepen the understanding of policy and practice in decentralization by examining successful innovations at the regional and local levels in Latin America and the Caribbean. Since innovations occur in specific institutional settings that provide unique incentive structures, the research first analyzes and systematizes these "successful" institutional settings. The study next develops responses to operational needs, such as assisting in the design of appropriate institution-strengthening components in municipal and regional projects. It also will assist in formulating new policies in areas of emerging interest, such as improving the performance of subnational governments in fostering private sector development through decentralized institutional arrangements.

Five areas of local innovation received special emphasis: administrative performance, fiscal management, the quality of public service provision, private sector development, and mechanisms of local participation in local and regional decisionmaking. The research explored these areas through case studies tailored to address operational issues of implementation. Case study findings are being disseminated through a series of seminars. During fiscal 1996, 15 of the 17 planned "best practice" studies were completed.

Now that the project has generated a critical mass of cases of innovation from the region, its objective is to come to a more systematic understanding of the key policy instruments behind the success of innovations; conditions of success (key initial conditions and key conditions of sustainability); and factors explaining the failure of some innovations, and positive lessons that can be learned from these factors in designing implementation strategies. An early conclusion of the case studies is that innovations in these areas and sustained improvement in local policymaking depend crucially on strong commitment to reform by local policymakers, on improved local participation, and on strong private sector involvement in local affairs.

Responsibility: Latin America and the Caribbean, Sector Leadership Group, and Technical Department, Public Sector Modernization Division—Harald Fuhr (Internet address hfuhr@worldbank.org) and Tim Campbell. With Florence Eid, Massachusetts Institute of Technology. Latin American research institutes assisted in carrying out case studies.

Completion date: April 1997.

Reports:

Ball, Gwen. 1994. "Institutional and Organizational Development in Decentralized Projects." Paper presented at seminar, Fresh Views on Local and Regional Development in Latin America and the Caribbean, Brainstorming Workshop. World Bank, Latin America and the Caribbean Regional Office, Washington, DC.

Bland, Gary. 1994. "Local and Intermediate-Level Government Electoral Policy in Latin America and the Caribbean." Paper presented at seminar, Fresh Views on Local and Regional Development in Latin America and the Caribbean, Brainstorming Workshop. World Bank, Latin America and the Caribbean Regional Office, Washington, DC.

Campbell, Tim, and Travis Katz. 1996. "Innovations and Risk Taking: The Engine of Local Government Reform." *The Urban Age* 3,4(January):8–9.

Campbell, Tim, and M. Morgan. 1992. "Modes of Accountability in Local Governments of Latin America and the Caribbean." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Campbell, Tim, and others. 1991. "Decentralization to Local Government in Latin America and the Caribbean: National Strategies and Local Response in Planning, Spending, and Management." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

_____. 1993. "Participation, Choice, and Accountability in Local Government: Latin America and the Caribbean and the United States." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Eid, Florence. 1994. "Institutional Development and the Meso Level of Government." Paper presented at seminar, Fresh Views on Local and Regional Development in Latin America and the Caribbean, Brainstorming Workshop. World Bank, Latin America and the Caribbean Regional Office, Washington, DC.

Fuhr, Harald. 1992. "Public Administration and Decentralization in Latin America." In Harald Asmerom and others, eds., *Bureaucracy and Developmental Policies in the Third World.* Amsterdam: VU University Press.

_____. 1994. "Municipal Institutional Strengthening and Donor Coordination: The Case of Ecuador." *Public Administration and Development* 14(2):169–86.

Fuhr, Harald, Tim Campbell, and Florence Eid. 1995. "Research Framework Papers." LATPS Research Dissemination Note. World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Fuhr, Harald, and others. 1993. *Subsidiarität in der Entwicklungszusammenarbeit: Dezentralisierung und Verwaltungsreformen zwischen Strukturanpassung und Selbsthilfe.* Baden-Baden: Nomos.

Katz, Travis. 1994. "The City Manager Experience in the United States." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Peterson, George E. 1994. "Concepts, Issues, and Practices of Decentralization." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

_____. 1994. "Decentralization Experience in Latin America: An Overview of Lessons and Issues." World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Taillant, Jorge Daniel. 1994. "Decentralization: Local and Regional Government Development. A Literature Review." Paper presented at seminar, Fresh Views on Local and Regional Development in Latin America and the Caribbean, Brainstorming Workshop. World Bank, Latin America and the Caribbean Regional Office, Washington, DC.

Commodity Marketing Systems

Agricultural marketing systems in many developing and transition economies have until recently been subject to strong government intervention. In many of these countries this intervention has resulted in significant costs and inefficiencies. For example, internal marketing costs and margins are significantly higher in countries with government monopolies than in those with free market systems. Recognizing these costs, many developing countries are reconsidering the role of the government in commodity marketing. They are reducing government controls and interventions, phasing out government monopolies, and encouraging a private sector role in commodity marketing. They also are abolishing administratively set prices and leaving prices to market forces, phasing out input and consumption sub-

sidies, and passing internal and external export marketing to the private sector.

This research is examining commodity market liberalization in several developing and transition economies and its effect on marketing costs, farmgate prices, and crop quality. Experience in a number of countries shows that the private sector emerges quickly after liberalization. And efficiency gains are significant: marketing costs drop, and the share of the farmers' price in the export price increases substantially.

Following liberalization, the private sector can provide a channel for credit, as private traders begin to establish financing agreements with foreign buyers and extend cash purchases down to the farm level. Although the government can still determine quality standards, it can gradually pass quality inspection services to private inspectors licensed by a government body. Often it is preferable to have a gradual and orderly withdrawal of government monopolies, to reduce the possibility of disruptions in crop movement and quality. Equally important is the evolution of private sector institutions and the introduction of an appropriate legal and regulatory framework for the private sector.

Responsibility: International Economics Department, Commodity Policy and Analysis Unit—Panos Varangis (Internet address pvarangis@worldbank.org), Takamasa Akiyama, John Baffes, Donald Larson, Elton Thigpen, and Nanae Yabuki.

Completion date: June 1997.

Report:

Schreiber, G., and Panos Varangis. 1996. "Cocoa Marketing and Pricing Systems in West Africa." World Bank, International Economics Department, Washington, DC.

Regional Program on Enterprise Development

One of the lessons emerging from structural adjustment efforts in Africa is that macroeconomic reform is a necessary, but not a sufficient, condition for private sector growth. There are enterprise-level constraints that inhibit the growth of existing firms and impede the entry of new ones. This research program is designed to get a better grasp of the constraints that inhibit enterprise development in Africa and to make recommendations to ease those constraints.

It is investigating these issues in three ways. First, it is collecting survey data through interviews, conducted annually for three years, of a panel of 200 large and small manufacturing firms in each of several countries—Burundi, Cameroon, Côte d'Ivoire, Ghana, Kenya, Tanzania, Zambia, and Zimbabwe. The survey focuses on four manufacturing sectors: food processing, wood working, metal working, and textiles and garments. Survey questions seek general information on the firm and on issues relating to labor, technology, regulation, infrastructure, financial markets, conflict resolution, and the use of business support services.

Second, it is carrying out a series of case studies on selected aspects of the research agenda, such as finance, business strategy, and technological capability. These case studies are selected from a stratified subsample of the panel firms and are conducted to complement quantitative information gathered in the broader survey exercise.

Third, it is conducting cross-country studies as well as studies of issues related to firm dynamics over time. These issues include labor markets, business strategy, financial markets, technological capabilities, the nature and determinants of entrepreneurship, the impact of infrastructure on firm operations and growth, regulation and the extent to which firms perceive regulation as constraining their operations and growth, and how firms grow in these economies and why. The analyses of these issues should contribute to evaluations of the impact of structural adjustment programs in Africa.

Responsibility: Africa Technical Department, Private Sector Development and Economics Division—Tyler Biggs (Internet address tbiggs@worldbank.org) and Melanie Mbuyi. With Pradeep Srivastava, Alfred Robinson, and Manju Kedia Shah. The Ecole des Hautes Etudes Commerciales, Canada; Centre Universitaire de Douala, Cameroon; Centre d'Etudes et de Recherches sur le Développement International, France; Oxford University; University of Göteborg, Sweden; Catholic University-Leuven, Belgium; University of Burundi; University of Dar es Salaam; Foundation for Research in Economics and Business Administration, Norway; Free University of Amsterdam; and University of Zimbabwe assisted in the field surveys and country reports. The Belgian Administration for Development Cooperation; the Canadian International Development Agency; the Danish International Development Agency; the Finnish International Development Agency; the Ministry of Cooperation and the Ministry of Foreign Affairs, France; the Federal Ministry of Economic Cooperation, Germany; the Ministry of Foreign Affairs, Italy; the Ministry of Foreign Affairs, the Netherlands; the Norwegian Agency for Development Cooperation; the Swiss Development Cooperation; the Swedish International Enterprise Development Cooperation; and the Overseas Development Administration, United Kingdom, are providing funding for the research.

Completion date: June 1997.

Reports:

Biggs, Tyler, Margaret Miller, Caroline Otto, and Gerald Tyler. 1996. *Africa Can Compete! Opportunities and Challenges for*

Garments and Home Products in the European Market. World Bank Discussion Paper 300. Washington, DC.

Biggs, Tyler, Gail R. Moody, Jan-Hendrik van Leeuwen, and E. Diane White. 1994. *Africa Can Compete! Opportunities and Challenges for Garments and Home Products in the U.S. Market*. World Bank Discussion Paper 242. Washington, DC.

Biggs, Tyler, Manju Shah, and Pradeep Srivastava. 1995. *Technological Capabilities and Learning in African Enterprises*. World Bank Technical Paper 288. Washington, DC.

Biggs, Tyler, and Pradeep Srivastava. 1996. *Structural Aspects of Manufacturing in Sub-Saharan Africa: Findings from a Seven-Country Enterprise Survey*. World Bank Discussion Paper 346. Washington, DC.

Lall, Sanjaya, Giorgio Barba Navaretti, Simon Teitel, and Ganeshan Wignaraja. 1994. *Technology and Enterprise Development—Ghana under Structural Adjustment*. London: Macmillan; New York: St. Martin's Press.

Handbook on Public Expenditure Analysis

Public expenditure reviews are an important, if frustrating, part of the Bank's economic and sector work. They are important because they help organize our dialogue with countries, can put our lending program in a larger context, and give operational significance to our poverty assessments. They are frustrating because they require comparing public expenditures across sectors and reconciling claims for scarce public resources with the specialized interests of line ministries.

Standard economic analysis emphasizes the role that market failures and improved income distribution play in the justification of government action. But the degree to which public provision can alleviate market failures has not been quantified for many sectors, though quantification can help in prioritizing public expenditures.

This research project is designed to exploit this fundamental insight from public economics and make progress both in setting the context for intersectoral comparisons and in attempting to measure the degree of market failure in applications to specific sectors.

The sectors that the research will analyze are health and education. Both are large components of government outlays and pose difficulties for assessing the welfare consequences of public expenditures. On the basis of both theoretical work and applications to Papua New Guinea, the Philippines, and Thailand, the research will attempt to set up a framework for measuring externalities and modeling the industrial organization of these sectors.

Responsibility: Policy Research Department, Public Economics Division—Jeffrey Hammer (Internet address jhammer@worldbank.org), Dominique van de Walle, and Shantayanan Devarajan. With Tim Besley, London School of Economics; Mark Gersovitz, Johns Hopkins University; and David Wildasin, Vanderbilt University.

Completion date: June 1998.

BANK RESEARCH OUTPUT

Below are listed various types of research output arising from research and policy review activities at the Bank. To provide maximum coverage of such output, research is defined for the purposes of this list in a broader rather than a narrower sense. Copies of Bank publications (categories A and E) can be purchased or ordered from the Bank's bookstore or distributors (see list on last page of this volume). Copies of working papers and background papers (categories F–H) can be obtained from the authors or the associated Bank departments. Reprints of articles from the Bank's research journals (category C) may be requested from the authors; other published material can be purchased from the publishers (categories B and D). The following types of fiscal 1996 research output are listed:

A. Research-oriented books written by Bank staff and published either by the Bank or by other publishers. This list also includes periodic data publications, such as the *World Debt Tables*, that feed subsequent research.

B. Research by Bank staff published as part of collected volumes of research papers.

C. Articles appearing in the Bank's two economics journals, the *World Bank Economic Review* and *World Bank Research Observer*.

D. Articles related to Bank research and published in non-Bank professional journals.

E. World Bank Discussion Papers, Technical Papers, and other Bank papers series.

- *World Bank Discussion Papers.* This series provides an outlet in the public domain for a broad range of Bank output that provides detailed results of interest to development practitioners—from work on narrow research topics or country-specific studies.
- *World Bank Technical Papers.* This series provides an outlet in the public domain for research and studies that are highly technical and aimed at a narrower audience.
- *Other published series.* Papers in such series as the Living Standards Measurement Study Working Paper and Economic Development Institute series typically focus on a specialized topic and are designed to give prominence to Bank work on that topic or to work by a particular Bank unit.

F. *Policy Research Working Papers.* These working papers are a vehicle for quick dissemination, sometimes in an incompletely polished format, of findings of work under way in the Bank. The primary audience is Bank staff, though some copies are circulated to interested researchers outside the Bank.

G. *Other working papers.* These papers are produced and distributed by departments, some divisions, and a vice presidency. They disseminate quickly findings of departmental research and are targeted primarily to specialists in the Bank.

H. Background papers to *World Development Report 1996.* These papers are commissioned from researchers inside and outside the Bank. Some also come out as Policy Research Working Papers or in other forms.

A. Books by Bank Researchers

Austin, James E. 1996. *Agroindustrial Project Analysis: Critical Design Factors.* Baltimore: Johns Hopkins University Press.

Bogetic, Zeljko, and Arye L. Hillman, eds. 1995. *Financing Government in the Transition—Bulgaria: The Political Economy of Tax Policies, Tax Bases, and Tax Evasion.* World Bank Regional and Sectoral Study. Washington, DC.

Bruno, Michael, and Boris Pleskovic, eds. 1996. *Annual World Bank Conference on Development Economics 1995.* Washington, DC: World Bank.

Campos, José Edgardo, and Hilton L. Root. 1996. *The Key to the Asian Miracle: Making Shared Growth Credible.* Washington, DC: The Brookings Institution.

Carvalho, Soniya, and Howard White. 1996. *Implementing Projects for the Poor: What Has Been Learned?* Directions in Development Series. Washington, DC: World Bank.

Colletta, Nat J., Markus Kostnes, and Ingo Wiederhofer. 1995. *The Transition from War to Peace in Sub-Saharan Africa.* Directions in Development Series. Washington, DC: World Bank.

Dia, Mamadou. 1996. *Africa's Management in the 1990s and Beyond: Reconciling Indigenous and Transplanted Institutions.* Directions in Development Series. Washington, DC: World Bank.

Dinerstein, Eric, David M. Olson, Douglas J. Graham, Avis L. Webster, Steven A. Primm, Marnie P. Bookbinder, and George Ledec. 1995. *A Conservation Assessment of the Terrestrial Ecoregions of Latin America and*

the Caribbean. Washington, DC: World Bank and World Wildlife Fund. (Also published in Spanish.)

D'Silva, Emmanuel, and others, eds. 1995. *The Role of Forest Departments in the 21st Century: A Report of the Workshop in Hyderabad, India.* New Delhi: Ministry of Environment and Forests, and Washington, DC: World Bank.

Edwards, Sebastian. 1996. *Crisis and Reform in Latin America: From Despair to Hope.* New York: Oxford University Press.

Eskeland, Gunnar S., and Shantayanan Devarajan. 1995. *Taxing Bads by Taxing Goods: Pollution Control with Presumptive Charges.* Directions in Development Series. Washington, DC: World Bank.

Frydman, Roman, Cheryl W. Gray, and Andrzej Rapaczynski. 1996. *Corporate Governance in Central Europe and Russia.* 2 vols. Budapest: Central European University.

Hanna, Susan, and Mohan Munasinghe, eds. 1995. *Property Rights and the Environment: Social and Ecological Issues.* Washington, DC: World Bank.

_____. 1995. *Property Rights in a Social and Ecological Context: Case Studies and Design Applications.* Washington, DC: World Bank.

Heaver, Richard A., and Joseph M. Hunt. 1995. *Improving Early Childhood Development: An Integrated Program for the Philippines.* Directions in Development Series. Washington, DC: World Bank.

Holden, Paul, and Sarath Rajapatirana. 1995. *Unshackling the Private Sector: A Latin American Story.* Directions in Development Series. Washington, DC: World Bank.

International Finance Corporation. 1995. *Emerging Stock Markets Factbook 1995.* Washington, DC.

_____. 1996. *Emerging Stock Markets Factbook 1996.* Washington, DC.

King, Kenneth, and Mohan Munasinghe, eds. 1995. *Ozone Layer Protection: Country Incremental Costs.* Washington, DC: World Bank and Global Environment Facility.

Klavens, Jonathan, and Anthony Zamparutti. 1995. *Foreign Direct Investment and Environment in Central and Eastern Europe: A Survey.* Washington, DC: World Bank.

Lutz, Ernst, and Julian Caldecott. 1996. *Decentralization and Biodiversity Conservation.* Princeton: Princeton University Press.

Martin, Will, and L. Alan Winters. 1995. *The Uruguay Round: Widening and Deepening the World Trading System.* Directions in Development Series. Washington, DC: World Bank.

Measham, Anthony R., and Richard A. Heaver. 1996. *India's Family Welfare Program: Moving to a Reproductive and Child Health Approach.* Directions in Development Series. Washington, DC: World Bank.

Michalopoulos, Constantine, and David G. Tarr. 1996. *Trade Performance and Policy in the New Independent States.* Washington, DC: World Bank. (Also published in Russian.)

Ozorio de Almeida, Anna Luiza, and João S. Campari. 1995. *Sustainable Settlement in the Brazilian Amazon.* New York: Oxford University Press.

Parker, Ronald, Alcira Kreimer, and Mohan Munasinghe, eds. 1995. *Informal Settlements, Environmental Degradation, and Disaster Vulnerability: The Turkey Case Study.* Washington, DC: World Bank.

Picciotto, Robert, and Ray C. Rist. 1995. *Evaluation and Development: Proceedings of the 1994 World Bank Conference.* Washington, DC: World Bank.

Pinstrup-Andersen, Per, David Pelletier, and Harold Alderman, eds. 1995. *Child Growth and Nutrition in Developing Countries: Priorities for Action.* Ithaca: Cornell University Press.

Psacharopoulos, George. 1995. *Building Human Capital for Better Lives.* Directions in Development Series. Washington, DC: World Bank.

Qureshi, Zia. 1996. *Global Capital Supply and Demand: Is There Enough to Go Around?* Directions in Development Series. Washington, DC: World Bank.

Sanderson, Warren C., and Jee-Peng Tan. 1995. *Population in Asia.* World Bank Regional and Sectoral Study. Washington, DC.

Serageldin, Ismail. 1995. *Toward Sustainable Management of Water Resources.* Directions in Development Series. Washington, DC: World Bank.

Shah, Anwar, ed. 1995. *Fiscal Incentives for Investment and Innovation.* New York: Oxford University Press.

Sheng, Andrew, ed. 1996. *Bank Restructuring: Lessons from the 1980s.* Washington, DC: World Bank.

Thomas, Vinod, and Ajay Chhibber. 1995. *Restructuring Economies in Distress.* New York: Oxford University Press.

Tomich, Thomas P., Peter Kilby, and Bruce F. Johnston. 1995. *Transforming Agrarian Economies: Opportunities Seized, Opportunities Missed.* Ithaca and London: Cornell University Press.

Umali-Deininger, Dina, and Charles Maguire, eds. 1995. *Agriculture in Liberalizing Economies: Changing Roles for Governments—Proceedings of the Fourteenth Agricultural Sector Symposium.* Washington, DC: World Bank.

van der Gaag, Jacques. 1995. *Private and Public Initiatives: Working Together for Health and Education.* Directions in Development Series. Washington, DC: World Bank.

van de Walle, Dominique, and Kimberly Nead. 1995. *Public Spending and the Poor: Theory and Evidence.* Baltimore and London: Johns Hopkins University Press.

van Zyl, Johan, Johann Kirsten, and Hans Binswanger, eds. 1995. *Agricultural Land Reform in South Africa: Policies, Markets, and Mechanisms.* Cape Town: Oxford University Press.

Varangis, Panos, Takamasa Akiyama, and Donald Mitchell. 1995. *Managing Commodity Booms—and Busts.* Directions in Development Series. Washington, DC: World Bank.

Warr, Peter G., and Bhanupong Nidhiprabha. 1996. *Thailand's Macroeconomic Miracle: Stable Adjustment and Sustained Growth.* World Bank Comparative Macroeconomic Study. Washington, DC.

World Bank. 1995. *Advancing Gender Equality: From Concept to Action.* Washington, DC.

_____. 1995. *Better Urban Services: Finding the Right Incentives.* Development in Practice Series. Washington, DC. (Also published in French and Spanish.)

_____. 1995. *Bureaucrats in Business: The Economics and Politics of Government Ownership.* World Bank Policy Research Report. New York: Oxford University Press. (Summary, database, and video available separately. Also published in Arabic.)

_____. 1995. *Claiming the Future: Choosing Prosperity for the Middle East and North Africa.* Washington, DC.

_____. 1995. *The Emerging Asian Bond Market.* Washington, DC.

_____. 1995. *The Employment Crisis in Industrial Countries: Is International Integration to Blame?* Perspectives on *World Development Report 1995.* Washington, DC.

_____. 1995. *Enhancing Women's Participation in Economic Development.* World Bank Policy Paper. Washington, DC.

_____. 1995. *Global Economic Prospects and the Developing Countries 1995.* Washington, DC. (Also published in French and Spanish.)

_____. 1995. *Higher Education: The Lessons of Experience.* Development in Practice Series. Washington, DC. (Also published in French and Spanish.)

_____. 1995. *Jobs, Poverty, and Working Conditions in South Asia.* Regional Perspectives on *World Development Report 1995.* Washington, DC.

_____. 1995. *Labor and Economic Reforms in Latin America and the Caribbean.* Regional Perspectives on *World Development Report 1995.* Washington, DC. (Also published in Portuguese and Spanish.)

_____. 1995. *Labor and the Growth Crisis in Sub-Saharan Africa.* Regional Perspectives on *World Development Report 1995.* Washington, DC.

_____. 1995. *Mainstreaming the Environment: The World Bank Group and the Environment since the Rio Earth Summit—Fiscal 1995.* Washington, DC. (Also published in French and Spanish.)

_____. 1995. *Meeting the Infrastructure Challenge in Latin America and the Caribbean.* Directions in Development Series. Washington, DC.

_____. 1995. *Monitoring Environmental Progress: A Report on Work in Progress.* Washington, DC.

_____. 1995. *A New Agenda for Women's Health and Nutrition.* Development in Practice Series. Washington, DC. (Also published in French.)

_____. 1995. *Priorities and Strategies for Education: A Review.* Development in Practice Series. Washington, DC.

_____. 1995. *Toward Gender Equality: The Role of Public Policy.* Development in Practice Series. Washington, DC. (A companion multimedia package on gender issues available separately on CD-ROM.)

_____. 1995. *Trends in Developing Economies 1995.* Washington, DC. (Data for 1994–95 available separately on diskette.)

_____. 1995. *Will Arab Workers Prosper or Be Left Out in the Twenty-First Century?* Regional Perspectives on *World Development Report 1995.* Washington, DC. (Also published in Arabic.)

_____. 1995. *World Bank Atlas 1996.* Washington, DC.

_____. 1995. *World Development Report 1995: Workers in an Integrating World.* Washington, DC. (Also published in Arabic, Chinese, French, German, Japanese, Portuguese, Russian, and Spanish. An archive of all 18 *World Development Reports,* 1978–95, is available separately on CD-ROM.)

_____. 1996. *African Development Indicators 1996.* Washington, DC.

_____. 1996. *The Environmental Data Book Teaching Guide.* Washington, DC.

_____. 1996. *Global Economic Prospects and the Developing Countries 1996.* Washington, DC. (Translations in Arabic, Chinese, French, German, Japanese, Portuguese, Russian, and Spanish forthcoming.)

_____. 1996. *Improving Women's Health in India.* Development in Practice Series. Washington, DC.

_____. 1996. *Managing Capital Flows in East Asia.* Development in Practice Series. Washington, DC.

_____. 1996. *Poverty Reduction and the World Bank: Progress and Challenges in the 1990s.* Washington, DC.

_____. 1996. *Private Sector Development in Low-Income Countries.* Development in Practice Series. Washington, DC. (Also forthcoming in French.)

_____. 1996. *Social Indicators of Development 1996.* Baltimore: Johns Hopkins University Press. (Time-series data for each year from 1965 to 1994 available separately on diskette.)

_____. 1996. *Sustainable Transport: Priorities for Policy Sector Reform.* Development in Practice Series. Washington, DC.

_____. 1996. *World Bank Participation Sourcebook.* Washington, DC.

_____. 1996. *World Debt Tables 1996: External Finance for Developing Countries.* Washington, DC. (Also available in CD-ROM and diskette.)

Young, Mary. 1996. *Early Child Development: Investing in the Future.* Directions in Development Series. Washington, DC: World Bank.

B. Book Chapters by Bank Researchers

Ainsworth, Martha. 1996. "Economic Aspects of Child Fostering in Côte d'Ivoire." In T. Paul Schultz, ed., *Research in Population Economics.* Vol. 8. Greenwich, Conn.: JAI Press.

Alderman, Harold, and G. Shively. 1996. "Prices, Markets, and Economic Reform in Ghana." In D. Sahn, ed., *Economic Reform in Africa.* New York: Oxford University Press.

Barba Navaretti, Giorgio, Isidro Soloaga, and Wendy Takacs. 1996. "Bargains Rejected? Developing Country Trade Policy on Used Equipment." In D. Dimon, I.G. Tomlinson, and S. Nichols, eds., *Competitiveness in International Business and Trade.* Laredo: Texas A&M International University Press.

Byerlee, Derek, and P. Pingali. 1995. "Agricultural Research in Asia: Fulfillments and Frustrations." In G.H. Peters and D.D. Hedley, eds., *Agricultural Competitiveness: Market Forces and Policy Choice.* Aldershot, U.K.: Dartmouth.

Demirgüç-Kunt, Asli, and Ross Levine. 1996. "The Financial System and Public Enterprise Reform: Concepts and Cases." In N. Hermes and R. Lensink, eds., *Financial Development and Economic Growth: Theory and Experiences from Developing Countries.* London: Routledge.

Devarajan, Shantayanan, Delfin S. Go, Jeffrey D. Lewis, Sherman Robinson, and Pekka Sinko. 1996. "Simple General Equilibrium Modeling." In Joseph F. François and Kenneth Reinert, eds., *Applied Methods for Trade Policy Modeling.* Cambridge: Cambridge University Press.

Devarajan, Shantayanan, Lyn Squire, and Sethaput Suthiwart-Narueput. 1996. "Project Appraisal at the World Bank." In C. Fitzpatrick and J. Weiss, eds., *Cost-Benefit Analysis and Project Appraisal for Developing Countries.* London: Macmillan.

Fiszbein, Ariel, and George Psacharopoulos. 1995. "Income Inequality Trends in Latin America in the Eighties: A Decomposition Analysis." In Nora Lustig, ed., *Coping with Austerity: Poverty and Inequality in Latin America.* Washington, DC: The Brookings Institution.

Grosh, Margaret E. 1995. "Five Criteria for Choosing among Poverty Programs." In Nora Lustig, ed., *Coping with Austerity: Poverty and Inequality in Latin America.* Washington, DC: The Brookings Institution.

Harrison, M., and A. Harrison. 1995. "The MFA Paradox: More Protection and More Trade?" In Anne O. Krueger, ed., *The Political Economy of American Trade Policy.* Chicago: University of Chicago Press.

Hussain, S.S., and Derek Byerlee. 1995. "Education and Farm Productivity in Post–Green Revolution Agriculture in Asia." In G.H. Peters and D.D. Hedley, eds., *Agricultural Competitiveness: Market Forces and Policy Choice.* Aldershot, U.K.: Dartmouth.

James, Estelle. 1996. "Mandatory Saving Schemes: Are They an Answer to the Old Age Security Problem?" In Z. Bodie, O. Mitchell, and J. Turner, eds., *Securing Employer-Based Pensions: An International Perspective.* Philadelphia: University of Pennsylvania Press.

_____. 1996. "Social Security around the World." In Peter A. Diamond, David C. Lindeman, and Howard Young, eds., *Social Security: What Role for the Future?* Washington, DC: National Academy of Social Insurance; distributed internationally by the Brookings Institution, Washington, DC.

Jimenez, Emmanuel. 1996. "La medición de los niveles de vida por las encuestas de tipo 'LSMS': El contexto internacional." In G. Moncada and R. Webb, eds., *Como estamos? Analisis de la encuesta de niveles de vida.* Lima, Peru: Cuanto.

Kishor, Nalin M. 1996. "Pesticide Externalities in Coastal Andhra Pradesh." In John M. Kerr and others, eds., *Natural Resource Economics: Theory and Application in India.* New Delhi: Oxford University Press and IBH Publishing.

Levine, Ross. 1995. "Does the Financial System Matter?" In Monica Aparicio and William Easterly, eds., *Economic Growth: Theory, Institutions, and International Experience.* Bogotá: Banco de la República, in cooperation with the World Bank.

_____. 1996. "Financial Functions, Institutions, and Growth." In Alison Harwood and Bruce Smith, eds., *Sequencing Financial Sector Development and Reform: Major Themes and Issues.* Washington, DC: The Brookings Institution.

_____. 1996. "Foreign Banks, Financial Development, and Economic Growth." In Claude Barfield, ed., *International Trade in Financial Services.* Washington, DC: American Enterprise Institute.

_____. 1996. "Unresolved Issues in the Relationship between Finance and Development." In N. Hermes and R. Lensink, eds., *Financial Development and Economic Growth: Theory and Experiences from Developing Countries.* London: Routledge.

Ma, Jun. 1996. "Can Guangdong's Development Model Be Replicated Elsewhere?" In Jixuan Hu, Zhaohui Hong, and Eleni Stavrou, eds., *In Search of a Chinese Road toward Modernization: Economic and Educational Issues in China's Reform Process.* New York: Mellen University Press.

Martin, Will, and L. Alan Winters. 1995. "Trade and Developing Economies." In *International Review of World Trade 1996.*

_____. 1996. "The Uruguay Round: A Milestone for the Developing Economies." In B. Bora and M. Pangestu, eds., *Priority Issues in Trade and Development: Implications for the Asia-Pacific Region.* Singapore: Pacific Cooperation Council.

Moser, Caroline O. 1995. "From Nairobi to Beijing: The Transition from Women in Development to Gender and Development." In Ann Leonard and Martha Chen, eds., *Seeds 2: Supporting Women's Work around the World.* New York: The Feminist Press.

_____. 1996. "Seeing the Invisible: Women, Gender, and Urban Development." In R. Stren, ed., *Urban Research in the Developing World.* Vol. 4, *Thematic Issues.* Toronto: University of Toronto Press.

Nash, John, and S. Andriamananjara. 1996. "Have Trade Policy Reforms Led to Greater Openness in Developing Countries? Evidence from Readily Available Trade Data." In D. Dimon, I.G. Tomlinson, and S. Nichols, eds., *Competitiveness in International Business and Trade.* Laredo: Texas A&M International University Press.

Newman, Peter. 1996. "Transportation." In D. Satterthwaite, ed., *United Nations Global Review of Human Settlements.* Oxford: Oxford University Press.

Otsubo, Shigeru. 1996. "Developing Countries in an Integrating World: Opportunities and Challenges." In *IADB Business Research Yearbook 1997.*

Plusquellec, Hervé. 1996. "La Banque Mondiale et le Financement." In *Barrages Internationaux et Coopération.* Paris: Editions Karthala.

Schmidt-Hebbel, Klaus, and Luis Servén. 1995. "Dynamic Response to External Shocks in Classical and Keynesian Economies." In D. Curie and D. Vines, eds., *North-South Linkages and International Macroeconomic Policy.* Cambridge: Cambridge University Press.

_____. 1995. "Hacia una menor inflación en Chile: Contracción monetaria bajo expectativas racionales." In F. Morande and A. Rosende, eds., *Analisis empirico de la inflacion en Chile.* Santiago: ILADES.

Tarr, David, and Constantine Michalopoulos. 1995. "Energizing Trade of the Former Soviet Union." In J.P. Gern, ed., *Economies in Transition.* Paris: Maisonneuve.

_____. 1995. "Trade Policy Reform in the New Independent States." In K. Fatemi and S. Nichols, eds., *International Business in the 21st Century.* College Station: Texas A&M University Press.

Winters, L. Alan. 1996. "Structural Reform in OECD Countries: Critical Interactions with the Rest of the World." In *Interactions between Structural Reform, Macroeconomic Policies, and Economic Performance.* Paris: OECD.

Winters, L. Alan, and Danny Leipziger. 1996. "Chile and NAFTA." In Maurice Schiff and C. Sapelli, eds., *Chile and NAFTA.* Santiago, Chile: Centro Internacional para el Económico Desarrollo.

Yeats, Alexander, and Raed Safadi. 1996. "Latin American Experiences with Regional Integration." In *Regionalism and Its Place in the Multilateral Trading System.* Paris: OECD.

C. Articles Published in the *World Bank Economic Review* and *World Bank Research Observer*

Ainsworth, Martha. 1996. "Introduction: Fertility in Sub-Saharan Africa." *World Bank Economic Review* 10(1): 81–84.

Ainsworth, Martha, Kathleen Beegle, and Andrew Nyamete. 1996. "The Impact of Women's Schooling on Fertility and Contraceptive Use: A Study of Fourteen Sub-Saharan African Countries." *World Bank Economic Review* 10(1):85–122.

Alderman, Harold, and Victor Lavy. 1996. "Household Responses to Public Health Services: Cost and Quality Tradeoffs." *World Bank Research Observer* 11(1): 3–22.

Beede, David N., and David E. Bloom. 1995. "The Economics of Municipal Solid Waste." *World Bank Research Observer* 10(2):113–50.

Behrman, Jere R. 1996. "The Impact of Health and Nutrition on Education." *World Bank Research Observer* 11(1):23–37.

Bencivenga, Valerie R., Bruce D. Smith, and Ross M. Starr. 1996. "Equity Markets, Transactions Costs, and Capital Accumulation: An Illustration." *World Bank Economic Review* 10(2):241–65.

Benefo, Kofi, and T. Paul Schultz. 1996. "Fertility and Child Mortality in Côte d'Ivoire and Ghana." *World Bank Economic Review* 10(1):123–58.

Birdsall, Nancy, David R. Ross, and Richard Sabot. 1995. "Inequality and Growth Reconsidered: Lessons from East Asia." *World Bank Economic Review* 9(3):477–508.

Corbo, Vittorio, and Leonardo Hernández. 1996. "Macroeconomic Adjustment to Capital Inflows: Lessons from Recent Latin American and East Asian Experience." *World Bank Research Observer* 11(1):61–85.

Cukierman, Alex, and Steven B. Webb. 1995. "Political Influence on the Central Bank: International Evidence." *World Bank Economic Review* 9(3):397–423.

Current, Dean, Ernst Lutz, and Sara J. Scherr. 1995. "The Costs and Benefits of Agroforestry to Farmers." *World Bank Research Observer* 10(2):151–80.

de Melo, Martha, Gur Ofer, and Olga Sandler. 1995. "Pioneers for Profit: St. Petersburg Entrepreneurs in Services." *World Bank Economic Review* 9(3):425–50.

Demery, Lionel, and Lyn Squire. 1996. "Macroeconomic Adjustment and Poverty in Africa: An Emerging Picture." *World Bank Research Observer* 11(1):39–59.

Demirgüç-Kunt, Asli, and Ross Levine. 1996. "An Overview." *World Bank Economic Review* 10(2):223–39.

_____. 1996. "Stock Market Development and Financial Intermediaries: Stylized Facts." *World Bank Economic Review* 10(2):291–321.

Demirgüç-Kunt, Asli, and Vojislav Maksimovic. 1996. "Stock Market Development and Financing Choices for Firms." *World Bank Economic Review* 10(2):341–69.

Dooley, Michael, Eduardo Fernández-Arias, and Kenneth Kletzer. 1996. "Is the Debt Crisis History? Recent Private Capital Inflows to Developing Countries." *World Bank Economic Review* 10(1):27–50.

Easterly, William, and Stanley Fischer. 1995. "The Soviet Economic Decline." *World Bank Economic Review* 9(3):341–71.

Feldman, Robert A., and Manmohan S. Kumar. 1995. "Emerging Equity Markets: Growth, Benefits, and Policy Concerns." *World Bank Research Observer* 10(2):181–200.

Fernández-Arias, Eduardo, and Peter J. Montiel. 1996. "The Surge in Capital Inflows to Developing Countries: An Analytical Overview." *World Bank Economic Review* 10(1):51–77.

Feyisetan, Bamikale J., and Martha Ainsworth. 1996. "Contraceptive Use and the Quality, Price, and Availability of Family Planning in Nigeria." *World Bank Economic Review* 10(1):159–87.

Griffin, Charles C., John Briscoe, Bhanwar Singh, Radhika Ramasubban, and Ramesh Bhatia. 1995. "Contingent Valuation and Actual Behavior: Predicting Connections to New Water Systems in the State of Kerala, India." *World Bank Economic Review* 9(3):373–95.

Hanushek, Eric A. 1995. "Interpreting Recent Research on Schooling in Developing Countries." *World Bank Research Observer* 10(2):227–46.

Korajczyk, Robert A. 1996. "A Measure of Stock Market Integration for Developed and Emerging Markets." *World Bank Economic Review* 10(2):267–89.

Kremer, Michael R. 1995. "Research on Schooling: What We Know and What We Don't—A Comment on Hanushek." *World Bank Research Observer* 10(2): 247–54.

Levine, Ross, and Sara Zervos. 1996. "Stock Market Development and Long-Run Growth." *World Bank Economic Review* 10(2):323–39.

McLure, Charles E., Jr. 1995. "Comment on 'The Dangers of Decentralization' by Prud'homme." *World Bank Research Observer* 10(2):221–26.

Mody, Ashoka, and Dilip K. Patro. 1996. "Valuing and Accounting for Loan Guarantees." *World Bank Research Observer* 11(1):119–42.

Prud'homme, Rémy. 1995. "The Dangers of Decentralization." *World Bank Research Observer* 10(2):201–20.

Ranis, Gustav. 1995. "Another Look at the East Asian Miracle." *World Bank Economic Review* 9(3):509–34.

Ravallion, Martin, and Gaurav Datt. 1996. "How Important to India's Poor Is the Sectoral Composition of Economic Growth?" *World Bank Economic Review* 10(1):1–25.

Schmidt-Hebbel, Klaus, Luis Servén, and Andrés Solimano. 1996. "Saving and Investment: Paradigms, Puzzles, Policies." *World Bank Research Observer* 11(1):87–117.

Sewell, David O. 1996. "'The Dangers of Decentralization' According to Prud'homme: Some Further Aspects." *World Bank Research Observer* 11(1):143–50.

Thomas, Duncan, and John Malucio. 1996. "Fertility, Contraceptive Choice, and Public Policy in Zimbabwe." *World Bank Economic Review* 10(1):189–222.

Velenchik, Ann D. 1995. "Apprenticeship Contracts, Small Enterprises, and Credit Markets in Ghana." *World Bank Economic Review* 9(3):451–75.

D. Articles Related to Bank Research and Published in Non-Bank Professional Journals

Adger, W.N., K. Brown, R. Cervigni, and D. Moran. 1995. "Total Economic Value of Forests in Mexico." *Ambio* 24(5):286–96.

Alderman, Harold, Jere R. Behrman, S. Khan, David R. Ross, and Richard Sabot. 1996. "Decomposing the Gender Gap in Cognitive Skills in a Poor Rural Economy." *Journal of Human Resources* 32(1):224–54.

_____. 1996. "Decomposing the Regional Gap in the Cognitive Skills in Rural Pakistan." *Journal of Asian Economics* 7(1):49–76.

Alderman, Harold, Jere R. Behrman, David R. Ross, and Richard Sabot. 1996. "The Returns to Endogenous Human Capital in Pakistan's Rural Wage Labor Market." *Oxford Bulletin of Economics and Statistics* 58(1):29–55.

Alderman, Harold, Sudarshan Canagarajah, and Steve Younger. 1995. "A Comparison of Ghanaian Civil Servants' Earnings before and after Retrenchment." *Journal of African Economies* 4(2).

Alderman, Harold, and G. Shively. 1996. "Economic Reform and Food Prices: Evidence from Markets in Ghana." *World Development* 24(3):521–34.

Allen, W.B., and D. Liu. 1995. "Service Quality and Motor Carrier Costs: An Empirical Analysis." *Review of Economics and Statistics* 77(3):499–510.

Amjadi, Azita, and Alexander Yeats. 1995. "Nontariff Barriers Facing Africa: The Uruguay Round." *South African Journal of Economics* 63(3):384–404.

Anderson, Dennis. 1995. "Energy Efficiency and the Economists: The Case for a Policy Based on Economic Principles." *Annual Review of Energy and the Environment* 20:495–511.

_____. 1995. "Round Table on Energy Efficiency and the Economists: An Assessment." *Annual Review of Energy and the Environment* 20:562–73.

Aribarg, A., G.Y. Zhang, J. Cao, G.Z. Li, R.A. Anderson, R.S. Swerdloff, F.C.W. Wu, H.W.G. Baker, X.H. Wang, J.C. Soufir, C.A. Paulsen, S.C. Ng, C. Gottlieb, D.J. Handelsman, A.J. Conway, B. Resch, and J. Szollosi. 1996. "Contraceptive Efficacy of Testosterone-Induced Azoospermia and Oligozoospermia in Normal Men." *Fertility and Sterility* 65(4):821–29.

Assogbavi, T., N. Khoury, and P. Yourougou. 1995. "Short Interest and the Asymmetry of the Price-Volume Relationship in the Canadian Stock Market." *Journal of Banking and Finance* 19(8):1341–58.

Aw, B.Y., and A.R. Hwang. 1995. "Productivity and the Export Market: A Firm-Level Analysis." *Journal of Development Economics* 47(2):313–32.

Balaj, Barbara, Ishac Diwan, and Bernard Philippe. 1995. "Aide extérieure aux Palestiniens: Ce qui n'a pas fonctionné." *Politique Etrangère* (Paris) (autumn).

Beckerman, P. 1995. "Central Bank Distress and Hyperinflation in Argentina, 1989–90." *Journal of Latin American Studies* 27(October):663–82.

Bennett, Lynn, and Carlos Cuevas. 1996. "Sustainable Banking with the Poor." *Journal of International Development* 8(2).

Binswanger, Hans P., and Shahidur R. Khandker. 1995. "The Impact of Formal Finance on the Rural Economy of India." *Journal of Development Studies* 32(2):234–62.

Bojo, J. 1996. "The Costs of Land Degradation in Sub-Saharan Africa." *Ecological Economics* 16(2):161–73.

Borish, Michael S., Millard F. Long, and Michel Noël. 1996. "Lessons from Bank and Enterprise Restructuring in the Transition Economies of Europe and Central Asia." *World Economy* 19(1):39–62.

Bose, R.K., and Josef Leitmann. 1996. "Environmental Profile of the Singrauli Region, India." *Cities* 13(2): 71–77.

Brahmbhatt, Milan, and Uri Dadush. 1995. "Reversals in Capital Flows: Anticipating Capital Flow Reversals." *Mondo Económico.*

_____. 1996. "Disparities in Global Integration." *Mondo Económico.*

Brooks, Karen M., and Zvi Lerman. 1995. "Restructuring of Traditional Farms and New Land Relations in Russia." *Agricultural Economics* 13(1):11–25.

Bruno, Michael, and William Easterly. 1996. "Inflation's Children: Tales of Crises That Beget Reforms." *American Economic Review* 86(2):213–17.

Buzina, R., P. Stegnar, K. Buzinasuboticanec, M. Horvat, I. Petric, and T.M.M. Farley. 1995. "Dietary Mercury Intake and Human Exposure in an Adriatic Population." *Science of the Total Environment* 170(3):199–208.

Byerlee, Derek. 1996. "Modern Varieties, Productivity, and Sustainability." *World Development* 24(4):697–718.

_____. 1996. "Past and Potential Impacts of Maize Research in Sub-Saharan Africa: A Critical Assessment." *Food Policy* 21(2).

Caprio, Gerard. 1995. "The Role of Financial Intermediaries in Transitional Economies." *Carnegie-Rochester Conference Series on Public Policy* 42:257–302.

_____. 1996. "Governing the Global Economy: International Finance and the Role of the State—A Review." *Journal of Economic Literature* (March).

Cashin, P., and Norman Loayza. 1995. "Paradise Lost: Growth, Convergence, and Migration in the South Pacific." *International Monetary Fund Staff Papers* 42(3):608–41.

Cernea, Michael M. 1995. "Malinowski Award Lecture—Social Organization and Development Anthropology." *Human Organization* 54(3):340–52.

Chaves, R.A., and C. Gonzalez-Vega. 1996. "The Design of Successful Rural Financial Intermediaries: Evidence from Indonesia." *World Development* 24(1):65–78.

Chen, Shaohua, and Martin Ravallion. 1996. "Data in Transition: Assessing Rural Living Standards in Southern China." *China Economic Review* 7(1):23–55.

Chernichovsky, Dov, and C. Bayulken. 1995. "A Pay-for-Performance System for Civil Service Doctors: The Indonesian Experiment." *Social Science and Medicine* 41(2):155–61.

Chetty, V.K., and D. Ratha. 1996. "On Finite Lifetimes and Growth." *Journal of Macroeconomics* 18(2):353–58.

Claessens, Stijn, and George Pennacchi. 1996. "Estimating the Likelihood of Mexican Default from the Market Prices of Brady Bonds." *Journal of Financial and Quantitative Analysis* 31(1):109–26.

Cochrane, Susan H., and David K. Guilkey. 1995. "The Effects of Fertility Intentions and Access to Services on Contraceptive Use in Tunisia." *Economic Development and Cultural Change* 43(4):779–804.

Cohen, Michael. 1996. "Habitat II and the Challenge of the Urban Environment: Bringing Together the Two Definitions of Habitat." *International Social Science Journal* 48(1).

Coriasoto, I.L., José Luis Bobadilla, and F. Notzon. 1996. "The Effectiveness of Antenatal Care in Preventing Intrauterine Growth Retardation and Low Birth Weight due to Preterm Delivery." *International Journal for Quality in Health Care* 8(1):13–20.

Cruz, Wilfrido, Mohan Munasinghe, and Jeremy J. Warford. 1996. "Greening Development: Environmental Implications of Economic Policies." *Environment* 38(5).

Cuevas, Carlos. 1996. "Enabling Environment and Microfinance Institutions: Lessons from Latin America." *Journal of International Development* 8(2).

Damico, F., J.P. Gouteux, F. Legall, and D. Cuisance. 1996. "Are Stable Flies (Diptera, Stomoxyinae) Vectors of Trypanosoma Vivax in the Central African Republic?" *Veterinary Research* 27(2):161–70.

Daveri, Francesco. 1995. "Costs of Entry and Exit from Financial Markets and Capital Flows to Developing Countries." *World Development* 23(8):1375–85.

Deininger, F. 1995. "Collective Agricultural Production: A Solution for Transition Economies." *World Development* 23(8):1317–34.

de Melo, Jaime, and David G. Tarr. 1996. "VERs under Imperfect Competition and Foreign Direct Investment: A Case Study of the U.S.-Japan Auto VER." *Japan and the World Economy* 8(1):11–33.

Demirgüç-Kunt, Asli, and Harry Huizinga. 1995. "Barriers to Portfolio Investments in Emerging Stock Markets." *Journal of Development Economics* 47(2):355–74.

Devarajan, Shantayanan. 1995. "Environment and Trade in General Equilibrium: Theory, Methodology, and Evidence—Discussion." *American Journal of Agricultural Economics* 77:786–88.

Devarajan, Shantayanan, Vinaya Swaroop, and Heng-fu Zou. 1996. "The Composition of Public Expenditure and Economic Growth." *Journal of Monetary Economics* 37(2):313–43.

Dewees, Peter A. 1995. "Trees and Farm Boundaries: Farm Forestry, Land Tenure, and Reform in Kenya." *Africa* 65(2):217–35.

Dinar, Ariel. 1996. "Extension Commercialization: How Much to Charge for Extension Services?" *American Journal of Agricultural Economics* 78(1):1–12.

Eisemon, Thomas Owen, I. Ionescusisesti, C.H. Davis, and J. Gaillard. 1996. "Reforming Romania's National Research System." *Research Policy* 25(1):107–31.

Eisemon, Thomas Owen, I. Mihailescu, L. Vlasceanu, C. Zamfir, J. Sheehan, and C.H. Davis. 1995. "Higher Education Reform in Romania." *Higher Education* 30(2):135–52.

Estrin, Saul, Alan Gelb, and Inderjit Singh. 1995. "Shocks and Adjustment by Firms in Transition: A Comparative Study." *Journal of Comparative Economics* 21(2): 131–53.

Faiz, Asif, Surhid Gautam, and E. Burki. 1995. "Air Pollution from Motor Vehicles: Issues and Options for Latin American Countries." *Science of the Total Environment* 169(1–3):303–10.

Farley, T.M.M., O. Meirik, C.L. Chang, M.G. Marmot, and N.R. Poulter. 1995. "Effect of Different Progestagens in Low-Estrogen Oral Contraceptives on Venous Thromboembolic Disease." *Lancet* 346(8990):1582–88.

Fernández-Arias, Eduardo. 1996. "The New Wave of Private Capital Inflows: Push or Pull." *Journal of Development Economics* 48(2):389–418.

Fitzgerald, B. 1995. "International Financing for Health and the Role of the World Bank." *Medical Education* 29(1):63–64.

Foell, W., C. Green, M. Amann, S. Bhattacharya, G. Carmichael, M. Chadwick, S. Cinderby, T. Haugland, J.P. Hettelingh, L. Hordijk, J. Kuylenstierna, J. Shah, R. Shrestha, D. Streets, and D. Zhao. 1995. "Energy Use, Emissions, and Air Pollution Reduction Strategies." *Water, Air, and Soil Pollution* 85(4):2277–82.

Fraser, Julia, and Louis S. Thompson. 1996. "Command Legacy Will Take Time to Overcome." *Rail Business Report 1996, Railway Gazette International* (January).

Freund, Caroline L., and Christine I. Wallich. 1996. "The Welfare Effects of Raising Household Energy Prices in Poland." *Energy Journal* 17(1):53–77.

Furstenberg, F.F., S.D. Hoffman, and L. Shrestha. 1995. "The Effect of Divorce on Intergenerational Transfers: New Evidence." *Demography* 32(3):319–33.

Gaiha, R. 1995. "Poverty, Development, and Participation in India: A Progress Report." *Asian Survey* 35(9):867–78.

Goodland, Robert. 1995. "The Concept of Environmental Sustainability." *Annual Review of Ecology and Systematics* 26:1–24.

Gouteux, J.P., F. Legall, J.M. Guillerme, and D. Demba. 1996. "Insecticide Treatments (Pour On and Spot On) Applied to Cattle against *Glossina fuscipes fuscipes* in the Central African Republic." *Veterinary Research* 27(3):273–84.

Grieco, M., and K. Lilja. 1996. "Research Note—Contradictory Couplings: Culture and the Synchronization of Opponents." *Organization Studies* 17(1):131–37.

Griffin, P.D., and T.M.M. Farley. 1996. "Hormonal Contraception for Men." *Lancet* 347(9004):830–31.

Grootaert, Christiaan. 1995. "Structural Change and Poverty in Africa: A Decomposition Analysis for Côte d'Ivoire." *Journal of Development Economics* 47(2):375–401.

Grosh, Margaret E., and Paul Glewwe. 1996. "Household Survey Data from Developing Countries: Progress and Prospects." *American Economic Review* 86(2):15–19.

Harrold, P. 1995. "China: Foreign Trade Reform—Now for the Hard Part." *Oxford Review of Economic Policy* 11(4):133–46.

Hasna, M.K. 1995. "Street Hydrant Project in Chittagong's Low-Income Settlement." *Environment and Urbanization* 7(2):207–18.

Heleniak, Timothy. 1995. "Brief Communications—Background and News Analysis—Is Russia's Demographic Situation Improving?" *Post-Soviet Geography* 36(10):644–46.

_____. 1995. "Economic Transition and Demographic Change in Russia, 1989–95." *Post-Soviet Geography* 36(7):446–58.

Helm, W., and Johan van Zyl. 1995. "Does South African Agriculture Receive Too Much Support? A Comparison." *Agrekon* 34(2).

Hentschel, Jesko, and Peter Lanjouw. 1995. "Un Perfil de Pobreza en Ecuador." *Cuestiones Económicas* (Banco Central del Ecuador) 27.

Hill, M. Anne, and Elizabeth King. 1995. "Women's Education and Economic Well-Being." *Feminist Economics* 1(2):21–46.

Hoekman, Bernard M., and Petros C. Mavroidis. 1996. "Dumping, Antidumping, and Antitrust." *Journal of World Trade* 30(1):27–52.

Holden, Paul, and Mateen Thobani. 1995. "Tradable Water Rights: A Property Rights Approach to Improving Water Use and Promoting Investment." *Cuadernos de Economía* (97).

Holmes, M., and D. Shand. 1995. "Management Reform: Some Practitioner Perspectives on the Past 10 Years." *Governance: An International Journal of Policy and Administration* 8(4):551–78.

Howes, S. 1996. "The Influence of Aggregation on the Ordering of Distributions." *Economica* 63(250): 253–72.

Hurley, S.F., L.M. Bond, J.B. Carlin, D.B. Evans, and J.M. Kaldor. 1995. "A Method for Estimating Baseline Health Care Costs." *Journal of Epidemiology and Community Health* 49(5):525–31.

Hurley, S.F., J.M. Kaldor, J.B. Carlin, S. Gardiner, D.B. Evans, P. Chondros, J. Hoy, D. Spelman, W.J. Spicer, H. Wraight, and P. Meese. 1995. "The Usage and Costs of Health Services for HIV Infection in Australia." *AIDS* 9(7):777–85.

James, Estelle. 1995. "The Old Age Crisis in International Perspective." *Policy Options* (Montreal) 16(7).

_____. 1995. "A Pension System for the Twenty-First Century." *Politique Internationale* (Paris) (October).

Jamison, Dean T., Helen Saxenian, and Y. Bergevin. 1995. "Investing in Health Wisely: The Role of Needs-Based Technology Assessment." *International Journal of Technology Assessment in Health Care* 11(4):673–84.

Jechoutek, K.G., and R. Lamech. 1995. "New Directions in Electric Power Financing." *Energy Policy* 23(11): 941–53.

Jha, P., D. Deboer, K. Sykora, and C.D. Naylor. 1996. "Characteristics and Mortality Outcomes of Thrombolysis Trial Participants and Nonparticipants: A Population-Based Comparison." *Journal of the American College of Cardiology* 27(6):1335–42.

Jha, P., M. Flather, E. Lonn, M. Farkouh, and S. Yusuf. 1995. "Antioxidant Vitamins and Cardiovascular Disease: A Critical Review of Epidemiologic and Clinical Trial Data." *Annals of Internal Medicine* 123(11):860–72.

Johnson, T.M. 1995. "Development of China's Energy Sector: Reform, Efficiency, and Environmental Impacts." *Oxford Review of Economic Policy* 11(4):118–32.

Kaminski, Bartlomiej. 1995. "The Significance of Europe Agreements for Central European Industrial Exports." *Russian and East European Finance and Trade: A Journal of Translations* 31(1):9–47.

Keefer, Philip. 1996. "Protection against a Capricious State: French Investment and Spanish Railroads, 1845–75." *Journal of Economic History* 56(1):170–92.

Keefer, Philip, and Stephen Knack. 1995. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures." *Economics and Politics* (November).

Kenworthy, Jeff. 1995. "Automobile Dependence in Bangkok: An International Comparison with Implications for Planning Policies." *World Transport Policy and Practice* 1(3):31–41.

Kenworthy, Jeff, Peter Newman, P. Barter, and C. Poboon. 1995. "Is Increasing Automobile Dependence Inevitable in Booming Economies? Asian Cities in an International Context." *IATSS Research* 19(2):58–67.

Knight, Malcolm, Norman Loayza, and Delano Villaneuva. 1996. "The Peace Dividend: Military Spending Cuts and Economic Growth." *International Monetary Fund Staff Papers* 43(1):1–37.

Koch-Weser, C. 1995. "Challenge and Vision: Economic Recovery of the Middle East and North Africa." *Internationale Politik* 50(7):43–50.

Lahiri, K., and Nlandu Mamingi. 1995. "Testing for Cointegration: Power versus Frequency of Observation—Another View." *Economics Letters* 49(2):121–24.

Lakshminarayan, P.G., S.R. Johnson, and A. Bouzaher. 1995. "A Multiobjective Approach to Integrating Agricultural Economic and Environmental Policies." *Journal of Environmental Management* 45(4):365–78.

Langseth, P. 1995. "Civil Service Reform in Uganda: Lessons Learned." *Public Administration and Development* 15(4):365–90.

Lanjouw, Peter. 1995. "La Pobreza Rural en Ecuador." *Cuestiones Económicas* (Banco Central del Ecuador) 27.

Lanjouw, Peter, and Martin Ravallion. 1995. "Poverty and Household Size." *Economic Journal* 105:1415–34.

Laplante, Benoît. 1995. "It's Not Easy Being Green: The Politics of Canada's Green Plan—Comment." *Canadian Public Policy/Analyse de Politiques* 21(4):461–67.

Lerman, Zvi, Karen M. Brooks, and Csaba Csaki. 1995. "Restructuring of Traditional Farms and New Land Relations in Ukraine." *Agricultural Economics* 13(1): 27–37.

Levine, Ross. 1995. "Market Liquidity: A Financial Elixir for Growth." *Emerging Markets Investor* (October).

Lewis, Jeffrey D., Sherman Robinson, and Zhi Wang. 1995. "Beyond the Uruguay Round: The Implications of an Asian Free Trade Area." *China Economic Review* 6(1):35–90.

Ma, Jun. 1995. "China: Central Government Credibility and Economic Overheating." *Economic Systems* 19(3).

_____. 1995. "Defining the Limits of Local Government Power in China." *Journal of Contemporary China* 6(fall).

_____. 1995. "Modeling Central-Local Fiscal Relations in China." *China Economic Review* 6(1):105–36.

_____. 1995. "The Reform of Central-Local Fiscal Relations." *Modern China Studies* (Princeton University Center for Modern China) 1 and 2. (In Chinese.)

_____. 1995. "The Reform of China's Intergovernmental Fiscal Relations." *Asian Economic Journal* 9(3).

_____. 1996. "China's Banking Sector: From Liberalization to a Regulatory Framework." *Journal of Contemporary China* 5(10).

_____. 1996. "Monetary Management and Intergovernmental Relations in China." *World Development* 24(1):145–53.

_____. 1996. "The Relevance of Japanese Experience for China's Intergovernmental Fiscal Relations." *Local Finance* 2. (In Japanese.)

MacIsaac, D.J., and Harry Anthony Patrinos. 1995. "Labor Market Discrimination against Indigenous People in Peru." *Journal of Development Studies* 32(2):218–33.

Mani, Muthukumara. 1996. "Environmental Tariffs on Polluting Imports: An Empirical Study." *Environmental and Resource Economics* (June).

Mas, Ignacio. 1995. "Central Bank Independence: A Critical View from a Developing Country Perspective." *World Development* 23(10):1639–52.

_____. 1995. "Policy-Induced Disincentives to Financial Sector Development: Selected Examples from Latin America in the 1980s." *Journal of Latin American Studies* 27(October):683–706.

_____. 1995. "Things Governments Do to Money: A Recent History of Currency Reform Schemes and Scams." *Kyklos* 48(4):483–512.

Mason, A.D. 1996. "Targeting the Poor in Rural Java." *IDS Bulletin* (Institute of Development Studies) 27(1):67.

Meier, Peter, and Mohan Munasinghe. 1995. "Greenhouse Gas Emission Reduction: A Case Study of Sri Lanka." *Energy Journal* 16(4):79–107.

Milanovic, Branko. 1996. "Income, Inequality, and Poverty during the Transition in Eastern Europe: A Survey of the Evidence." *MOCT-MOST* (1):131–47.

Modabber, F. 1995. "Vaccines against Leishmaniasis." *Annals of Tropical Medicine and Parasitology* 89(1): 83–88.

Moffat, D., and O. Linden. 1995. "Perception and Reality: Assessing Priorities for Sustainable Development in the Niger River Delta." *Ambio* 24(7–8):527–38.

Montes-Negret, Fernando. 1995. "China's Credit Plan: An Overview." *Oxford Review of Economic Policy* 11(4):25–42.

Moore, Michael R., and Ariel Dinar. 1995. "Water and Land as Quantity-Rationed Inputs in California Agriculture: Empirical Tests and Water Policy Implications." *Land Economics* 71(4):445–61.

Moser, Caroline O. 1995. "Evaluating Gender Impacts." *New Directions for Evaluation* 67(fall).

_____. 1996. "Urban Social Policy and Poverty Reduction." *Environment and Urbanization* 7(1):159–72.

Musgrove, Philip. 1995. "Cost-Effectiveness and the Health Sector Reform." *Salud Pública de Mexico* 37(4):363–74.

Newman, Peter. 1996. "City Life and City Death." *The Macroscope.*

_____. 1996. "Reducing Automobile Dependence." *Environment and Urbanization* 8(1):67–92.

Nguyen, N.X. 1996. "Physician Volume Response to Price Controls." *Health Policy* 35(2):189–204.

Olem, H., and Alfred M. Duda. 1995. "International Watercourses: The World Bank Looks toward a More Comprehensive Approach to Management." *Water Science and Technology* 31(8):345–52.

Oliveira, J.B. 1995. "Understanding Textbook Quality in the U.S.A.: How Governments Distort the Market." *International Review of Education* 41(6):481–500.

Olliaro, P., J. Cattani, and D. Wirth. 1996. "Malaria, the Submerged Disease." *Journal of the American Medical Association* 275(3):230–33.

Olliaro, P.L., and P.I. Trigg. 1995. "Status of Antimalarial Drugs under Development." *Bulletin of the World Health Organization* 73(5):565–71.

Patrinos, Harry Anthony. 1995. "Gender Earnings Differentials in the Engineering Profession in Greece." *Higher Education* 30(4):341–51.

_____. 1996. "Nonlinearities in the Returns to Education: Sheepskin Effects or Threshold Levels of Human Capital." *Applied Economics Letters* 3(3):171–73.

Patrinos, Harry Anthony, and M. Lavoie. 1995. "Engineers and Economic Development in Greece." *International Journal of Manpower* 16(10):39.

Patrinos, Harry Anthony, and George Psacharopoulos. 1996. "Socioeconomic and Ethnic Determinants of Age-Grade Distortion in Bolivian and Guatemalan Primary Schools." *International Journal of Educational Development* 16(1):3–14.

Plaisier, A.P., E.S. Alley, B.A. Boatin, G.J. Vanoortmarssen, H. Remme, S.J. Devlas, L. Bonneux, and J.D.F. Habbema. 1995. "Irreversible Effects of Ivermectin on Adult Parasites in Onchocerciasis Patients in the Onchocerciasis Control Program in West Africa." *Journal of Infectious Diseases* 172(1):204–10.

Plucknett, D.L., and D.L. Winkelmann. 1995. "Technology for Sustainable Agriculture." *Scientific American* 273(3):182–86.

Plusquellec, Hervé. 1996. "Guilan, A Successful Irrigation Project in Iran: The East Meets the West." *Irrigation and Drainage Systems* 10(2).

Politi, C., G. Carrin, D. Evans, F.A.S. Kuzoe, and P.D. Cattand. 1995. "Cost-Effectiveness Analysis of Alternative Treatments of African Gambiense Trypanosomiasis in Uganda." *Health Economics* 4(4):273–87.

Prederiksen, H.D. 1996. "Water Crisis in the Developing World: Misconceptions about Solutions." *Journal of Water Resources Planning and Management* 122(2): 79–87.

Psacharopoulos, George. 1995. "Evaluation of Education and Training: What Room for the Comparative Approach." *International Review of Education* 41(3–4):259–84.

_____. 1995. "Tracking the Performance of Education Programs: Evaluation Indicators." *New Directions for Program Evaluation* 67(fall):93–104.

Psacharopoulos, George, Samuel Morley, Ariel Fiszbein, H. Lee, and B. Wood. 1995. "Poverty and Income Inequality in Latin America during the 1980s." *Review of Income and Wealth* 41(3):245–64.

Psacharopoulos, George, and Harry Anthony Patrinos. 1995. "Reducing Poverty in Latin America: An Enhanced Role for Education." *Prospects* 25(1). (Also published in Arabic, Chinese, French, and Spanish.)

Rabinovitch, J., and J. Leitman. 1996. "Urban Planning in Curitiba." *Scientific American* 274(3).

Rama, Martin. 1995. "Do Labor Market Policies and Institutions Matter? The Adjustment Experience in Latin America and the Caribbean." *Labour* (special issue):S243–68.

_____. 1995. "La Pobreza Ecuatoriana Rediscutida: El Impacto de la Educacíon, el Crecimiento y la Desregulación." *Cuestiones Económicas* (Banco Central del Ecuador) 27:139–70.

Ravallion, Martin. 1995. "Growth and Poverty: Evidence for Developing Countries in the 1980s." *Economic Letters* 48:411–17.

Ravallion, Martin, and B. Sen. 1996. "When Method Matters: Monitoring Poverty in Bangladesh." *Economic Development and Cultural Change* (April).

Razavi, Hossein. 1995. "Oil and Gas Financing by the World Bank." *Energy Policy* 23(11):1001–07.

Remme, J.H.F. 1995. "The African Program for Onchocerciasis Control: Preparing to Launch." *Parasitology Today* 11(11):403–06.

Renaud, Bertrand. 1995. "La coopération dans le système financier international." *Revue d'Economie* (33).

_____. 1995. "The Real Estate Economy and the Design of Russian Housing Reforms 1." *Urban Studies* 32(8):1247–64.

_____. 1995. "The Real Estate Economy and the Design of Russian Housing Reforms 2." *Urban Studies* 32(9):1437–51.

Ros, J., J. Draisma, Nora Lustig, and A. Tenkate. 1996. "Prospects for Growth and the Environment in Mexico in the 1990s." *World Development* 24(2):307–24.

Scandizzo, P.L., and Odin Knudsen. 1996. "Social Supply and the Evaluation of Food Policies." *American Journal of Agricultural Economics* 78(1):137–45.

Schiff, Maurice. 1995. "Uncertain Property Rights and the Coase Theorem." *Rationality and Society* 7(3): 321–27.

Servén, Luis. 1995. "Capital Goods Imports, the Real Exchange Rate, and the Current Account." *Journal of International Economics* 39(1–2):79–101.

Shafik, Nemat. 1995. "Making a Market: Mass Privatization in the Czech and Slovak Republics." *World Development* 23(7):1143–56.

Shrestha, L.B., and I. Rosenwaike. 1996. "Can Data from the Decennial Census Measure Trends in Mobility Limitation among the Aged?" *Gerontologist* 36(1): 106–09.

Srivastava, Jitendra. 1996. "World Bank Makes Dynamic Link between Agriculture and Biodiversity." *Diversity* 12(2).

Steel, William F. 1995. "Small Enterprises under Liberalization: Responses and Constraints." *Appropriate Technology* 22(3):5–9.

Subbarao, Kalanidhi, and Laura Raney. 1995. "Social Gains from Female Education: A Cross-National Study." *Economic Development and Cultural Change* 44(1):105–28.

Swaroop, Vinaya. 1995. "Changes in Government Expenditure, Optimal Debt and Tax Policy, and Intertemporal Adjustments." *Public Finance/Finance Publiques* 50(1):136–52.

Swart, K.A., A. van der Vyver, and Johan van Zyl. 1995. "Tariffication of Agricultural Commodity Imports in South Africa: A Tariff Policy and Strategy." *Agrekon* 34(1).

Taramelli, D., N. Basilico, E. Pagani, R. Grande, D. Monti, M. Ghione, and P. Olliaro. 1995. "The Heme Moiety of Malaria Pigment (Beta-Hematin) Mediates: The Inhibition of Nitric Oxide and Tumor-Necrosis-Factor-Alpha Production by Lipopolysaccharide-Stimulated Macrophages." *Experimental Parasitology* 81(4):501–11.

Tarr, David, and Constantine Michalopoulos. 1996. "Trade Policy Reform in the New Independent States." *The Eurasian Report* 5(1).

Thobani, Mateen. 1996. "Water: Tapping a New Market." *Hemisfile* (Institute of the Americas) 7(1).

Thomas, V., and Y. Wang. 1996. "Distortions, Interventions, and Productivity Growth: Is East Asia Different?" *Economic Development and Cultural Change* 44(2):265–88.

Thompson, Louis S. 1996. "Issues and Progress in Transport Concessioning." *French Road Federation* (June).

Udry, C., John Hoddinott, Harold Alderman, and Lawrence Haddad. 1995. "Gender Differentials in Farm Productivity: Implications for Household Efficiency and Agricultural Policy." *Food Policy* 20(5): 407–23.

Valdés, Alberto. 1995. "Joining an Existing Regional Trade Agreement from the Perspective of a Small Open Economy: Chile's Accession to NAFTA and Mercosur." *American Journal of Agricultural Economics* 77(5):1292–97.

van der Slice, J., and John Briscoe. 1995. "The Sequencing of Environmental Interventions in Developing Countries: Interactions and Their Implications." *American Journal of Epidemiology* 141(2):135–44.

van Houtven, George L., and Maureen L. Cropper. 1996. "When Is a Life Too Costly to Save? The Evidence from U.S. Environmental Regulations." *Journal of Environmental Economics and Management* 30(3):348–68.

van Veen, T.W.S, and Cornelis de Haan. 1995. "Trends in the Organization and Financing of Livestock and Animal Health Services." *Preventive Veterinary Medicine* 25(2):225–40.

van Zyl, Johan. 1995. "The Farm Size-Efficiency Relationship in South African Commercial Agriculture." *Agrekon* 34(4).

van Zyl, Johan, and Nick Vink. 1995. "An Agricultural Economic View on Land Taxation in South Africa." *Journal of Property Tax Assessment and Administration* 1(2).

Vonamsberg, J. 1995. "Excessive Environmental Risks: An Intergenerational Market Failure." *European Economic Review* 39(8):1447–64.

Wang, Z., and J. Slagle. 1996. "An Object-Oriented Knowledge-Based Approach for Formulating Applied General Equilibrium Models." *Journal of Economic Dynamics and Control* 20(1–3):209–36.

Wildasin, David E. 1995. "Factor Mobility, Risk, and Redistribution in the Welfare State." *Scandinavian Journal of Economics* 97(4):527–46.

_____. 1996. "Imperfect Mobility and Local Government Behavior in an Overlapping-Generations Model." *Journal of Public Economics* (Netherlands) 60:177–98.

_____. 1996. "Introduction: Fiscal Aspects of Evolving Federations." *International Tax and Public Finance* (Netherlands) 3:121–35.

Wildasin, David E., and Dietmar Wellisch. 1996. "Decentralized Income Redistribution and Immigration." *European Economic Review* 40(1):187–217.

Willemse, J., and Johan van Zyl. 1995. "Economic Implications of a Deregulated Yellow Maize Marketing System on the Livestock Industry." *Agrekon* 34(3).

Winters, L. Alan. 1996. "Intégration européenne et bien-être économique dans le reste du monde." *Economie Internationale* 65.

_____. 1996. "Transportation Costs and Integration in the Americas." *Swiss Journal of Economics and Statistics* 131:465–88.

Winters, L. Alan, and Will Martin. 1996. "Trade and Developing Countries." *International Review of World Trade*, pp. 45–50.

Ye, X., and J.E. Taylor. 1995. "The Impact of Income Growth on Farm Household Nutrient Intake: A Case Study of a Prosperous Rural Area in Northern China." *Economic Development and Cultural Change* 43(4): 805–19.

Zou, Heng-fu. 1995. "The Spirit of Capitalism and Savings Behavior." *Journal of Economic Behavior and Organization* 28(1):131–43.

_____. 1996. "Taxes, Federal Grants, Local Public Spending, and Growth." *Journal of Urban Economics* 39(3): 303–17.

E. World Bank Discussion Papers, Technical Papers, and Other Bank Series Papers

Adamson, Seabron, Robin Bates, Robert Laslett, and Alberto Pototschnig. 1996. *Energy Use, Air Pollution, and Environmental Policy in Kraków: Can Economic Incentives Really Help?* World Bank Technical Paper 308, Energy Series. Washington, DC.

Agüero, Max, and Exequiel Gonzalez. 1996. *Managing Transboundary Stocks of Small Pelagic Fish: Problems and Options.* World Bank Discussion Paper 329. Washington, DC.

Armstrong, Jill. 1995. *Uganda's AIDS Crisis: Its Implications for Development.* World Bank Discussion Paper 298. Washington, DC.

Armstrong, Robert P. 1996. *Ghana Country Assistance Review: A Review of Development Effectiveness.* World Bank Operations Evaluation Study. Washington, DC.

Babbel, David F., and Stefano Bertozzi. 1996. *Insuring Sovereign Debt against Default.* World Bank Discussion Paper 328. Washington, DC.

Bachmann, Heinz. 1996. *Implementing Deregulation and Promoting Foreign Direct Investment in Africa: A Report of Six Workshops.* Investment Marketing Services Research Series. Washington, DC: World Bank. (The volume contains both English and French versions of the text.)

Baldry, David, Davide Calamari, and Laurent Yaméogo. 1995. *Environmental Impact Assessment of Settlement and Development in the Upper Léraba Basin: Burkina Faso, Côte d'Ivoire, and Mali.* World Bank Technical Paper 302. Washington, DC. (Also published in French.)

Bamberger, Michael, and Shabbir Cheema. 1995. *Case Studies of Project Sustainability: Implications for Policy and Operations from Asian Experience.* EDI Series. Washington, DC: World Bank.

Bamberger, Michael, Abdullahi M. Yahie, and George Matovu, eds. 1996. *The Design and Management of Poverty Reduction Programs and Projects in Anglophone Africa.* EDI Learning Resources Series. Washington, DC: World Bank.

Baneth, Jean. 1996. *Selecting Development Projects for the World Bank.* World Bank Discussion Paper 322. Washington, DC.

Belkindas, Misha V., and Olga V. Ivanova. 1995. *Foreign Trade Statistics in the USSR and Successor States.* Studies of Economies in Transformation Series 18. Washington, DC: World Bank.

Benoît, Philippe. 1996. *Project Finance at the World Bank: An Overview of Policies and Instruments.* World Bank Technical Paper 312. Washington, DC.

Bhala, Raj. 1995. *Towards a Payments System Law for Developing and Transition Economies.* World Bank Discussion Paper 299. Washington, DC.

Biggs, Tyler, Margaret Miller, Caroline Otto, and Gerald Tyler. 1996. *Africa Can Compete! Export Opportunities and Challenges for Garments and Home Products in the European Market.* World Bank Discussion Paper 300. Washington, DC.

Biggs, Tyler, Manju Shah, and Pradeep Srivastava. 1995. *Technological Capabilities and Learning in African Enterprises.* World Bank Technical Paper 288. Washington, DC.

Biot, Yvan, Piers Macleod Blaikie, Cecile Jackson, and Richard Palmer-Jones. 1995. *Rethinking Research on Land Degradation in Developing Countries.* World Bank Discussion Paper 289. Washington, DC.

Borish, Michael S., and Michel Noël. 1996. *Private Sector Development during Transition: The Visegrad Countries.* World Bank Discussion Paper 318. Washington, DC.

Brehm, Monica Rios, and Jorge Quiroz Castro. 1995. *The Market for Water Rights in Chile: Major Issues.* World Bank Technical Paper 285. Washington, DC.

Broadman, Harry G. 1996. *Policy Options for Reform of Chinese State-Owned Enterprises.* World Bank Discussion Paper 335. Washington, DC.

Brooks, Karen M., Elmira Krylatykh, Zvi Lerman, Aleksandr Petrikov, and Vasilii Uzun. 1996. *Agricultural Reform in Russia: A View from the Farm Level.* World Bank Discussion Paper 327. Washington, DC.

Bulatao, Rodolfo A. 1995. *Key Indicators for Family Planning Projects.* World Bank Technical Paper 297. Washington, DC.

Cernea, Michael M. 1996. *Social Organization and Development Anthropology.* Environmentally Sustainable Development Studies and Monographs 6. Washington, DC: World Bank.

Cohen, Michael A., and Josef Leitmann. 1995. *Enabling Sustainable Community Development.* Environmentally Sustainable Development Proceedings Series 8. Washington, DC: World Bank.

Colletta, Nat J., Markus Kostner, and Ingo Wiederhofer, with Emilio Mondo, Taimi Sitari, and Tadesse A. Woldu. 1996. *Case Studies in War-to-Peace Transition: The Demobilization and Reintegration of Ex-Combatants in Ethiopia, Namibia, and Uganda.* World Bank Discussion Paper 331. Washington, DC.

Covarrubias, Alvaro J. 1996. *Lending for Electric Power in Sub-Saharan Africa.* World Bank Operations Evaluation Study. Washington, DC.

Current, Dean, Ernst Lutz, and Sara Scherr, eds. 1995. *Costs, Benefits, and Farmer Adoption of Agroforestry: Project Experience in Central America and the Caribbean.* World Bank Environment Paper 14. Washington, DC.

Dakolias, Maria. 1996. *The Judicial Sector in Latin America and the Caribbean: Elements of Reform.* World Bank Technical Paper 319. Washington, DC.

Dalla, Ismail, and Keena Khatkhate. 1995. *Regulated Deregulation of the Financial System in Korea.* World Bank Discussion Paper 292. Washington, DC.

Davies, David G., ed. 1996. *The Economic Evaluation of Projects: Papers from a Curriculum Development Workshop.* EDI Learning Resources Series. Washington, DC: World Bank.

Dia, Mamadou. 1996. *A Governance Approach to Civil Service Reform in Sub-Saharan Africa.* World Bank Technical Paper 225. Washington, DC.

Donaldson, David J. 1995. *Privatization: Principles and Practice.* IFC Lessons of Experience Series. Washington, DC: World Bank. (Also published in Russian.)

Dunlop, David W., and Jo M. Martins, eds. 1995. *An International Assessment of Health Care Financing: Lessons for Developing Countries.* EDI Seminar Series. Washington, DC: World Bank.

Elder, John, and Laura Cooley. 1995. *Sustainable Settlement and Development of the Onchocerciasis Control Programme Area: Proceedings of a Ministerial Meeting.* World Bank Technical Paper 310. Washington, DC. (Also published in French.)

Faruqee, Rashid, Ridwan Ali, and Yusuf Choudhry. 1995. *Pakistan's Public Agricultural Enterprises: Inefficiencies, Market Distortions, and Proposals for Reform.* World Bank Discussion Paper 305. Washington, DC.

Foley, Gerald. 1995. *Photovoltaic Applications in Rural Areas of the Developing World.* World Bank Technical Paper 304. Washington, DC.

Gilham, Fred E.M., Thomas M. Bell, Tijen Arin, Graham A. Matthews, Claude Le Rumeur, and A. Brian Hearn. 1995. *Cotton Production Prospects for the Next Decade.* World Bank Technical Paper 287. Washington, DC.

Glaessner, Philip J., Kye Woo Lee, Anna Maria Sant'Anna, and Jean-Jacques de St. Antoine. 1995. *Poverty Alleviation and Social Investment Funds: The Latin American Experience.* World Bank Discussion Paper 261. Washington, DC. (French edition.)

Glen, Jack D., Yannis Karmokolias, Robert R. Miller, and Sanjay Shah. 1995. *Dividend Policy and Behavior in Emerging Markets: To Pay or Not to Pay.* IFC Discussion Paper 26. Washington, DC: World Bank.

Glewwe, Paul, and Gillette Hall. 1995. *Who Is Most Vulnerable to Macroeconomic Shocks? Hypotheses Tests Using Panel Data from Peru.* Living Standards Measurement Study Working Paper 117. Washington, DC: World Bank.

Gopal, Gita. 1995. *Procurement and Disbursement Manual for Projects with Community Participation.* World Bank Discussion Paper 312. Washington, DC.

Gorriz, Cecilia, Ashok Subramanian, and José Simas. 1995. *Irrigation Management Transfer in Mexico: Process and Progress.* World Bank Technical Paper 292. Washington, DC.

Gray, Dale F. 1995. *Reforming the Energy Sector in Transition Economies: Selected Experience and Lessons.* World Bank Discussion Paper 296. Washington, DC.

Grimshaw, Richard, and Larisa Helfer. 1995. *Vetiver Grass for Soil and Water Conservation, Land Rehabilitation, and Embankment Stabilization: A Collection of Papers and Newsletters Compiled by the Vetiver Network.* World Bank Technical Paper 273. Washington, DC.

Grosh, Margaret E., and Judy L. Baker. 1995. *Proxy Means Tests for Targeting Social Programs: Simulations and Speculation.* Living Standards Measurement Study Working Paper 118. Washington, DC.

Grosh, Margaret E., and Paul Glewwe. 1995. *A Guide to Living Standards Measurement Study Surveys and Their Data Sets.* Living Standards Measurement Study Working Paper 120. Washington, DC: World Bank.

Grosh, Margaret E., and Juan Muñoz. 1996. *A Manual for Planning and Implementing the Living Standards Measurement Study Survey.* Living Standards Measurement Study Working Paper 126. Washington, DC: World Bank.

Harrold, Peter. 1995. *The Broad Sector Approach to Investment Lending: Sector Investment Programs.* World Bank Discussion Paper 302. Washington, DC.

_____. 1995. *The Impact of the Uruguay Round on Africa.* World Bank Discussion Paper 311. Washington, DC.

Harrold, Peter, Malathi Jayawickrama, and Deepak Bhattasali. 1996. *Practical Lessons for Africa from East Asia in Industrial and Trade Policies.* World Bank Discussion Paper 310. Washington, DC.

Hearne, Robert, and K. William Easter. 1995. *Water Allocation and Water Markets: An Analysis of Gains from Trade in Chile.* World Bank Technical Paper 315. Washington, DC.

Heneveld, Edward H., and Helen J. Craig. 1996. *Schools Count: World Bank Project Designs and the Quality of Primary Education in Sub-Saharan Africa.* World Bank Technical Paper 303. Washington, DC.

Henry, Richard, and Graeme Rothwell. 1995. *The World Poultry Industry.* IFC Global Agriculture Series 1. Washington, DC: World Bank.

Hentschel, Jesko, and Peter Lanjouw. 1996. *Constructing an Indicator of Consumption for the Analysis of Poverty: Principles and Illustrations with References to Ecuador.* Living Standards Measurement Study Working Paper 124. Washington, DC: World Bank.

Hill, Lowell D., and Karen L. Bender. 1995. *Developing the Regulatory Environment for Competitive Agricultural Markets.* World Bank Technical Paper 266. Washington, DC.

Holm-Nielson, Lauritz, Michael F. Crawford, and Alcyone Saliba. 1996. *Institutional and Entrepreneurial Leadership in the Brazilian Science and Technology Sector: Setting a New Agenda.* World Bank Discussion Paper 325. Washington, DC.

Hooten, Anthony J., and Marea E. Hatziolos, eds. 1995. *Sustainable Financing Mechanisms for Coral Reef Conservation: Proceedings of a Workshop.* Environmentally Sustainable Development Proceedings Series 9. Washington, DC: World Bank.

Ii, Masako. 1996. *The Demand for Medical Care: Evidence from Urban Areas of Bolivia.* Living Standards Measurement Study Working Paper 123. Washington, DC: World Bank.

Jacobsen, Veronica, Grant M. Scobie, and Alex Duncan. 1995. *Statutory Intervention in Agricultural Marketing:*

A New Zealand Perspective. World Bank Technical Paper 283. Washington, DC.

Jaspersen, Frederick Z., Anthony A. Aylward, and Mariusz A. Sumlinski. 1995. *Trends in Private Investment in Developing Countries: Statistics for 1970–94.* IFC Discussion Paper 28. Washington, DC: World Bank.

Jayarajah, Carl, William H. Branson, and Binayak Sen. 1996. *The Social Dimensions of Adjustment: World Bank Experience, 1980–93.* World Bank Operations Evaluation Study. Washington, DC.

Jimenez, Emmanuel, and Marlaine E. Lockheed. 1995. *Public and Private Secondary Education in Developing Countries: A Comparative Study.* World Bank Discussion Paper 309. Washington, DC.

Johnson, Sonia R. 1996. *Education and Training of Accountants in Anglophone Sub-Saharan Africa.* World Bank Technical Paper 305. Washington, DC.

Johnson, Todd M., Junfeng Li, Zhongxiao Jiang, and Robert P. Taylor. 1996. *China: Issues and Options in Greenhouse Gas Emissions Control.* World Bank Discussion Paper 330. Washington, DC.

Jones, William I. 1995. *The World Bank and Irrigation.* World Bank Operations Evaluation Study. Washington, DC.

Kaminski, Bartlomiej, Zhen Kun Wang, and L. Alan Winters. 1996. *Foreign Trade in the Transition: The International Environment and Domestic Policy.* Studies of Economies in Transformation 20. Washington, DC: World Bank.

Kane, Eileen. 1996. *Seeing for Yourself: Research Handbook for Girls' Education in Africa.* EDI Learning Resources Series. Washington, DC: World Bank.

Kapoor, Kapil. 1995. *Africa's Experience with Structural Adjustment: Proceedings of the Harare Seminar, May 23–24, 1994.* World Bank Discussion Paper 288. Washington, DC.

Kapur, Anil. 1995. *Airport Infrastructure: The Emerging Role of the Private Sector.* World Bank Technical Paper 313. Washington, DC.

Khandker, Shahidur R. 1996. *Education Achievements and School Efficiency in Rural Bangladesh.* World Bank Discussion Paper 319. Washington, DC.

Khandker, Shahidur R., Baqui Khalily, and Zahed Khan. 1995. *Grameen Bank.* World Bank Discussion Paper 306. Washington, DC.

Khandker, Shahidur R., Zahad Khan, and Baqui Khalily. 1995. *Sustainability of a Government Targeted Credit Program: Evidence from Bangladesh.* World Bank Discussion Paper 316. Washington, DC.

Kim, Hyung-Ki. 1996. *The Civil Service System and Economic Development: The Japanese Experience.* EDI Learning Resources Series. Washington, DC: World Bank.

Klitgaard, Robert. 1995. *Institutional Adjustment and Adjusting to Institutions.* World Bank Discussion Paper 303. Washington, DC.

Kramer, Randall A., Narendra Sharma, and Mohan Munasinghe, eds. 1995. *Valuing Tropical Forests: Methodology and Case Study of Madagascar.* World Bank Environment Paper 13. Washington, DC.

Le Houerou, Philippe H. 1996. *Investment Policy in Russia.* Studies of Economies in Transformation 17. Washington, DC: World Bank. (Russian edition.)

Leibbrandt, Murray V., Christopher D. Woolard, and Ingrid D. Woolard. 1996. *The Contribution of Income Components to Income Inequality in South Africa: A Decomposable Gini Analysis.* Living Standards Measurement Study Working Paper 125. Washington, DC: World Bank.

Lobo, Crispino, and Gudrun Kochendorfer-Lucius. 1995. *The Rain Decided to Help Us: Participatory Management in the State of Maharashtra, India.* EDI Learning Resources Series. Washington, DC: World Bank.

Londoño, Juan Luís. 1996. *Poverty, Inequality, and Human Capital Development in Latin America, 1950–2025.* World Bank Latin American and Caribbean Study Series. Washington, DC. (Also published in Spanish.)

Martin, Will, and L. Alan Winters. 1995. *The Uruguay Round and the Developing Economies.* World Bank Discussion Paper 307. Washington, DC.

Montgomery, Mark, Aka Kouame, and Raylynn Oliver. 1995. *The Tradeoff between Number of Children and Child Schooling: Evidence from Côte d'Ivoire and Ghana.* Living Standards Measurement Study Working Paper 112. Washington, DC: World Bank. (French edition.)

Moser, Caroline O. 1996. *Confronting Crisis: A Comparative Study of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities.* Environmentally Sustainable Development Studies and Monographs Series 8. Washington, DC: World Bank.

_____. 1996. *Confronting Crisis: A Summary of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities.* Environmentally Sustainable Development Studies and Monographs Series 7. Washington, DC: World Bank. (Also published in French and Spanish.)

Muir, Russell, and Joseph P. Saba. 1995. *Improving State Enterprise Performance.* World Bank Technical Paper 306. Washington, DC.

Munasinghe, Mohan, ed. 1996. *Global Climate Change: Economic and Policy Issues.* World Bank Environment Paper 12. Washington, DC.

Najmabadi, Farrokh, and Sanjaya Lall. 1995. *Developing Industrial Technology: Lessons for Policy and Practice.* World Bank Operations Evaluation Study. Washington, DC.

Narayan, Deepa. 1996. *Toward Participatory Research.* World Bank Technical Paper 307. Washington, DC.

Odaga, Adhiambo. 1995. *Girls and Schools in Sub-Saharan Africa: From Analysis to Action.* World Bank Technical Paper 298. Washington, DC. (Also published in French.)

Ohiorhenuan, John F.E., and Stephen M. Wunker. 1995. *Capacity Building Requirements for Global Environmental Protection.* Global Environment Facility Working Paper 12. Washington, DC: World Bank.

Oram, Peter A., and Cornelis de Haan. 1995. *Technologies for Rainfed Agriculture in Mediterranean Climates: A Review of World Bank Experience.* World Bank Technical Paper 300. Washington, DC.

Pannier, Dominique. 1996. *Corporate Governance of Public Enterprises in Transitional Economies.* World Bank Technical Paper 323. Washington, DC.

Peters, Charles M. 1996. *The Ecology and Management of Non-Timber Forest Resources.* World Bank Technical Paper 322. Washington, DC.

Picciotto, Robert. 1995. *Putting Institutional Economics to Work: From Participation to Governance.* World Bank Discussion Paper 304. Washington, DC.

Pieri, Christian, Julian Dumanski, and Ann Hamblin. 1995. *Land Quality Indicators.* World Bank Discussion Paper 315. Washington, DC.

Pinto, Rogerio F., and Angelous J. Mrope. 1995. *Assessing Sector Institutions: Lessons of Experience from Zambia's Education Sector.* World Bank Discussion Paper 297. Washington, DC.

Pitt, Mark M. 1995. *Women's Schooling, the Selectivity of Fertility, and Child Mortality in Sub-Saharan Africa.* Living Standards Measurement Study Working Paper 119. Washington, DC: World Bank.

Pitt, Mark M., and Shahidur R. Khandker. 1996. *Household and Intrahousehold Impact of the Grameen Bank and Similar Targeted Credit Programs in Bangladesh.* World Bank Discussion Paper 320. Washington, DC.

Pohl, Gerhard, Gregory T. Jedrzejczak, and Robert E. Anderson. 1995. *Creating Capital Markets in Central and Eastern Europe.* World Bank Technical Paper 295. Washington, DC. (Also published in Russian.)

Pradhan, Sanjay. 1996. *Evaluating Public Spending: A Framework for Public Expenditure Reviews.* World Bank Discussion Paper 323. Washington, DC.

Preker, Alexander S., and Richard G.A. Feacham. 1995. *Market Mechanisms and the Health Sector in Central and Eastern Europe.* World Bank Technical Paper 293. Washington, DC.

Ravallion, Martin. 1996. *Poverty Comparisons.* Living Standards Measurement Study Working Paper 122. Washington, DC: World Bank. (Also published in French.)

Rios Brehm, Monica, and Jorge Quiroz. 1995. *The Market for Water Rights in Chile.* World Bank Technical Paper 285. Washington, DC.

Roulier, Richard P. 1995. *Bank Governance Contracts: Establishing Goals and Accountability in Bank Restructuring.* World Bank Discussion Paper 308. Washington, DC.

Rowat, Malcolm, Waleed H. Malik, and Maria Dakolias. 1995. *Judicial Reform in Latin America and the Caribbean.* World Bank Technical Paper 280. Washington, DC.

Roy, Jayanta, ed. 1996. *Macroeconomic Management and Fiscal Decentralization.* EDI Seminar Series. Washington, DC: World Bank.

Sacay, Orlando J., and Bikki K. Randhawa. 1995. *Design Issues in Rural Finance.* World Bank Discussion Paper 293. Washington, DC.

Sader, Frank. 1995. *Privatizing Public Enterprises and Foreign Investment in Developing Countries, 1988–93.* Foreign Investment Advisory Service Occasional Paper 5. Washington, DC: World Bank. (Also published in French.)

Sato, Setsuya, and David Burras Humphrey. 1995. *Transforming Payment Systems: Meeting the Needs of Emerging Market Economies.* World Bank Discussion Paper 291. Washington, DC.

Schmidt-Hebbel, Klaus. 1995. *Colombia's Pension Reform: Fiscal and Macroeconomic Effects.* World Bank Discussion Paper 314. Washington, DC.

Schneider, Robert R. 1995. *Government and the Economy on the Amazon Frontier.* World Bank Environment Paper 11. Washington, DC.

Schübeler, Peter. 1996. *Participation and Partnership in Urban Infrastructure Management.* Urban Management Programme Series Paper 19. Washington, DC: World Bank.

Schware, Robert, and Paul Kimberly. 1995. *Information Technology and National Trade Facilitation: A Guide to Best Practices.* World Bank Technical Paper 317. Washington, DC.

_____. 1995. *Information Technology and National Trade Facilitation: Making the Most of Global Trade.* World Bank Technical Paper 316. Washington, DC.

Serageldin, Ismail, Richard Barrett, and Joan Martin-Brown, eds. 1995. *The Business of Sustainable Cities: Public-Private Partnerships for Creative, Technical, and Institutional Solutions.* Environmentally Sustainable Development Proceedings Series 7. Washington, DC: World Bank.

Serageldin, Ismail, Michael Cohen, and Josef Leitmann. 1995. *Enabling Sustainable Community Development.* Environmentally Sustainable Development Proceedings Series 8. Washington, DC: World Bank.

Serageldin, Ismail, Michael A. Cohen, and K.C. Sivaramakrishnan, eds. 1995. *The Human Face of the*

Urban Environment: Proceedings of the Second Annual World Bank Conference on Environmentally Sustainable Development. Environmentally Sustainable Development Proceedings Series 6. Washington, DC: World Bank.

Serageldin, Ismail, and Joan Martin-Brown, eds. 1996. *Servicing Innovative Financing of Environmentally Sustainable Development.* Environmentally Sustainable Development Proceedings Series 11. Washington, DC: World Bank.

Shaw, Paul, and Martha Ainsworth. 1996. *Financing Health Services through User Fees and Insurance: Case Studies from Sub-Saharan Africa.* World Bank Discussion Paper 294. Washington, DC.

Shen, Susan, and Arnold Contreras-Hermosilla. 1995. *Environmental and Economic Issues in Forestry: Selected Case Studies in Asia.* World Bank Technical Paper 281. Washington, DC.

Srivastava, Jitendra, John Lambert, and Noel Vietmeyer. 1996. *Medicinal Plants: An Expanding Role in Development.* World Bank Technical Paper 320. Washington, DC.

Srivastava, Jitendra P., Nigel J.H. Smith, and Douglas A. Forno. 1996. *Biodiversity and Agriculture: Implications for Conservation and Development.* World Bank Technical Paper 321. Washington, DC.

Stassen, Hubert E. 1995. *Small-Scale Biomass Gasifiers for Heat and Power.* World Bank Technical Paper 296. Washington, DC.

Stehm, Jeff. 1996. *Clearance and Settlement Systems for Securities: Critical Design Choices in Emerging Market Economies.* World Bank Discussion Paper 321. Washington, DC.

Streifel, Shane S. 1995. *Review and Outlook of the World Oil Market.* World Bank Discussion Paper 301. Washington, DC.

Subbarao, Kalanidhi, Akhter U. Ahmed, and Tesfaye Teklu. 1996. *Selected Social Safety Net Programs in the Philippines.* World Bank Discussion Paper 317. Washington, DC.

Talero, Eduardo, and Philip Gaudette. 1996. *Harnessing Information for Development: A Proposal for a World Bank Group Strategy.* World Bank Discussion Paper 313. Washington, DC.

Tamale, Eric, Norman Jones, and Idah Pswarayi-Riddihough. 1995. *Technologies Related to Participatory Forestry in Tropical and Subtropical Countries.* World Bank Technical Paper 299. Washington, DC.

Tavoulareas, E. Stratos, and Jean-Pierre Charpentier. 1995. *Clean Coal Technologies for Developing Countries.* World Bank Technical Paper 286. Washington, DC.

Taylor, Ajibola, Gerard Boukambou, Mohamed Dahniya, Bakary V. Ouayogode, Robert I. Ayling, Moctar Toure, and Mohamood Abdi Noor. 1996. *Strengthening National Agricultural Research Systems in the Humid and Sub-Humid Zones of West and Central Africa: A Framework for Action.* World Bank Technical Paper 318. Washington, DC.

ul Haque, Irfan. 1996. *Trade, Technology, and International Competitiveness.* EDI Development Studies Series. Washington, DC: World Bank.

Valdés, Alberto, and Barry Schaeffer. 1995. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Argentina.* World Bank Technical Paper 294. Washington, DC.

_____. 1995. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Chile.* World Bank Technical Paper 291. Washington, DC.

_____. 1995. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Colombia.* World Bank Technical Paper 268. Washington, DC.

_____. 1995. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for the Dominican Republic.* World Bank Technical Paper 267. Washington, DC.

_____. 1995. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Uruguay.* World Bank Technical Paper 284. Washington, DC.

_____. 1996. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Ecuador.* World Bank Technical Paper 314. Washington, DC.

_____. 1996. *Surveillance of Agricultural Prices and Trade Policies: A Handbook for Paraguay.* World Bank Technical Paper 327. Washington, DC.

van de Walle, Dominique. 1996. *Infrastructure and Poverty in Vietnam.* Living Standards Measurement Study Working Paper 121. Washington, DC: World Bank.

Webb, Anna Kathryn Vandever, Kye Woo Lee, and Anna Maria Sant'Anna. 1995. *The Participation of Nongovernmental Organizations in Poverty Alleviation.* World Bank Discussion Paper 295. Washington, DC.

Webster, Leila, Randall Riopelle, and Anne-Marie Chidzero. 1996. *World Bank Lending for Small Enterprises 1989–93.* World Bank Technical Paper 311. Washington, DC.

Weijenberg, Jan, Matthew Dagg, Jacob Kampen, and Maurice Kalunda. 1995. *Strengthening National Agricultural Research Systems in Eastern and Central Africa.* World Bank Technical Paper 290. Washington, DC.

World Bank. 1995. *China: Macroeconomic Stability in a Decentralizing Economy.* World Bank Country Study. Washington, DC.

_____. 1995. *Economic Developments in India: Achievements and Challenges.* World Bank Country Study. Washington, DC.

_____. 1995. *Environmental Assessment Sourcebook.* Vol. 1, *Policies, Procedures, and Cross-Sectoral Issues.* World Bank Technical Paper 139. Washington, DC. (Arabic edition.)

_____. 1995. *Hungary: Structural Reforms for Sustainable Growth.* World Bank Country Study. Washington, DC.

_____. 1995. *Local Government Capacity in Colombia: Beyond Technical Assistance.* World Bank Country Study. Washington, DC.

_____. 1995. *Understanding Poverty in Poland.* World Bank Country Study. Washington, DC.

_____. 1996. *Bosnia and Herzegovina: Toward Economic Recovery.* World Bank Country Study. Washington, DC.

_____. 1996. *The Chinese Economy: Fighting Inflation, Deepening Reforms.* World Bank Country Study. Washington, DC.

_____. 1996. *Fiscal Management in Russia.* World Bank Country Study. Washington, DC.

_____. 1996. *Hungary: Poverty and Social Transfers.* World Bank Country Study. Washington, DC.

_____. 1996. *Leveling the Playing Field: Giving Girls an Equal Chance for Basic Education—Three Countries' Efforts.* EDI Learning Resources Series. Washington, DC. (Also published in French.)

_____. 1996. *Pacific Island Economies: Building a Resilient Economic Base for the Twenty-First Century.* World Bank Country Study. Washington, DC.

_____. 1996. *Reform in the Food and Agriculture Sector.* World Bank Country Study. Washington, DC.

_____. 1996. *Review of Colombia's Agriculture and Rural Development Strategy.* World Bank Country Study. Washington, DC.

_____. 1996. *Russian Federation: Toward Medium-Term Viability.* World Bank Country Study. Washington, DC.

_____. 1996. *Statistical Handbook 1995: States of the Former USSR.* Studies of Economies in Transformation 19. Washington, DC. (FSU*STARS* data available on diskette.)

_____. 1996. *Uganda: The Challenge of Growth and Poverty Reform.* World Bank Country Study. Washington, DC.

World Bank, FAO, UNIDO, and the International Fertilizer Working Group. 1995. *World and Regional Supply and Demand Balances for Nitrogen, Phosphate, and Potash, 1993/94–1999/2000.* World Bank Technical Paper 309. Washington, DC.

F. Policy Research Working Papers

Afsah, Shakeb, Benoît Laplante, and Nabiel Makarim. 1996. "Program-Based Pollution Control Management: The Indonesian PROKASIH Program." Policy Research Working Paper 1602. World Bank, Policy Research Department, Washington, DC.

Agrawal, Nisha. 1995. "Indonesia: Labor Market Policies and International Competitiveness." Policy Research Working Paper 1515. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Ahuja, Vinod, and Deon Filmer. 1995. "Educational Attainment in Developing Countries: New Estimates and Projections Disaggregated by Gender." Policy Research Working Paper 1489. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Akiyama, Takamasa, and Akihiko Nishio. 1996. "Indonesia's Cocoa Boom: Hands-Off Policy Encourages Smallholder Dynamism." Policy Research Working Paper 1580. World Bank, International Economics Department and East Asia and Pacific, Country Department II, Washington, DC.

Alberini, Anna, Gunnar S. Eskeland, Alan Krupnick, and Gordon McGranahan. 1996. "Determinants of Diarrheal Disease in Jakarta." Policy Research Working Paper 1568. World Bank, Policy Research Department, Washington, DC.

Amiot, François, and Ovadia Salama. 1996. "Logistical Constraints on International Trade in the Maghreb." Policy Research Working Paper 1598. World Bank, Middle East and North Africa, Country Department I, Washington, DC.

Amjadi, Azita, Ulrich Reincke, and Alexander Yeats. 1996. "Did External Barriers Cause the Marginalization of Sub-Saharan Africa in World Trade?" Policy Research Working Paper 1586. World Bank, International Economics Department, Washington, DC.

Amjadi, Azita, and Alexander J. Yeats. 1995. "Have Transport Costs Contributed to the Relative Decline of Sub-Saharan African Exports? Some Preliminary Empirical Evidence." Policy Research Working Paper 1559. World Bank, International Economics Department, Washington, DC.

Anas, Alex, and Kyu Sik Lee. 1996. "The Benefits of Alternative Power Tariffs for Nigeria and Indonesia." Policy Research Working Paper 1606. World Bank, Operations Evaluation Department, Washington, DC.

Anas, Alex, Kyu Sik Lee, and Michael Murray. 1996. "Infrastructure Bottlenecks, Private Provision, and Industrial Productivity: A Study of Indonesian and Thai Cities." Policy Research Working Paper 1603. World Bank, Operations Evaluation Department, Washington, DC.

Babbel, David F., Craig Merrill, and William Panning. 1995. "Default Risk and the Effective Duration of Bonds." Policy Research Working Paper 1511. World Bank, Financial Sector Development Department, Washington, DC.

Banerji, Arup, and Hafez Ghanem. 1995. "Political Regimes, Trade, and Labor Policies in Developing Countries." Policy Research Working Paper 1521. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Barbone, Luca, and Hana Polackova. 1996. "Public Finances and Economic Transition." Policy Research Working Paper 1585. World Bank, Europe and Central Asia, Country Department II, Washington, DC.

Bell, Linda A. 1995. "The Impact of Minimum Wages in Mexico and Colombia." Policy Research Working Paper 1514. World Bank, Policy Research Department, Washington, DC.

Bidani, Benu, and Martin Ravallion. 1995. "Decomposing Social Indicators Using Distributional Data." Policy Research Working Paper 1487. World Bank, Policy Research Department, Washington, DC.

Bond, Eric, Steve Chiu, and Antonio Estache. 1995. "Trade Reform Design as a Signal to Foreign Investors: Lessons for Economies in Transition." Policy Research Working Paper 1490. World Bank, Washington, DC.

Bordo, Michael. 1995. "Regulation and Bank Stability: Canada and the United States, 1870–1980." Policy Research Working Paper 1532. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Bruno, Michael, and William Easterly. 1995. "Inflation Crises and Long-Run Growth." Policy Research Working Paper 1517. World Bank, Office of the Vice President, Development Economics, and Policy Research Department, Washington, DC.

Bruno, Michael, Martin Ravallion, and Lyn Squire. 1996. "Equity and Growth in Developing Countries: Old and New Perspectives on the Policy Issues." Policy Research Working Paper 1563. World Bank, Office of the Senior Vice President, Development Economics, and Policy Research Department, Washington, DC.

Calomiris, Charles W. 1995. "Universal Banking and the Financing of Industrial Development." Policy Research Working Paper 1533. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Calvo, Sara, and Carmen Reinhart. 1996. "Capital Flows to Latin America: Is There Evidence of Contagion Effects?" Policy Research Working Paper 1619. World Bank, Economic Development Institute; and International Monetary Fund, Western Hemisphere Department, Washington, DC.

Capie, Forrest. 1995. "The Evolution of Central Banking." Policy Research Working Paper 1534. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Caprio, Gerard, Jr. 1995. "Financial History: Lessons of the Past for Reformers of the Present." Policy Research Working Paper 1535. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

_____. 1996. "Bank Regulation: The Case of the Missing Model." Policy Research Working Paper 1574. World Bank, Policy Research Department, Washington, DC.

Chomitz, Kenneth M., and Kanta Kumari. 1996. "The Domestic Benefits of Tropical Forests: A Critical Review Emphasizing Hydrological Functions." Policy Research Working Paper 1601. World Bank, Policy Research Department, Washington, DC.

Claessens, Stijn, Susmita Dasgupta, and Jack Glen. 1995. "The Cross-Section of Stock Returns: Evidence from Emerging Markets." Policy Research Working Paper 1505. World Bank, Policy Research Department, World Development Report Office, and International Finance Corporation, Economics Department, Washington, DC.

Claessens, Stijn, Enrica Detragiache, Ravi Kanbur, and Peter Wickham. 1996. "Analytical Aspects of the Debt Problems of Heavily Indebted Poor Countries." Policy Research Working Paper 1618. World Bank, Africa Regional Office, Office of the Chief Economist, and East Asia and Pacific Regional Office, Office of the Regional Vice President; and International Monetary Fund, Research Department, Washington, DC.

Commander, Simon, and Andrei Tolstopiatenko. 1996. "Why Is Unemployment Low in the Former Soviet Union? Enterprise Restructuring and the Structure of Compensation." Policy Research Working Paper 1617. World Bank, Economic Development Institute, Washington, DC.

Conway, Patrick. 1995. "Saving in Transition Economies: The Summary Report." Policy Research Working Paper 1509. World Bank, Europe and Central Asia, Country Department IV, Washington, DC.

Cropper, Maureen L., and Uma Subramanian. 1995. "Public Choices between Lifesaving Programs: How Important Are Lives Saved?" Policy Research Working Paper 1497. World Bank, Policy Research Department and Asia Technical Department, Washington, DC.

Dabrowski, Marek. 1996. "Different Strategies of Transition to a Market Economy: How Do They Work in Practice?" Policy Research Working Paper 1579. World Bank, Policy Research Department, Washington, DC.

Datt, Gaurav, and Martin Ravallion. 1996. "Why Have Some Indian States Done Better Than Others at Reducing Rural Poverty?" Policy Research Working Paper 1594. World Bank, Policy Research Department, Washington, DC.

de Gregorio, José. 1996. "Inflation, Growth, and Central Banks: Theory and Evidence." Policy Research Working Paper 1575. World Bank, Policy Research Department, Washington, DC.

de Melo, Martha, Cevdet Denizer, and Alan Gelb. 1996. "From Plan to Market: Patterns of Transition." Policy Research Working Paper 1564. World Bank, Policy Research Department, Washington, DC.

Devarajan, Shantayanan, and Shaikh I. Hossain. 1995. "The Combined Incidence of Taxes and Public Expenditures in the Philippines." Policy Research Working Paper 1543. World Bank, Policy Research Department, Washington, DC.

Devarajan, Shantayanan, Lyn Squire, and Sethaput Suthiwart-Narueput. 1995. "Reviving Project Appraisal at the World Bank." Policy Research Working Paper 1496. World Bank, Policy Research Department, Washington, DC.

Diamond, Douglas W. 1996. "Liquidity, Banks, and Markets: Effects of Financial Development on Banks and the Maturity of Financial Claims." Policy Research Working Paper 1566. World Bank, Policy Research Department, Washington, DC.

Driscoll, John, and Aart Kraay. 1995. "Spatial Correlations in Panel Data." Policy Research Working Paper 1553. World Bank, Policy Research Department, Washington, DC.

Easterly, William, and Ross Levine. 1995. "Africa's Growth Tragedy: A Retrospective, 1960–89." Policy Research Working Paper 1503. World Bank, Policy Research Department, Washington, DC.

Egerer, Roland. 1995. "Capital Markets, Financial Intermediaries, and Corporate Governance: An Empirical Assessment of the Top Ten Voucher Funds in the Czech Republic." Policy Research Working Paper 1555. World Bank, Europe and Central Asia, and Middle East and North Africa Technical Department, Washington, DC.

Eskeland, Gunnar S., and Tarhan Feyzioglu. 1995. "Rationing Can Backfire: The 'Day without a Car' in Mexico City." Policy Research Working Paper 1554. World Bank, Policy Research Department, Washington, DC.

Faruqee, Rashid, and Yusuf A. Choudhry. 1996. "Improving Water Resource Management in Bangladesh." Policy Research Working Paper 1569. World Bank, South Asia, Country Department I, Washington, DC.

Fernández-Arias, Eduardo, and Mark M. Spiegel. 1996. "North-South Customs Unions and International Capital Mobility." Policy Research Working Paper 1573. World Bank, International Economics Department, Washington, DC.

Feyzioglu, Tarhan, Vinaya Swaroop, and Min Zhu. 1996. "Foreign Aid's Impact on Public Spending." Policy Research Working Paper 1610. World Bank, Policy Research Department, Washington, DC.

Filmer, Deon. 1995. "Estimating the World at Work." Policy Research Working Paper 1488. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Fleming, Alex, and Samuel Talley. 1996. "The Latvian Banking Crisis: Lessons Learned." Policy Research Working Paper 1590. World Bank, Europe and Central Asia, Country Department IV, Washington, DC.

Freund, Caroline L., and Christine I. Wallich. 1995. "Raising Household Energy Prices in Poland: Who Gains? Who Loses?" Policy Research Working Paper 1495. World Bank, Europe and Central Asia, Country Department II, Washington, DC.

Fry, Maxwell J., Stijn Claessens, Peter Burridge, and Marie-Christine Blanchet. 1995. "Foreign Direct Investment, Other Capital Flows, and Current Account Deficits: What Causes What?" Policy Research Working Paper 1527. World Bank, International Economics Department, Washington, DC.

Galal, Ahmed, and Bharat Nauriyal. 1995. "Regulating Telecommunications in Developing Countries: Outcomes, Incentives, and Commitment." Policy Research Working Paper 1520. World Bank, Policy Research Department, Washington, DC.

Gelbach, Jonah B., and Lant H. Pritchett. 1995. "Does More for the Poor Mean Less for the Poor? The Politics of Tagging." Policy Research Working Paper 1523. World Bank, Policy Research Department, Washington, DC.

Ghani, Ejaz, and Hyoungsoo Zang. 1995. "Is Ethiopia's Debt Sustainable?" Policy Research Working Paper 1525. World Bank, Eastern Africa Department, Washington, DC.

Gilbert, Christopher L. 1995. "International Commodity Control: Retrospect and Prospect." Policy Research Working Paper 1545. World Bank, International Economics Department, Washington, DC.

Goldstein, Morris. 1995. "Coping with Too Much of a Good Thing: Policy Responses for Large Capital Inflows in Developing Countries." Policy Research Working Paper 1507. World Bank, International Economics Department, Washington, DC.

Gooptu, Sudarshan. 1996. "The Analysis of Emerging Policy Issues in Development Finance." Policy Research Working Paper 1589. World Bank, International Economics Department, Washington, DC.

Gray, Cheryl W. 1996. "In Search of Owners: Lessons of Experience with Privatization and Corporate Governance in Transition Economies." Policy Research Working Paper 1595. World Bank, Office of the Senior Vice President, Development Economics, Washington, DC.

Gray, Cheryl W., and Kathryn Hendley. 1995. "Developing Commercial Law in Transition Economies: Examples from Hungary and Russia." Policy Research Working Paper 1528. World Bank, Policy Research Department, Washington, DC.

Gray, Cheryl, Sabine Schlorke, and Miklos Szanyi. 1995. "Hungary's Bankruptcy Experience, 1992–93." Policy Research Working Paper 1510. World Bank, Policy Research Department, Washington, DC.

Grootaert, Christiaan, Ravi Kanbur, and Gi-Taik Oh. 1995. "The Dynamics of Poverty: Why Some People Escape from Poverty and Others Don't—An African Case Study." Policy Research Working Paper 1499. World Bank, Environment Department and Africa Regional Office, Washington, DC.

Hammer, Jeffrey S. 1996. "Economic Analysis for Health Projects." Policy Research Working Paper 1611. World Bank, Policy Research Department, Washington, DC.

Harrison, Glenn W., Thomas F. Rutherford, and David G. Tarr. 1996. "Economic Implications for Turkey of a Customs Union with the European Union." Policy Research Working Paper 1599. World Bank, International Economics Department, Washington, DC.

Hentschel, Jesko, William F. Waters, and Anna Kathryn Vandever Webb. 1996. "Rural Poverty in Ecuador—A Qualitative Assessment." Policy Research Working Paper 1576. World Bank, Latin America and the Caribbean, Country Department III, Washington, DC.

Hernández, Leonardo, and Heinz Rudolph. 1995. "Sustainability of Private Capital Flows to Developing Countries: Is a Generalized Reversal Likely?" Policy Research Working Paper 1518. World Bank, International Economics Department, Washington, DC.

Hertel, Thomas W., Christian F. Bach, Betina Dimaranan, and Will Martin. 1996. "Growth, Globalization, and Gains from the Uruguay Round." Policy Research Working Paper 1614. World Bank, International Economics Department, Washington, DC.

Hoekman, Bernard. 1995. "The World Trade Organization, the European Union, and the Arab World: Trade Policy Priorities and Pitfalls." Policy Research Working Paper 1513. World Bank, Europe and Central Asia, and Middle East and North Africa Technical Department, Washington, DC.

Hoekman, Bernard, and Simeon Djankov. 1996. "Catching Up with Eastern Europe? The European Union's Mediterranean Free Trade Initiative." Policy Research Working Paper 1562. World Bank, Europe and Central Asia, and Middle East and North Africa Technical Department, Washington, DC.

Hoekman, Bernard, and Arvind Subramanian. 1996. "Egypt and the Uruguay Round." Policy Research Working Paper 1597. World Bank, Europe and Central Asia, and Middle East and North Africa Technical Department, Washington, DC.

Ingco, Merlinda D. 1995. "Agricultural Trade Liberalization in the Uruguay Round: One Step Forward, One Step Back?" Policy Research Working Paper 1500. World Bank, International Economics Department, Washington, DC.

Isham, Jonathan, and Daniel Kaufmann. 1995. "The Forgotten Rationale for Policy Reform: The Productivity of Investment Projects." Policy Research Working Paper 1549. World Bank, Europe and Central Asia, Country Department IV, Washington, DC.

Isham, Jonathan, Daniel Kaufmann, and Lant Pritchett. 1995. "Governance and Returns on Investment: An Empirical Investigation." Policy Research Working Paper 1550. World Bank, Policy Research Department, Washington, DC.

Ishiguro, Masayasu, and Takamasa Akiyama. 1995. "Electricity Demand in Asia and the Effects on Energy Supply and the Investment Environment." Policy Research Working Paper 1557. World Bank, International Economics Department, Washington, DC.

Jalan, Jyotsna, and Martin Ravallion. 1996. "Transient Poverty in Rural China." Policy Research Working Paper 1616. World Bank, Policy Research Department, Washington, DC.

James, Estelle. 1996. "Protecting the Old and Promoting Growth: A Defense of *Averting the Old Age Crisis.*" Policy Research Working Paper 1570. World Bank, Policy Research Department, Washington, DC.

Kennedy, Peter W., and Benoît Laplante. 1995. "Equilibrium Incentives for Adopting Cleaner Technology under Emissions Pricing." Policy Research Working Paper 1491. World Bank, Policy Research Department, Washington, DC.

Kessides, Ioannis N., and Robert D. Willig. 1995. "Restructuring Regulation of the Rail Industry for the Public Interest." Policy Research Working Paper 1506. World Bank, Private Sector Development Department, Washington, DC.

Klein, Michael. 1996. "Competition in Network Industries." Policy Research Working Paper 1591. World Bank, Private Sector Development Department, Washington, DC.

Knight, Malcolm, Norman Loayza, and Delano Villanueva. 1996. "The Peace Dividend: Military Spending Cuts and Economic Growth." Policy Research Working Paper 1577. World Bank, Policy Research Department and International Monetary Fund, Washington, DC.

Kraay, Aart, and Jaume Ventura. 1995. "Trade and Fluctuations." Policy Research Working Paper 1560. World Bank, Policy Research Department, Washington, DC.

Kroszner, Randall. 1995. "Free Banking: The Scottish Experience as a Model for Emerging Economies." Policy Research Working Paper 1536. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Lächler, Ulrich. 1995. "Interest Rates, Credit, and Economic Adjustment in Nicaragua." Policy Research Working Paper 1529. World Bank, Latin America and the Caribbean, Country Department II, Washington, DC.

Lea, Michael J., and Bertrand Renaud. 1995. "Contractual Savings for Housing: How Suitable Are They for Transitional Economies?" Policy Research Working Paper 1516. World Bank, Financial Sector Development Department, Washington, DC.

Lee, Kyu Sik, Alex Anas, and Gi-Taik Oh. 1996. "Costs of Infrastructure Deficiencies in Manufacturing in Indonesia, Nigeria, and Thailand." Policy Research Working Paper 1604. World Bank, Operations Evaluation Department, Washington, DC.

Lee, Kyu Sik, Alex Anas, Satyendra Verma, and Michael Murray. 1996. "Why Manufacturing Firms Produce Some Electricity Internally." Policy Research Working Paper 1605. World Bank, Operations Evaluation Department, Washington, DC.

Lehmann, Hartmut. 1995. "Active Labor Market Policies in the OECD and in Selected Transition Economies." Policy Research Working Paper 1502. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Levine, Ross, and Sara Zervos. 1996. "Stock Market Development and Long-Run Growth." Policy Research Working Paper 1582. World Bank, Policy Research Department, Washington, DC.

Listfield, Robert, and Fernando Montes-Negret. 1995. "Payment Systems in Latin America: A Tale of Two Countries—Colombia and El Salvador." Policy Research Working Paper 1519. World Bank, Financial Sector Development Department, Washington, DC.

López, Ramón, John Nash, and Julie Stanton. 1995. "Adjustment and Poverty in Mexican Agriculture: How Farmers' Wealth Affects Supply Response." Policy Research Working Paper 1494. World Bank, International Economics Department, Washington, DC.

López, Ramón, and Maurice Schiff. 1995. "Migration and the Skill Composition of the Labor Force: The Impact of Trade Liberalization in Developing Countries." Policy Research Working Paper 1493. World Bank, International Economics Department, Washington, DC.

Mabbett, Deborah. 1996. "Social Insurance in the Transition to a Market Economy: Theoretical Issues with Application to Moldova." Policy Research Working Paper 1588. World Bank, Europe and Central Asia, Country Department IV, Washington, DC.

Majd, Nader. 1995. "The Uruguay Round and South Asia: An Overview of the Impact and Opportunities." Policy Research Working Paper 1484. World Bank, International Economics Department, Washington, DC.

McCarthy, F. Desmond, and Giovanni Zanalda. 1995. "Economic Performance in Small Open Economies: The Caribbean Experience, 1980–92." Policy Research Working Paper 1544. World Bank, Office of the Vice President, Development Economics, Washington, DC.

McCarthy, F. Desmond, and Kangbin Zheng. 1996. "Population Aging and Pension Systems: Reform Options for China." Policy Research Working Paper 1607. World Bank, Office of the Senior Vice President, Washington, DC.

McIsaac, Donald A., and David F. Babbel. 1995. "The World Bank Primer on Reinsurance." Policy Research Working Paper 1512. World Bank, Financial Sector Development Department, Washington, DC.

Michaely, Michael. 1996. "Trade Preferential Agreements in Latin America: An Ex-Ante Assessment." Policy Research Working Paper 1583. World Bank, Latin America and the Caribbean Regional Office, Washington, DC.

Michalopoulos, Constantine. 1996. "Payments and Finance Problems in the Commonwealth of Independent States." Policy Research Working Paper 1587. World Bank, Europe and Central Asia, Country Department III, Washington, DC.

Milanovic, Branko. 1995. "Poverty, Inequality, and Social Policy in Transition Economies." Policy Research Working Paper 1530. World Bank, Policy Research Department, Washington, DC.

Morisset, Jacques, and César Revoredo. 1995. "In Search of Price Rigidities (Recent Sector Evidence from Argentina)." Policy Research Working Paper 1558. World Bank, Latin America and the Caribbean, Country Department I, Washington, DC.

_____. 1995. "Savings and Education: A Life-Cycle Model Applied to a Panel of 74 Countries." Policy Research Working Paper 1504. World Bank, Latin America and the Caribbean, Country Department I, Washington, DC.

Orlowski, Witold M. 1996. "Price Support at Any Price? Costs and Benefits of Alternative Agricultural Policies for Poland." Policy Research Working Paper 1584. World Bank, Europe and Central Asia, Country Department II, Washington, DC.

Packer, Frank. 1995. "Before Main Banks: A Selective Historical Overview of Japan's Prewar Financial Sys-

tem." Policy Research Working Paper 1537. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Palacios, Robert J. 1996. *"Averting the Old-Age Crisis:* Technical Annex." Policy Research Working Paper 1572. World Bank, Policy Research Department, Washington, DC.

Pritchett, Lant. 1995. "Divergence, Big Time." Policy Research Working Paper 1522. World Bank, Office of the Vice President, Development Economics, Washington, DC.

_____. 1996. "Population Growth, Factor Accumulation, and Productivity." Policy Research Working Paper 1567. World Bank, Policy Research Department, Washington, DC.

_____. 1996. "Where Has All the Education Gone?" Policy Research Working Paper 1581. World Bank, Policy Research Department, Washington, DC.

Qureshi, Saeed, Ijaz Nabi, and Rashid Faruqee. 1996. "Rural Finance for Growth and Poverty Alleviation." Policy Research Working Paper 1593. World Bank, South Asia, Country Department I, Washington, DC.

Qureshi, Zia. 1995. "Do We Face a Global 'Capital Shortage'?" Policy Research Working Paper 1526. World Bank, International Economics Department, Washington, DC.

Rajapatirana, Sarath. 1995. "Trade Policies, Macroeconomic Adjustment, and Manufactured Exports: The Latin American Experience." Policy Research Working Paper 1492. World Bank, Latin America and the Caribbean Technical Department, Washington, DC.

Ravallion, Martin. 1996. "Issues in Measuring and Modeling Poverty." Policy Research Working Paper 1615. World Bank, Policy Research Department, Washington, DC.

Rebelo, Jorge M., and Pedro P. Benvenuto. 1995. "Concessions of Busways to the Private Sector: The São Paulo Metropolitan Region Experience." Policy Research Working Paper 1546. World Bank, Latin America and the Caribbean, Country Department I, Washington, DC.

Renaud, Bertrand M. 1996. "Housing Finance in Transition Economies: The Early Years in Eastern Europe and the Former Soviet Union." Policy Research Working Paper 1565. World Bank, Financial Sector Development Department, Washington, DC.

Revenga, Ana. 1995. "Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing." Policy Research Working Paper 1524. World Bank, Latin America and the Caribbean, Country Department II, Washington, DC.

Rutkowski, Michal. 1995. "Workers in Transition." Policy Research Working Paper 1556. World Bank, Office of the Vice President, Development Economics, Washington, DC.

Samuel, Cherian. 1996. "Stock Market and Investment: The Governance Role of the Market." Policy Research Working Paper 1578. World Bank, Operations Policy Department, Washington, DC.

_____. 1996. "Stock Market and Investment: The Signaling Role of the Market." Policy Research Working Paper 1612. World Bank, Operations Policy Department, Washington, DC.

_____. 1996. "The Stock Market as a Source of Finance: A Comparison of U.S. and Indian Firms." Policy Research Working Paper 1592. World Bank, Operations Policy Department, Washington, DC.

Saunders, Anthony, and Berry Wilson. 1995. "Contingent Liability in Banking: Useful Policy for Developing Countries?" Policy Research Working Paper 1538. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Schiff, Maurice, and Claudio E. Montenegro. 1995. "Aggregate Agricultural Supply Response in Developing Countries: A Survey of Selected Issues." Policy Research Working Paper 1485. World Bank, International Economics Department, Washington, DC.

Schmidt-Hebbel, Klaus, and Luis Servén. 1996. "Income Inequality and Aggregate Saving: The Cross-Country Evidence." Policy Research Working Paper 1561. World Bank, Policy Research Department, Washington, DC.

Servén, Luis. 1996. "Does Public Capital Crowd Out Private Capital? Evidence from India." Policy Research Working Paper 1613. World Bank, Policy Research Department, Washington, DC.

Singh, Harinder, and Kwang W. Jun. 1995. "Some New Evidence on Determinants of Foreign Direct Investment in Developing Countries." Policy Research Working Paper 1531. World Bank, International Economics Department, Washington, DC.

Swaroop, Vinaya. 1996. "The Public Sector in the Caribbean: Issues and Reform Options." Policy Research Working Paper 1609. World Bank, Policy Research Department, Washington, DC.

Sylla, Richard. 1995. "The Rise of Securities Markets: What Can Governments Do?" Policy Research Working Paper 1539. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.

Thirtle, Colin, Robert Townsend, and Johan van Zyl. 1995. "Testing the Induced Innovation Hypothesis in South African Agriculture (An Error Correction Ap-

proach)." Policy Research Working Paper 1547. World Bank, Agriculture and Natural Resources Department, Washington, DC.
van Thuyet, Pham. 1995. "The Emerging Legal Framework for Private Sector Development in Viet Nam's Transitional Economy." Policy Research Working Paper 1486. World Bank, Policy Research Department, Washington, DC.
van Zyl, Johan, Tulio Barbosa, Andrew N. Parker, and Loretta Sonn. 1995. "Decentralized Rural Development and Enhanced Community Participation: A Case Study from Northeast Brazil." Policy Research Working Paper 1498. World Bank, Agriculture and Natural Resources Department, Washington, DC.
van Zyl, Johan, Hans Binswanger, and Colin Thirtle. 1995. "The Relationship between Farm Size and Efficiency in South African Agriculture." Policy Research Working Paper 1548. World Bank, Agriculture and Natural Resources Department, Washington, DC.
van Zyl, Johan, Bill R. Miller, and Andrew Parker. 1996. "Agrarian Structure in Poland: The Myth of Large-Farm Superiority." Policy Research Working Paper 1596. World Bank, Agriculture and Natural Resources Department, Washington, DC.
Vittas, Dimitri. 1995. "Sequencing Social Security, Pension, and Insurance Reform." Policy Research Working Paper 1551. World Bank, Financial Sector Development Department, Washington, DC.
_____. 1995. "Thrift Deposit Institutions in Europe and the United States." Policy Research Working Paper 1540. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.
Vodopivec, Milan. 1995. "Unemployment Insurance and Duration of Unemployment: Evidence from Slovenia's Transition." Policy Research Working Paper 1552. World Bank, Policy Research Department, Washington, DC.
White, Eugene. 1995. "Deposit Insurance." Policy Research Working Paper 1541. World Bank, Policy Research Department and Financial Sector Development Department, Washington, DC.
Williamson, Samuel H. 1995. "The Development of Industrial Pensions in the United States in the Twentieth Century." Policy Research Working Paper 1542. World Bank, Policy Research Department and Finance and Private Sector Development Department, Washington, DC.
Winter, Sidney G. 1995. "Small and Medium-Size Enterprises in Economic Development: Possibilities for Research and Policy." Policy Research Working Paper 1508. World Bank, Policy Research Department, Washington, DC.
Yabuki, Nanae, and Takamasa Akiyama. 1996. "Is Commodity-Dependence Pessimism Justified? Critical Factors and Government Policies That Characterize Dynamic Commodity Sectors." Policy Research Working Paper 1600. World Bank, International Economics Department, Washington, DC.
Yeats, Alexander J. 1995. "Are Partner-Country Statistics Useful for Estimating 'Missing' Trade Data?" Policy Research Working Paper 1501. World Bank, International Economics Department, Washington, DC.
_____. 1996. "Export Prospects of Middle Eastern Countries: A Post–Uruguay Round Analysis." Policy Research Working Paper 1571. World Bank, International Economics Department, Washington, DC.
Zhang, Tao, and Heng-fu Zou. 1996. "Fiscal Decentralization, Public Spending, and Economic Growth in China." Policy Research Working Paper 1608. World Bank, Policy Research Department, Washington, DC.

G. Other Working Papers

Economic Development Institute

Chang, Ha-Joon. 1995. "The Evolution of Perspectives on Regulation in the Postwar Era." EDI Working Paper 95-10.
Ellerman, David. 1995. "Spinning Off a Division as a Separate Company." EDI Working Paper 95-08.
_____. 1995. "Spinoffs as a Restructuring Strategy for Postsocialist Enterprises." EDI Working Paper 95-09.
Giorgis, Tedla W. 1995. "Critical Competencies in Human Resources Development." EDI Working Paper 95-06.
Langseth, Petter. 1995. "Civil Service Reform in Uganda: Lessons Learned." EDI Working Paper 95-05.
Montenegro, Armando. 1995. "Economic Reforms in Colombia: Regulation and Deregulation, 1990–94." EDI Working Paper 95-04.
Petrin, Tea. 1995. "Industrial Policy Supporting Economic Transition in Central-Eastern Europe: Lessons from Slovenia." EDI Working Paper 95-07.

Environment Department

Brandon, K. 1996. "Ecotourism and Conservation: A Review of Key Issues." Environment Department Paper 33.
ENVLW and GEF. 1995. "Mainstreaming Biodiversity in Development." Environment Department Paper 29.

Hansen, Stein. 1996. "Towards a Sustainable Economy: Can We Survive Green Advice?" Environment Department Paper 36.
Hoagland, Porter, and others. 1995. "A Methodological Review of Net Benefit Evaluation for Marine Reserves." Environment Department Paper 27.
Kumari, Kanta. 1995. "An Environmental and Economic Assessment of Forest Management Options: Malaysia." Environment Department Paper 26.
Lovei, M. 1995. "Financing Pollution Abatement: Theory and Practice." Environment Department Paper 28.
Munasinghe, Mohan. 1995. "Sustainable Energy Development." Environment Department Paper 16.
_____. 1996. "Global Climate Change: Economic and Policy Issues." Environment Department Paper 12.
Salmen, L. 1995. "Beneficiary Assessment." Environment Department Paper 23.
_____. 1995. "Participation in Poverty Assessment." Environment Department Paper 20.
_____. 1995. "Participatory Poverty Assessment." Environment Department Paper 24.

Human Capital Development Vice Presidency

Calderón, Z. Alberto. 1996. "Voucher Program for Secondary Schools: The Colombian Experience." HCD Working Paper 66.
Musgrove, Philip. 1995. "Mismatch of Need, Demand, and Supply of Services: Picturing Different Ways Health Systems Can Go Wrong." HCO Working Paper 60.
Psacharopoulos, George. 1995. "The Profitability of Investment in Education: Concepts and Methods." HCO Working Paper 63.
West, Edwin G. 1995. "Education with and without the State." HCO Working Paper 61.
_____. 1996. "Education Vouchers in Practice and Principle: A World Survey." HCD Working Paper 64.
Zabalza, Antonio. 1996. "Is There a Case for Government Intervention in Training?" HCD Working Paper 65.

Industry and Energy Department

Barry, Mamadou, ed. 1996. "Regularizing Informal Mining: A Summary of the Proceedings of the International Roundtable on Artisanal Mining." IEN Occasional Paper 6.
ESMAP and UNDP. 1995. "Côte d'Ivoire: Project of Energy Efficiency in Buildings." Energy Sector Management Assistance Programme Report 175/95.
_____. 1995. "Madagascar: impact des combustibles ligneux sur l'environnement." Energy Sector Management Assistance Programme Report 176/95.
_____. 1995. "Morocco: Energy Sector Institutional Development Study." Energy Sector Management Assistance Programme Report 173/95.
_____. 1995. "Turkey: Assessing Pollution Abatement Policies with a Case Study of Ankara." Energy Sector Management Assistance Programme Report 177/95.
_____. 1995. "Vietnam: Household Energy Technical Assistance—Improved Coal Briquetting and Commercialized Dissemination of Higher Efficiency Biomass and Coal Stoves." Energy Sector Management Assistance Programme Report 178/95.
_____. 1995. "Vietnam: Power Sector Reform and Restructuring—Final Report to the Steering Committee." Energy Sector Management Assistance Programme Report 174/95.
_____. 1996. "Colombia: Energy Efficiency Report for the Commercial and Public Sectors." Energy Sector Management Assistance Programme Report 184/96.
_____. 1996. "Ethiopia: Energy Assessment." Energy Sector Management Assistance Programme Report 179/96.
_____. 1996. "Mexico: Energy Efficiency Management Technical Assistance to the Comision Nacional para el Ahorro de Energia." Energy Sector Management Assistance Programme Report 180/96.
_____. 1996. "Mozambique: Electricity Tariffs Study." Energy Sector Management Assistance Programme Report 181/96.
_____. 1996. "Sub-Saharan Africa: Symposium on Power Sector Reform and Efficiency Improvement, Johannesburg, December 5–8, 1995." Energy Sector Management Assistance Programme Report 182/96.
Shirazi, Mohsen. 1995. "The Commercialization Process in Exploration and Production Agreements: A Study from the Africa Gas Initiative." IEN Occasional Paper 5.

Policy Research Department

Blank, Lorraine, Margaret E. Grosh, and Pauline Knight. 1996. "Building Analytic Capacity in Conjunction with LSMS Surveys: The Jamaica Story." Research Paper Series 1.
Chomitz, Kenneth, and David A. Gray. 1996. "Roads, Land Use, and Deforestation: A Spatial Model Applied to Belize." Poverty, Environment, and Growth Working Paper 3.
Chomitz, Kenneth, and Charles Griffiths. 1996. "Deforestation, Shifting Cultivation, and Tree Crops in Indonesia: Nationwide Patterns of Smallholder Agriculture at the Forest Frontier." Poverty, Environment, and Growth Working Paper 4.

Contreras, Manuel E. 1995. "Building Analytic Capacity in Bolivia: The Social Policy Analysis Unit (UDAPSO)." Research Paper Series 2.

Drummond, Lisa B.W. 1995. "Building Analytic Capacity in Conjunction with LSMS Surveys: A Report on the Viet Nam Living Standards Survey." Research Paper Series 3.

Filmer, Deon, and Lant Pritchett. 1996. "Environmental Degradation and the Demand for Children: Searching for the Vicious Circle." Poverty, Environment, and Growth Working Paper 2.

Milanovic, Branko. 1995. "Poverty, Inequality, and Social Policy in Transition Economies." Research Paper Series 9.

_____. 1996. "Income, Inequality, and Poverty during Transition." Research Paper Series 11.

Oliver, Raylynn. 1995. "Building Analytic Capacity in Conjunction with LSMS Surveys: The Kyrgyz Republic." Research Paper Series 4.

Ravallion, Martin, and Shaohua Chen. 1996. "What Can New Survey Data Tell Us about Recent Changes in Living Standards in Developing and Transitional Economies?" Poverty, Environment, and Growth Working Paper 1.

Wilson, Francis, and Dudley Horner. 1996. "Lessons from the Project for Statistics on Living Standards and Development: The South African Story." Research Paper Series 5.

Ying, Yvonne. 1996. "Income, Poverty, and Inequality in China during the Transition to a Market Economy." Research Paper Series 10.

Poverty and Social Policy Department

Braithwaite, Jeanine. 1995. "Armenia: A Poverty Profile." PSP Discussion Paper 80.

Coulombe, Harold, and Andrew McKay. 1995. "An Assessment of Trends in Poverty in Ghana, 1988–92." PSP Discussion Paper 81.

Dar, Amit, and Zafiris Tzannatos. 1996. "World Bank Lending for Labor Markets: 1991 to 1995." PSP Discussion Paper 93.

Demery, Lionel. 1995. "The Incidence of Social Spending in Ghana." PSP Discussion Paper 82.

Fong, Monica. 1996. "Gender Barriers in the Transition to a Market Economy." PSP Discussion Paper 87.

Graham, Carol, and Cheikh Kane. 1996. "Opportunistic Government or Sustaining Reform? Electoral Trends and Public Expenditure Patterns in Peru, 1990–95." PSP Discussion Paper 89.

Hino, Toshiko. 1996. "A Tale of Two Projects: Lessons Drawn from World Bank–NGO Partnerships." PSP Discussion Paper 90.

Jones, Christine, and Xiao Ye. 1995. "Accounting for the Reduction in Rural Poverty in Ghana, 1988–92." PSP Discussion Paper 84.

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Khandker, Shahidur R. 1995. "Schooling Outcomes and School Efficiency in Rural Bangladesh." PSP Discussion Paper 78.

Khandker, Shahidur R., and Osman H. Chowdhury. 1996. "Targeted Credit Programs and Rural Poverty in Bangladesh." PSP Discussion Paper 94.

Khandker, Shahidur R., and Baqui Khalily. 1996. "The BRAC's Credit Programs: Performance and Sustainability." PSP Discussion Paper 88.

Khandker, Shahidur R., Zahed Khan, and Baqui Khalily. 1995. "Sustainability of a Government Targeted Credit Program: The Bangladesh Rural Development Board's Rural Development-12 Project." PSP Discussion Paper 75.

Khandker, Shahidur R., and M. Abdul Latif. 1996. "The Role of Family Planning and Targeted Credit Programs in Demographic Change in Bangladesh." PSP Discussion Paper 92.

Norton, Andy, Ellen B. Aryeetey, David Korboe, and D.K. Tony Dogbe. 1995. "Poverty Assessment in Ghana Using Qualitative and Participatory Research Methods." PSP Discussion Paper 83.

Pitt, Mark M., and Shahidur R. Khandker. 1995. "Household and Intrahousehold Impacts of the Grameen Bank and Similar Targeted Credit Programs in Bangladesh." PSP Discussion Paper 76.

Rietbergen-McCracken, Jennifer, ed. 1996. "Participation in Practice: The Experience of the World Bank and Other Stakeholders." PSP Discussion Paper 91.

Rofman, Rafael. 1995. "Effects of Social Security on Lifetime Income Distribution in Argentina." PSP Discussion Paper 73.

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Schwartz, Antoine, and Richard Sack. 1996. "Sector Work and Project Performance in Education: A Review of Bank Experience." PSP Discussion Paper 85.

Subbarao, Kalanidhi, and Kalpana Mehra. 1995. "Social Sectors in Transition: The Case of Romania." PSP Discussion Paper 79.

Subbarao, Kalanidhi, and Tesfaye Teklu. 1995. "Selected Social Safety Net Programs in the Philippines: Targeting, Cost-Effectiveness, and Options for Reform." PSP Discussion Paper 77.

Tzannatos, Zafiris, and Geraint Johnes. 1996. "Training and Skills Development in the East Asian NICs: A Comparison and Lessons for Developing Countries." PSP Discussion Paper 95.

Private Sector Development Department

Baietti, Aldo. 1995. "Small-Scale Privatization in Kazakstan." CFS Discussion Paper 114.

Bishop, Veronique, Ashoka Mody, and Mark Schankerman. 1995. "Exploiting New Market Opportunities in Telecommunications: Lessons for Developing Countries." CFS Discussion Paper 110.

Gates, Jeffrey R., and Jamal Saghir. 1995. "Employee Stock Ownership Plans: Objectives, Design Options, and International Experience." CFS Discussion Paper 112.

Harding, April L. 1995. "Commercial Real Estate Market Development in Russia." CFS Discussion Paper 109.

Juan, Ellis J. 1995. "Airport Infrastructure: The Emerging Role of the Private Sector—Recent Experiences Based on Ten Case Studies." CFS Discussion Paper 115.

Kopicki, Ronald, and Louis Thompson. 1995. "Best Methods of Railway Restructuring and Privatization." CFS Discussion Paper 111.

Mody, Ashoka, and Dilip Patro. 1995. "Methods of Loan Guarantee Valuation and Accounting." CFS Discussion Paper 116.

Mody, Ashoka, and William Reinfeld. 1995. "Advanced Infrastructure for Time Management: The Competitive Edge in East Asia." CFS Discussion Paper 113.

H. Background Papers to *World Development Report 1996*

Aslund, Anders. "The Political Economy of Post-Communist Transformation."

Brooks, Karen M., Richard Burcroff, and Zvi Lerman. "Agriculture in the Transition."

Claessens, Stijn. "Banking Reform in Transition Economies."

Commander, Simon, and Mark Schankerman. "Divesting Social Assets."

_____. "Enterprise Restructuring and the Efficient Provision of Social Benefits."

de Melo, Martha, Judith Brandsma, and Leila Webster. "Private Sector Development in Transition Countries: An Overview."

de Melo, Martha, and Cevdet Denizer. "Monetary Policy and Financial Developments in Transition."

de Melo, Martha, Cevdet Denizer, and Alan Gelb. "From Plan to Market: Patterns of Transition."

Fleisig, Heywood, John Simpson, and Jan-Hendrik Röver. "Security Interests in Movable Property in Transition Economies: Issues and Options for Reform."

Gray, Cheryl. "In Search of Owners."

Gray, Dale. "Reforming the Energy Sector in Transition Economies: Selected Experience and Lessons."

Hillman, Arye L., and Heinrich W. Ursprung. "Rents and the Transition."

Ickes, Barry W., and Randi Ryterman. "The Organization of Markets and Its Role in Macroeconomic Stabilization during Transition."

Kaminski, Bartlomiej, and Zhen Kun Wang. "External Assistance and Progress in Transition."

Kornai, Janos. "The Hungarian Road: A Historical Case Study of the Political Economy of the Reform and Post-Socialist Transition."

Milanovic, Branko. "Poverty in Transition."

Pistor, Katharina. "Law Meets the Market: Matches and Mismatches in Transition Economies."

Siebert, Horst, Martin Raiser, and Rolf J. Langhammer. "The Transition in Central and Eastern Europe."

Wing, Thye Woo. "Enterprise Reform in Europe and Asia."

Winters, Alan, Bartlomiej Kaminski, and Zhen Kun Wang. "Foreign Trade in Transition: The International Environment and Domestic Policy."

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