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The World Bank Research Program

Abstracts of Current Studies

2000

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Definition of World Bank Research

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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Contents

Introduction

As reflected in the range of studies described in this volume, World Bank research is intended to serve many purposes. It seeks to enhance the understanding of poverty, improve the design of Bank-financed projects and programs, increase the effectiveness of aid, recognize emerging problems and respond to crises, and support the capacity to conduct policy-oriented research in developing and transition economies. Bank research is used by a variety of audiences, including policymakers, teachers and researchers, and the Bank's own lending program staff.

To find out how useful each of these groups finds its research, the Bank has conducted a series of analyses and surveys. In 1995 it analyzed the impact of its research in the academic and research community. In 1997 it investigated the influence of its research on Bank lending programs and projects. Most recently, in 1999, the Bank examined how well its research is meeting the needs of policymakers in developing and transition economies.

To do so, the Bank surveyed more than 270 high-level policymakers in 36 economies. Participating countries represented the full range of the Bank's clients—and participating policymakers the range of topics on which the Bank works.

Bank Research Contributes to Policymaking

The results of the survey show that Bank research is clearly having an influence among policymakers. An overwhelming majority of those surveyed—84 percent—reported using the Bank's analytical reports. In fact, respondents cited the Bank more often than any of the 16 other national and international sources in the survey.

The results of Bank studies are finding their way into the policy dialogue and influencing decisionmaking. Fully 80 percent of respondents using Bank research reported that it has contributed to policy development, and half of those that it has had an important effect on policymaking.

Policymakers spoke highly of the Bank's research program, which they believe provides valuable and relevant information on important topics. Most believe that Bank studies address the important problems they face as policymakers.

The survey confirmed that policymakers value research. Three-quarters of respondents reported that their agencies conduct research, and more than 80 percent of the agencies had contracted with others to conduct research.

How Can the Bank Improve the Impact of Its Research?

To help identify ways to improve its research, the Bank asked respondents how its studies could be made more useful. The main concern—expressed by about two-thirds of respondents—was the need for greater involvement by country nationals in Bank research.

The Bank has increasingly recognized the benefits of working with local partners. In 1999 more than half its research projects involved local researchers, up from less than a quarter in 1995—and as the abstracts in this volume show, that share remains high. Through such partnerships, researchers in developing and transition economies learn state-of-the-art analytical techniques. In turn, they provide information on local conditions and insights into the implications of research findings for local policy. Moreover, the collaboration helps create and sustain networks of researchers, improving access to data, new techniques, and future partners.

A second area for improvement identified by respondents is access to research findings. Sixty percent cited a need for better access to information, data, and findings. Greater dissemination, more translation, and less technical exposition of research techniques and findings could all help.

The Bank translates many research reports into one or more languages, but as the appendix on Bank research output reveals, it publishes most only in English. Trans-

lating more reports would increase access, but given declining research funding, doing so would mean scaling back research efforts. The decision to translate reports is thus not a simple one.

The Bank also seeks to address the need for less technical and more accessible reports of research findings, through such channels as the *World Bank Research Observer* and *World Bank Policy and Research Bulletin* (see below for more information on these publications). But the survey results suggest that more such channels of dissemination may be needed.

Access to the Bank's research findings could be increased dramatically if use of the Internet were widespread. But Internet use remains uncommon in many developing and transition economies. So until telecommunications systems and access improve in the poorest countries, the Bank will continue to produce and distribute paper reports to disseminate the findings of its research. This volume is among those that serve that purpose.

What Research Is Now Under Way at the Bank?

This volume reports on research projects initiated, under way, or completed in fiscal 2000 (July 1, 1999, through June 30, 2000). 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. To make it easier to obtain information and data, each abstract gives the email address for the research project's supervisor.

The abstracts cover 173 research projects from throughout the Bank, grouped under nine major headings:

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

The appendix lists reports and publications produced from Bank research and explains how to obtain them.

How to Get More Information

This is the annual 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, *Abstracts of Current Studies*, articles from the Bank's two journals—the *World Bank Research Observer* and *World Bank Economic Review*—and a host of reports and publications from Bank research projects are available on the Web at www.worldbank.org/research.

Studies by Subject Area

Macroeconomics 89

International Economics 99

Domestic Finance and Capital Markets 120

Transition Economies 132

Abstracts of Current Studies

Inequalities in Child Health: Comparing the Living Standards Measurement Study Survey and the Demographic and Health Survey

The World Bank, along with a number of other development agencies, has been giving increased emphasis to improving health and nutrition outcomes among the world's poor. There is, however, a shortage of data on differences between the poor and the nonpoor in terms of these measures. The broad aim of this study was to help fill this information gap for a specific set of health and nutrition outcomes, namely, those pertaining to child health. The narrower aim was to assess the usefulness of consumption and wealth proxies in order to determine whether the use of such proxies (survey data that do not include consumption data, such as the Demographic and Health Survey [DHS]) paints a reliable picture of poor-nonpoor differences in health and nutrition outcomes.

The methods used involve the computation of malnutrition measures of child health—stunting, underweight, and wasting—for five economic status quintiles. These measures were then compared using concentration curves that plot the cumulative percentage of, say, children born, ranked by economic status, against the cumulative percentage of, say, underweight children. A concentration index was then computed, analogous to the Gini coefficient, indicating the extent to which adverse outcomes are concentrated among the poor. Standard errors were computed for these indexes, enabling their significance to be assessed and the significance of cross-country differences to be determined. Economic status was measured by two alternative measures: equivalent household consumption and an index of "wealth" constructed by applying principal components analysis to data on house characteristics, durable ownership, and land cultivation. Countries studied include Bangladesh, Brazil, Burkina Faso, China, Côte d'Ivoire, Egypt, Ghana, Guatemala, Guyana, Indonesia, Morocco, Nepal, Nicaragua, Pakistan, Peru, the Philippines, Romania, the Russian Federation, South Africa, Vietnam, and Zambia.

The results indicate that, in all countries, poor children are less well nourished than better-off children. However, the degree of inequality between poor and nonpoor children can vary substantially across countries, even at similar levels of development (although many of the intercountry comparisons are not statistically significant). Results also indicate that in many—but not all—instances, whether equivalent consumption or the wealth index based on principal components analysis is used for ranking only slightly affects the picture that emerges on cross-country differences in malnutrition. These results suggest that both levels of development and average health and nutrition outcomes may be poor indicators of how the poor fare in such outcomes and that assessing poor-nonpoor differences using a synthetic wealth index is useful where consumption data are unavailable.

Among the main products of the study are comparable data on poor-nonpoor differences in malnutrition and child mortality, based on both consumption and the synthetic wealth index. Coupled with the DHS-based data being commissioned from Macro International by the Health, Nutrition, and Population Network's Poverty Thematic Group, these data will enable Bank staff preparing country assistance strategies and poverty assessments to understand how the poor within each country fare. These data will also help researchers identify the causes of poor-nonpoor differences in malnutrition, the impacts of the various determinants, and the inequalities in these determinants. Such work will help Bank staff assess the returns to different policies and projects in terms of their ability to improve health and nutrition outcomes among poor children.

A draft paper bringing together all the results has been prepared and is currently being revised for submission to a journal. The results will also be disseminated within the Bank through a seminar and on the Web at www.worldbank.org/poverty/health.

Responsibility: Human Development Network, Health, Nutrition, and Population Team—Adam Wagstaff (awagstaff@worldbank.org), Helen Saxenian, and Naoko Watanabe.
Completion date: December 1999.

Information, Incentives, and Antipoverty Interventions: Devilish Details on the Road to Poverty Reduction

This study examined the relationship between community participation and the efficacy of interventions designed to reduce poverty. It developed some simple analytics that were used to structure a review of the extant literature and motivate the analysis of the impact of participation on the efficacy of public work interventions in South Africa. These analytics suggest that because communities have informational advantages not available to outsiders, community participation has the potential to lower the cost of antipoverty interventions. Where the outcomes of interventions are difficult to measure, community participation is attractive because it is more likely to produce a set of outcomes actually desired by the community. This does not imply, however, that these outcomes are those desired by all members of the community nor by those who finance the interventions.

These arguments are supported both by a review of the extant literature and by a multivariate analysis of the impact of community participation on public work projects in South Africa. This analysis used data from a specially conducted survey combining household-level data on beneficiaries and institutional data on the interventions to allow characterization of the degree of participation. It found that increasing community participation lowers the ratio of project wages to local wages; increases the labor intensity of projects that provide roads, sewers, or community buildings; and lowers the cost of creating employment and of transferring funds to poor individuals. It found no evidence that community participation increases cost overruns in these projects.

The results of the research should help to improve the understanding and design of institutional arrangements in antipoverty interventions.

Early results were presented at the World Bank's Summer Research Workshop on July 6–8, 1999.

Responsibility: World Development Report Office—Ravi Kanbur (rkanbur@worldbank.org). With John Hoddinott and Lawrence Haddad, International Food Policy Research Institute; and Timothy Besley, London School of Economics and Political Science.
Completion date: December 1999.

Report

Adato, Michelle, Timothy Besley, Lawrence Haddad, and John Hoddinott. 1999. "Participation and Poverty Reduction: Issues, Theory and New Evidence from South Africa." Background paper for *World Development Report 2000/2001*. International Food Policy Research Institute and World Bank, Washington, D.C.

Sustainable Banking with the Poor

This research project was aimed 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 carried out a series of case studies of microfinance institutions in Africa, Asia, 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 covered a wide range of institutions, including commercial banks, specialized banks, nongovernmental organizations, nonbank financial institutions, and government development finance institutions.

The project drew on several disciplines—economics, finance, and anthropology—and used both quantitative and qualitative approaches to analyze why some programs have successfully delivered financial services to the poor while others have fallen short. It defined success by financial sustainability and by access and outreach. It measured financial sustainability in terms of key financial performance indicators, including the Subsidy Dependence Index widely used in the World Bank. It measured access and outreach 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 produced documents providing lessons for policy formulation, program design, and implementation. These include an integrated analysis and critical review of the role of nongovernmental organizations in microfinance and a thorough analytical assessment of the current state and potential of credit union outreach to the poor. In collaboration with the Consultative Group for Assisting the Poorest (CGAP), the project produced the "Microfinance Practical Guide" (Cécile Fruman and Michael Goldberg, World Bank, Washington, D.C., 1997), designed to assist Bank task managers in formulating and implementing microfinance activities. The guide presents a step-by-step approach to designing a microfinance loan or loan component and provides extensive advice on such nonlending activities as policy dialogue and technical assistance.

Targeted to a wider audience, the *Microfinance Handbook* (Joanna Ledgerwood, Washington, D.C.: World Bank, 1998) is a technical guide aimed at client country governments, financial institutions, donor agencies, and practitioners. The handbook offers a comprehensive overview of the main issues in microfinance and an update on the lessons learned and best practices in the field.

Comparative analyses of case studies were presented at three regional conferences (two in Africa and one in Latin America) and at professional meetings in Latin America. The project established a World Bank seminar series to disseminate best practice and to discuss issues and problems emerging in the rapidly growing field of microfinance. By June 30, 1999, 35 seminars had been held. The project also organized regional dissemination workshops in collaboration with partners: in Thailand in November 1997, in Zimbabwe in February 1998, in Benin in May 1998, and in Peru in June 1999. These regional conferences, each gathering more than 100 policymakers and practitioners, conveyed key messages on building regulatory frameworks and institutions for microfinance and rural finance. In addition, the project established a Web site to disseminate case studies and other publications (www-esd.worldbank.org/html/esd/agr/sbp).

The project's outputs have had a substantial influence on the design and implementation of microfinance projects supported by the Bank, helping to ensure that they reflect best practice.

Responsibility: South Asia Region, Social Development Sector Unit—Lynn Bennett (lbennett@worldbank.org); Africa Region Technical Families, Private Sector Finance—Carlos E. Cuevas and Sangae Sherman; and Private Sector Development Department, Knowledge Management Unit—Korotoumou Ouattara, and Small Enterprise Development Unit—Jacob Yaron. With Tom Dichter; Joanna Ledgerwood; Julia Paxton; J. D. von Pischke; Jeffrey Poyo; Gloria Almeyda; Stephanie Charitonenko; Jorge Rodriguez-Meza; Development Partners, United States; CEPES, Peru; Inversiones Nacionales de Turismo, Peru; Silvia Dorado; Nancy McGaw; and Ali Jaffrey. Funding for the research was contributed by the Swiss Agency for Development and Cooperation; the Royal Ministry of Foreign Affairs, Norway; and the Ford Foundation.

Completion date: December 1999.

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The Impact of Adult Deaths on Child Health in Northwestern Tanzania

In many Sub-Saharan African countries the AIDS epidemic is dramatically increasing mortality among adults of prime working age, with potentially severe consequences for surviving family members. Most of these effects have not been quantified. Using a longitudinal household data set from the Kagera region of Tanzania—an area hit hard by the AIDS epidemic—this study examined the impact of the mortality of prime-age adults on the morbidity, height for age, and weight for age of children under five. The data, from the Kagera Health and Development Survey, were collected in 1991–94.

Controlling for individual characteristics, household assets, and community variables, the study found that orphanhood (resulting from the death of one or both parents) and recent deaths of adults in the household (who may or may not have been parents) have independent effects on the morbidity and height for age of children under five. Children from the poorest house-

holds, those whose parents are or were uneducated, and those with the least access to health care are the most severely affected. The impact of an adult death on height for age is delayed (not appearing for four to six months) but substantial. The study found no significant relationship between adult mortality (or most other explanatory variables) and weight for height.

While an unknown share of the excess morbidity and malnutrition due to adult deaths can be attributed to HIV infection in the children, the study shows that three important health interventions—measles immunization, oral rehydration salts, and access to health care—are important in mitigating the impact of adult deaths. Not only do these programs disproportionately improve health outcomes for the poorest children, among the poor they disproportionately benefit children affected by adult mortality.

Responsibility: Development Research Group, Poverty and Human Resources—Martha Ainsworth (mainsworth @worldbank.org). With Innocent Semali, University of Dar es Salaam. The Danish Agency for Development Assistance and the U.S. Agency for International Development contributed funding for the Kagera Health and Development Survey.

Completion date: January 2000.

Report

Ainsworth, Martha, and Innocent Semali. 2000. "The Impact of Adult Deaths on Children's Health in Northwestern Tanzania." Policy Research Working Paper 2266. World Bank, Development Research Group, Washington, D.C.

Policies for Poor Areas

Most countries have regions in which the incidence of absolute poverty is high by national standards. Governments and donors are regularly called on to do something about these lagging poor areas, and area-based interventions are now found in most countries. The World Bank has assisted more than 300 area development projects since the early 1950s, most designed to develop rural areas for the benefit of poor people. Other agencies also provide substantial support for such development programs.

This project was aimed at understanding what part lack of geographic capital and the performance of local governments play in creating poor areas and what part factors such as residential differentiation (whereby people who lack "personal capital" end up being spatially concentrated) play. By identifying specific policy interventions—or their immediate outcomes in terms of community-level attributes—the analysis assessed the gains from poor-area policies and projects and considered the implications for the design of future projects.

The project examined the dynamics of the geography of poverty from a microeconomic perspective in order to help understand how various governmental and nongovernmental area-based actions, as well as other factors, affect households' prospects of escaping poverty. The approach—a microeconometric investigation of the economic geography of poverty in selected countries of Asia and Latin America—entails a significant increase in the number of policy-relevant variables included in microeconomic empirical models of poverty.

Responsibility: Development Research Group, Poverty and Human Resources—Martin Ravallion (mravallion @worldbank.org), Shaohua Chen, Emanuela Galasso, Jyotsna Jalan, and Quentin Wodon.

Completion date: March 2000.

Reports

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Poverty and Policy in Latin America and the Caribbean

This study analyzed the evolution of poverty and inequality in Latin America and the Caribbean from 1986 to 1996, with projections to 1998. It reviewed the policies that have been advocated (such as in World Bank poverty assessments) for reducing poverty and those that have been implemented. And it developed a number of new research techniques (including an index of income mobility, a methodology for estimating the economic cost of child labor, and tools for analyzing the relative welfare impact of targeting beneficiaries of social programs and allocating program benefits among beneficiaries).

Some of the main empirical findings of the study:

- In Latin America and the Caribbean in 1996, one of every six people (16.1 percent) was extremely poor, and one of three (36.7 percent) was poor. These poverty rates show progress since the early 1990s, but are still higher than those in the mid-1980s. Simulations for 1998 suggest a small reduction in poverty since 1996.
- Inequality remains high, with the weighted average of the national Gini coefficients at 0.56 in 1996. Inequality increased in the late 1980s, and then declined, but not as much as poverty did. The high inequality is due in part to the extensive self-employment and high level of income mobility in the region.
- The elasticity of poverty to growth is unitary: a 1 percent increase in mean per capita income results in a 1 percent reduction in poverty. Growth also helps improve nonmonetary indicators of welfare, such as infant mortality, life expectancy, secondary school enrollment, adult illiteracy, and access to safe water.
- Education helps to increase earnings, but the effect is not enough to pull a household from poverty if only one member is working. The returns to education have changed little over time. There is substitution between child labor and schooling: the children working now will have lower future incomes and thus a higher probability of being poor.
- The high level of poverty in the region is due in part to the adverse impact of macroeconomic shocks. Safety nets should be countercyclical, but there is evidence that they are pro-cyclical, with the poor hurt during crises by cuts in spending for targeted programs. Many existing safety nets need improvements in targeting and performance.
- There is evidence that the poor are socially excluded and that state institutions are not sufficiently pro-poor. By contrast, promoting participation can have positive effects, as demonstrated by social funds.

Findings were presented and discussed at a World Bank review meeting in November 1999; at Bank sem-

inars (Latin American and Caribbean Chief Economist seminar in July 1999, Latin American and Caribbean urban upgrading workshop in September 1999, and Thematic Group on Inequality seminars in September and November 1999); at the Latin American and Caribbean Economic Association conference in Santiago, Chile, in October 1999; and at the 12th Regional Seminar on Fiscal Policy in January 2000, also in Chile.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org), Norman Hicks, and William Maloney, and Public Sector Unit—Robert Ayres. With Matias Barenstein; Kihoon Lee; Pia Peeters; Corinne Siaens; and Shlomo Yitzhaki.

Completion date: March 2000.

Report

Wodon, Quentin, with contributions from Robert Ayres, Matias Barenstein, Norman Hicks, Kihoon Lee, William Maloney, Pia Peeters, Corinne Siaens, and Shlomo Yitzhaki. 2000. *Poverty and Policy in Latin America and the Caribbean*. World Bank Technical Paper 467. Washington, D.C.

Crime in Latin American Cities

Homicide rates in the typical Latin American country are higher than in the typical country in any other region of the world. And conversations with the poor in Latin America reveal that personal security is the most important developmental challenge facing them. This research attempted to identify the main causes of crime and violence in Latin American cities. Case studies of Brazil, Colombia, El Salvador, Mexico, and Peru based on household surveys confirm that economic conditions are important determinants of crime in the region. These studies show that employed, high-income, and educated men are more likely than other members of the community to be victims of violent crime. However, economics tells only part of the story. Family structure, the presence of police, youth gangs, illicit drug trade, and the availability of weapons are also important risk factors in some countries.

The case studies reveal that local authorities face a severe obstacle: the lack of reliable information about the magnitude and geographic distribution of crime. Accurate crime maps for major urban centers could help public security forces allocate their resources more efficiently. The best crime mapping technology cannot ensure that accurate information will be introduced into the system, however. The quality of information can be compromised by many factors, including the technical abilities of those in charge of recording complaints and citizens' confidence in the police forces to whom they must report crimes. Periodic victimization surveys that include questions about the quality of police services can help improve both crime maps and the behavior of local authorities.

The project's reports have been widely disseminated through the Web (www.worldbank.org/laccrime) and at a Bank-sponsored international conference held in Bogotá, Colombia, May 4–5, 2000. An edited volume is being prepared that will include shortened versions of the five Latin American case studies.

The project's reports and ideas are already affecting the Bank's policy dialogue with clients. A pilot project has been established in Argentina to set up crime and violence monitoring systems in four provincial locations. Discussions have been held with the government of Ecuador, and in El Salvador the case study has become the centerpiece of the dialogue on crime and violence.

Responsibility: Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit—Daniel Lederman (dlederman@worldbank.org). With Norman Loayza, Central Bank of Chile; Pablo Fajnzylber, Federal University of Minas Gerais, Brazil; Funsalud (Mexican Health Foundation); Instituto APOYO, Lima, Peru; Instituto Universitario de Opinion Publica, Universidad Centroamericana, El Salvador; Leandro Piquet Carnerio, University of São Paulo; and Centro de Investigacion sobre Salud y Violencia, Universidad del Valle, Cali, Colombia.

Completion date: May 2000.

Reports

Cruz, Jose Miguel, Alvaro Trigueros Argüello, and Francisco Gonzalez. 2000. "The Social and Economic Factors Associated with Violent Crime in El Salvador." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Eyzaguirre, Hugo, and others. 2000. "Criminal Violence Study in the Cities of Latin America: The Case of Peru." Paper presented

at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Fajnzylber, Pablo, Daniel Lederman, and Norman Loayza. 1998. *The Determinants of Crime Rates in Latin America and the World: An Empirical Assessment.* Latin American and Caribbean Studies Series. Washington, D.C.: World Bank.

———. 1999. "Inequality and Violent Crime." World Bank, Latin America and the Caribbean Region, Office of the Chief Economist, Washington, D.C.

Gaitán, Fernando, and Santiago Montenegro. 2000. "Un análisis crítico de estudios sobre la violencia en Colombia." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Lederman, Daniel, Ana Maria Menendez, and Norman Loayza. 1999. "Violent Crime: Does Social Capital Matter?" World Bank, Latin America and the Caribbean Region, Office of the Chief Economist, Washington, D.C.

Piquet, Leandro. 2000. "Pesquisa de vitimização região metropolitana de São Paulo." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Shrader, Elizabeth. 2000. "Methodologies to Measure the Gender Dimensions of Crime and Violence." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Vélez, Luis Fernando, Victoria Eugenia Espitia, Harold Banguero, Fabián Mendez, Edgar Muñoz, William Rotawinsky, Gildardo Vanegas, and Rafael Espinoza. 2000. "Victimization in Colombia: The City of Cali—An Exploratory Analysis." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Zurita, Beatriz. 2000. "Trends and Empirical Causes of Violent Crime in Mexico." Paper presented at the conference Crime and Violence: Causes and Policy Responses, Universidad de los Andes and World Bank, Bogotá, May 4–5.

Democracy, Redistribution, and Inequality

Current thinking about the relation between the distribution of political power and the distribution of economic resources has invariably led to the conclusion that when the poor acquire political power, they use it to massively redistribute economic resources in their favor, which should reduce inequality. This study looked at the link between democracy and inequality and assessed how and through what mechanisms democracy affects income distribution. It examined whether democratic countries really redistribute more income to the poor and whether income distribution in these countries tends to be more equal.

The study—which drew on data on democracy and inequality from the World Bank and data on redistribution and social spending from the United Nations, the World Bank, and the Luxembourg Income Study—comprised two parts. The first part consisted of a cross-country (panel data) analysis covering more than 100 countries over the period 1960–95. This research used new indicators of democratization (the database of political institutions developed at the World Bank), the level of redistribution, the degree of inequality, and the dominant ideology or religion. It examined whether democratization is linked to greater equality, hypothesizing that the effect is influenced by the dominant ideology or religion. That is, countries with the same level of democracy and all other variables may end up with different levels of inequality depending on the prevalent social preference for inequality (as expressed by the dominant ideology or religion).

The second part of the study tested the median voter hypothesis. It used, for the first time, the correct specification—that is, it compared the income gain of the lowest decile (or quintile or bottom 50 percent of the population) in each country when individuals are ranked by their market (factor) income. The assumption was that individuals base the decision on how much to redistribute on their market income. Lack of data on the distribution of market, gross, and disposable income had prevented use of this specification before. Results for 19 advanced democracies for the 1980s and 1990s show that countries whose market income was more unequally distributed did redistribute more. The bottom segment of the population (ranked by market income) ended up with the same share of disposable income—regardless of its initial position. The median voter hypothesis thus seems to find strong support in this research.

Responsibility: Development Research Group, Poverty and Human Resources—Branko Milanovic (bmilanovic

@worldbank.org). With Mark Gradstein, University of Pennsylvania and Ben Gurion University, Beersheva, Israel; and Yvonne Ying, Oxford University.
Completion date: June 2000.

Reports

Gradstein, Mark, and Branko Milanovic. 2000. "Does Liberté = Egalité? A Survey of the Empirical Evidence on the Links between Political Democracy and Income Inequality." Center for Economic Studies Working Paper 261. University of Munich.

Gradstein, Mark, Branko Milanovic, and Yvonne Ying. 2000. "Democracy, Ideology, and Inequality." World Bank, Development Research Group, Washington, D.C.

Milanovic, Branko. 1999. "Do More Unequal Countries Redistribute More? Does the Median Voter Hypothesis Hold?" Policy Research Working Paper 2264. World Bank, Development Research Group, Washington, D.C. (Also forthcoming in *European Journal of Political Economy*.)

Gender, Old Age, and Social Security: Evidence from Chile and Argentina

This research project analyzed the relative living conditions of older men and women and the impact of alternative social security arrangements on their income and consumption. Since women live longer than men, the very old are disproportionately women—who often do not have assets, labor market experience, or pensions of their own.

The research used econometric analysis of household and employment survey data to estimate the labor market experience and age-earnings profiles of men and women with different levels of education. This required the development of synthetic employment histories of men and women, by education level, which were used to simulate how they will fare under different defined benefit formulas and under defined benefit compared with defined contribution plans. The project focused on Argentina and Chile, but compared results with Mexico. The objective was to develop recommendations for second-generation pension reforms that will treat both men and women fairly and have beneficial effects on the broader economy.

An immediate finding is that while under extended family systems older women live with and are supported by their families, as families break down, women may be in trouble because they tend to outlive their spouses and to lack labor market experience and pensions of their own. If the family system changes faster than women's labor market participation, this may become a social problem. Even under the extended family system older men generally bring monetary assets and add to their family's mean per capita consumption, while older women lead to a decline in per capita consumption. This suggests that older men's bargaining power within the household and their ability to consume may exceed that of older women, but this may be beyond the capability of household surveys to observe.

Another important finding is that different categories of women fare differently when social security is reformed. This heterogeneity makes it as important to compare across different categories of women as it is to compare men and women as two aggregate groups. For example, systems that tie benefits closely to contributions will give large payoffs to women in the labor market, while women who work at home may fare better under systems without such close ties. These payoffs obviously have equity implications, but they also constitute rewards for certain behaviors and thus have output and efficiency implications as well. So countries need to think about which set of behaviors they wish to encourage when designing a social security system.

Once all three country papers are completed, a cross-country paper comparing the results and generalizing the conclusions will be produced. The full set of papers, together with the cross-cutting analysis, will be distributed as a volume of working papers and disseminated broadly through seminars and conferences.
Responsibility: Development Research Group, Poverty and Human Resources—Estelle James (ejames3 @worldbank.org); and Latin America and the Caribbean Region, Gender Sector Unit—Maria Correia. With Alejandra Cox-Edwards, California State University; Rebeca Wong, Georgetown University; and Susan Parker, Progresa, Mexico.
Completion date: June 2000.

Reports

Cox-Edwards, Alejandra. "Pension Projections for Chilean Men and Women: Estimates from Social Security Contributions."

Parker, Susan, and Rebeca Wong. "Welfare of the Elderly in Mexico: A Comparative Perspective."

The Impact of Population Aging on Health Care Systems

This research project analyzed the relationship between population aging and health care systems, with particular reference to five countries—Brazil, Chile, Israel, Mexico, and Vietnam. Not surprising, the country studies found that age is an important determinant of individuals' use of health care services except in the poorest country examined, Vietnam. The study of Brazil showed that 30 percent of hospitalizations in public facilities are for people over age 60, putting heavy pressure on both family and public resources. In Chile age strongly influences insurance choice as well as utilization, since public insurance subsidizes groups with high expected expenditures, while private insurance does not. The Israeli study showed behavioral differences between old and young with regard to interaction effects of income and education. The study of Mexico underscored the impact of insurance, which covers different age groups differently (adults of prime working age and their families are more likely to be covered by social security facilities than are others).

A major product of this exploratory study is a carefully conceived proposal for a much larger research project, one that would use household-level data to estimate age-utilization profiles and determine how these profiles are influenced by socioeconomic variables and health insurance systems that differ across countries and time. This approach would allow analysis of the impact on health care systems of simultaneous demographic and economic change.

Papers on Brazil and Vietnam are in progress.

Responsibility: Development Research Group, Poverty and Human Resources—Estelle James (ejames3 @worldbank.org). With Len Nichols, Urban Institute; Denisard de Oliveira Alves, São Paulo University; Dov Chernichovsky, Ben Gurion University of the Negev; Rebeca Wong, Georgetown University; and Claudio Sapelli. The Pan-American Health Organization participated in the research.

Completion date: June 2000.

Reports

Chernichovsky, Dov, and Sara Markowitz. "The Aging of the Israeli Population: Implications for the Health Care System." Draft.

Sapelli, Claudio. "Chile: Effects of Old Age on Health Services Utilization and Consequences for System Design." Draft.

Wong, Rebeca. "Health, Utilization of Health Care, and Aging in Mexico." Draft.

Inequality in Malaysia

Income distribution in Malaysia exhibited major changes between 1973 and 1995. Real average per capita income increased 2.5 times, the absolute poverty rate fell from more than 50 percent of the population to less than 8 percent, and income inequality decreased. This record has caused Malaysia to be cited as a successful case of growth with redistribution.

During this 22-year period income inequality first declined (1973–89) and then rose (1989–95). Because the changes in inequality in both periods were modest relative to the magnitude of economic growth, poverty in Malaysia fell dramatically and continuously throughout the entire period.

This project used the large, nationally representative Household Income Surveys from 1984, 1989, and 1997 to study two topics. The first part of the research investigated how important different factors were in accounting for the changes in income inequality between 1984 and 1989 and between 1989 and 1995. These two periods were chosen because they are about the same length, because income inequality fell in the first period and rose in the second by almost equal amounts, and because Malaysia adopted a national development policy beginning in 1991.

Past research has found a number of factors to be important determinants of inequality in Malaysia—among them, ethnicity, the demographic composition of the household, education and occupation of the household head, the sector of employment, and the region of the country and state. Factors examined in this study include changes in households' demographic characteristics and productive assets, individuals' labor force participation and labor hours decisions, and the structure of returns to various characteristics in wage employment and self-employment.

The second part of the research studied changes in inequality of earnings, the determinants of earnings, and how earnings were influenced by the changes in supply and demand for different types of labor over the 1984–97 period. Between 1984 and 1997 real per capita GDP increased about 70 percent in Malaysia, and real wages of manufacturing workers rose 30 percent. These increases were accompanied by changes that look almost like a stylized picture of rapid development. Labor force participation rates for both men and women increased for all age groups, the average number of years of schooling rose from 8.0 to 9.2 years, and the share of wage workers in the working-age population increased. Growth seems to have been fueled principally by increased labor force participation, longer working hours, and improved education. The study looked at the interaction between labor demand and labor supply, estimated the rate of return to education, and examined gender and ethnic earning biases.

Responsibility: Development Research Group, Poverty and Human Resources—Branko Milanovic (bmilanovic @worldbank.org) and Milos Jovicic. With Gary Fields, Cornell University; and Sergei Soares, Instituto de Pesquisa e Planejamento Econômico, Rio de Janeiro.

Completion date: June 2000.

Reports

Fields, Gary, and Sergei Soares. 2000. "The Macroeconomics of Changing Income Distribution in Malaysia."

Milanovic, Branko. 2000. "Inequality and Determinants of Earnings in Malaysia, 1984–97." World Bank, Development Research Group, Washington, D.C.

Links between Income Growth and Malnutrition

How rapidly will child malnutrition respond to GNP growth? This study explored that question using data from Living Standards Measurement Study surveys in 12 countries as well as panel data from the World Health Organization on malnutrition rates since the 1970s for 63 countries.

The two analyses yielded similar results. The same rates of increase in income at the household level and nationally imply similar rates of reduction in malnutrition. Both approaches indicated that the responses to income are smaller when fixed effects estimates, which hold infrastructure constant, are used. But in the long run income growth should lead to improved infrastructure and an income response half again as large as the short-run response measured in the cross-country estimates. With per capita income growth of 5 percent, malnutrition rates may drop by a third by 2020.

These estimates suggest that the goal of halving child malnutrition in the first two decades of this century—a goal set by the 1990 World Summit for Children and the 1996 World Food Summit—is unlikely to be met through income growth. Thus a combination of income growth and nutrition programs will be needed.

The study's results were presented at the annual meetings of the United Nations Administrative Committee on Coordination, Subcommittee on Nutrition, in April 2000. They are also discussed in a World Bank source book on poverty reduction strategy papers and in an International Food Policy Research Institute policy briefing.

Responsibility: Development Research Group, Rural Development—Harold Alderman (halderman@worldbank.org). With Lawrence Haddad and Yisehac Yohannes, International Food Policy Research Institute; Simon Appleton, University of Bath; and Lina Song, University of Nottingham.

Completion date: June 2000.

Report

Alderman, Harold, Simon Appleton, Lawrence Haddad, Lina Song, and Yisehac Yohannes. 2000. "Reducing Child Malnutrition: How Far Does Income Growth Take Us?" World Bank, Development Research Group, Washington, D.C. [www.worldbank.org/foodpolicy].

The Impact of the Financial Crisis on the Farm Sector in Thailand

This study identified and measured the short- and long-term impacts of the shocks from the recent financial crisis on the well-being of rural households in Thailand. It developed reliable information on crisis-induced changes in agricultural employment, rural credit, rural infrastructure, agricultural land use patterns, farm investment, output, and consumption. It also identified and

measured the impacts of the different crisis-induced shocks on farm household behavior and well-being in order to design effective interventions to mitigate the adverse social impacts of the crisis. Finally, it aimed to build a national consensus on short- and medium-term measures to restore equitable and sustainable rural growth.

Two data sources were used: a detailed, nationwide, farm household survey conducted by the Ministry of Agriculture and Cooperatives in 1996, a year before the onset of the crisis, and a follow-up survey of a large subsample of the same households, conducted with the assistance of a ministry research team. These panel data were used to analyze how different shock indicators are related to changes in household input expenditures, land use, investment, output, and consumption. The distribution of these crisis impacts across poor and nonpoor rural households was also examined.

The main findings of the study are as follows:

- There is little sign of massive urban to rural migration, although there appears to have been a slowdown in rural emigration.
- Although net remittances declined for all but the richest households, the poor are less reliant on remittances than the rich. However, overall off-farm income (including remittances) declined for the poor, but not for the rich.
- The central region performed much better in terms of consumption and income than the northeast or the north, which was particularly hard hit.
- The poor have borne the brunt of the crisis, with their expenditures and income (farm and off-farm) falling, both in real terms and relative to those of the rich. These findings are consistent with the fact that the poor derive most of their income from the labor market (which performed badly) rather than from farming (which generally performed well), while richer farmers derive most of their income from farming.
- No evidence of a credit crunch was found: outstanding loans did not decline substantially.

The key policy conclusion is that interventions that influence farmgate prices or enhance the availability of credit will probably have limited impact on the poor. By contrast, well-targeted social programs designed to fill gaps in the safety net will do more to alleviate rural poverty.

The results were presented at a seminar held in Bangkok June 22, 2000, attended by the minister, senior officials, and staff of the Ministry of Agriculture and Cooperatives, as well as representatives of the World Bank, the Mekong Environment and Resources Institute, Asia-Europe Meeting (ASEM) affiliates, other donors, local nongovernmental organizations and universities, and other elements of civil society. Some preliminary results of this work were shared with the World Bank resident mission in Thailand for use in preparing a poverty strategy note. All survey data from this research will be publicly released.

Conducted in response to a request from the government of Thailand, this study provided essential agroeconomic information to help the Thai government, the World Bank, and elements of civil society formulate a more effective and equitable program to respond to lingering effects of the crisis and ensure sustainable rural development in the medium to long term. These concerns lie at the heart of the country assistance strategy approved by the Bank's Board in June 1998.

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org), Jaime Quizon, and Hanan Jacoby. With Tongroj Onchan, Charles Mehl, and Anthony Zola, Mekong Environment and Resources Institute, Thailand; and Fabrizio Bresciani, University of Maryland. The ASEM Trust Fund contributed funding for the research.

Completion date: August 2000.

Technology and Poverty Alleviation

This project assesses the relative magnitudes of direct and indirect reductions in poverty as a result of post–green revolution technological change. It also assesses the potential contributions of recent advances in biotechnology for reducing poverty in the future.

The relative importance of direct effects (income or consumption of adopting households) and indirect effects (food price, wage, employment, and sectoral linkages) is assessed by estimating computable general equilibrium models for archetypal poor countries in Asia and Sub-Saharan Africa. These models characterize sources of income to identify the real income effects of technological advances, distinguishing the effects that come through

a decline in food prices from those that come through an improvement in farm income.

The potential of biotechnology to alleviate poverty is assessed by identifying the main features of agricultural biotechnology research that can have direct and indirect effects on poverty (which crops, which traits, and for which environments); analyzing the patterns of generation and ownership of *Bacillus thuringiensis* (Bt) patents; and developing a simulation model of the determinants of adoption of Bt seeds by small landholders to assess which households are best placed to adopt the technology and which are likely to be excluded from using it. In addition, a household survey was administered in the northern highlands of Peru to assess the direct impacts of modern potato varieties on poverty. Data from the survey are being used to analyze the determinants of adoption and diffusion of new potato varieties by households and measure the impact of technology adoption on household income and consumption.

The relative importance of direct and indirect effects varies widely with the structure of the economy and the incidence of poverty. In a typical African context, where the agricultural sector is large and the bulk of the poor are smallholders, direct effects are very important. Targeting technological change toward poor farmers is thus essential to reduce aggregate poverty. In contrast, in Asia, where most of the poor are rural landless, income gains for the rural poor derive mainly from indirect effects captured by the labor market. Targeting technological change toward employment creation is thus critical for reducing poverty. In Latin America, where poverty is largely urban and land is concentrated in the hands of large farmers, the rural poor derive most of their real income gains through indirect effects, captured mainly through falling food prices. In this case the main role of technological change is to lower the price of food, which may occur in the fields of large farmers.

Agricultural biotechnology has great promise for reducing poverty, through both direct and indirect effects. It also has the flexibility to strike different balances between the two sets of effects to reduce aggregate poverty based on country characteristics. Failing to capture the potential of agricultural biotechnology would represent an important missed opportunity, and it could cause smallholders in developing countries to be weakened relative to other producers and other countries. The institutional requirements for turning this potential into a reality are highly demanding, however. The critical factor determining failure or success will be not progress in the biological sciences but the ability to put in place the necessary institutions for the generation, transfer, delivery, and adoption of biotechnological innovations that can reduce poverty.

Results of the study were presented at a workshop organized by the World Bank in Malaysia May 10–12, 1999; at the Bank's Summer Research Workshop on poverty in Washington, D.C., July 6–8, 1999; and at a conference, The Shape of the Coming Agricultural Biotechnology Transformation: Strategic Investment and Policy Approaches from an Economic Perspective, at the University of Rome, June 17–19, 1999. The initial findings were used as inputs in the preparation of the World Bank's *World Development Report 2000/2001: Attacking Poverty* (New York: Oxford University Press, 2000). The research results will also inform the ongoing effort by the World Bank's Biotechnology Task Force to define guiding principles, strategies, and priorities that support capacity building in agricultural biotechnology to enhance its impact on poverty alleviation.

Responsibility: Development Research Group, Rural Development—Rinku Murgai (rmurgai@worldbank.org) and Gershon Feder. With Oscar Ortiz and Rebecca Nelson, International Potato Center, Peru; Alain de Janvry and Erin McCormick, University of California at Berkeley; and Paul Winters, University of New England, Armidale, Australia.

Completion date: September 2000.

The Derivation of World Income Distribution in 1988–93 Based on Household Survey Data

Interest in income inequality has been growing for the past decade. Until recently, however, it was not possible to derive a world income distribution, because detailed household income or expenditure data were not available for much of the world's population. This has changed during the past decade as data on transition economies have become more readily available and household surveys have been developed in many African countries.

This study uses recently collected national data from more than 200 surveys—covering more than 90 percent of the world's population and 95 percent of world GDP—to generate a world income distribution. The results reveal a high level of inequality and an increase in the level between 1988 and 1993, the two years examined. (The choice of years was determined by the availability of purchasing power parity data from the two most recent rounds of the International Comparison Program.) The world Gini coefficient increased from 62 to 66 over the period. The increase in inequality was driven by rising intercountry differences, particularly by increasing differences in income between the populous rural areas of Bangladesh, China, and India and the rich OECD countries. Rising rural-urban disparities in China also contributed significantly to world inequality. The study decomposes world inequality into intracountry and intercountry differences in mean income and simulates changes in world inequality under different income and population growth scenarios.

Responsibility: Development Research Group, Poverty and Human Resources—Branko Milanovic (bmilanovic @worldbank.org) and Costas Krouskas.

Completion date: December 2000.

Reports

Milanovic, Branko. 1999. "True World Income Distribution, 1988 and 1993: First Calculations, Based on Household Surveys Alone." Policy Research Working Paper 2244. World Bank, Development Research Group, Washington, D.C.

———. 2000. "How Great Is World Inequality?" *WIDER Angle* (United Nations University, Helsinki).

How Do the Poor Cope with a Widespread Natural Disaster? A Study of the 1998 Flood of Rural Bangladesh

Large shocks such as floods, cyclones, and earthquakes have dramatic effects on the well-being of rural households, particularly poor households. Bangladesh witnessed one of the worst floods of the 20th century in 1998. Two-thirds of the country remained under water for more than four months, causing severe human suffering.

The flood provided a unique opportunity to study how the poor respond to a catastrophic event and how governmental and other agencies could improve the coping mechanisms of the poor. To do so, this project created a survey that collected detailed information at the household and village level on the extent of flood damage, coping mechanisms available to and adopted by households, and the speed of recovery. The survey—which included detailed questions on assets before and after the flood as well as information on distress sales of assets, credit market activity, intrahousehold transfers, and temporary and permanent migration—was administered as part of the household survey conducted under the research project Long-Term Impacts of Microcredit Programs: A Study of the Grameen Bank and Other Programs in Bangladesh (see the abstract in this volume).

Major issues examined by the study include the following:

- What effect did the flood have on household assets, labor supply, migration, distress sales of assets, and labor?
- What kind of assistance did households in flood-affected areas receive from the government, from nongovernmental organizations, and from other sources, including family transfers from abroad and other places?
- How did the flood affect consumption, prices, investment, transfers, and productive activity in areas not directly affected by the flood?
- To what extent did the interventions of the government and of nongovernmental organizations substitute for informal coping mechanisms? What sorts of interventions were most effective?
- How important has the income diversification fostered by nongovernmental organizations and microcredit institutions been in smoothing consumption of the poor both before and after the flood?

The data have been entered and are being cleaned. Analysis will begin once clean data are available.

Responsibility: World Bank Institute, Economic Policy and Poverty Reduction Division, and Development Research Group, Rural Development—Shahidur R. Khandker (skhandker@worldbank.org); and Development Research Group, Rural Development—Hussain Samad. With Mark Pitt, Brown University; and M. Abdul Latif and Binayak Sen, Bangladesh Institute of Development Studies.

Completion date: December 2000.

Long-Term Impacts of Microcredit Programs: A Study of the Grameen Bank and Other Programs in Bangladesh

Providing affordable credit to the poor and improving institutions that deliver such credit have long been important objectives of World Bank operations. Recent experience with microcredit programs shows that with proper incentives and monitoring, loan defaults can be kept to a minimum and affordable credit can be delivered to the poor and to women, even if they lack physical collateral.

An earlier study based on a household and community survey in Bangladesh in 1991–92 found that microcredit programs have a substantial effect in reducing poverty and that credit given to women has a substantially larger effect than credit given to men. But how sustainable are microcredit programs, and how sustainable are their benefits? Building on the findings of the earlier study, this project explores these and related issues by resurveying the households and communities surveyed in 1991–92.

The study addresses the following questions: Do the estimated effects of microcredit programs remain over time? Are there diseconomies of scale in villages as microcredit programs expand over time? Do microcredit programs have any spillover effects? Do they have noncredit effects? Does the group play an essential role in group-based microcredit?

The survey will try to revisit all 1,798 households surveyed earlier in 72 program villages and 15 control villages. A few new control villages may have to be added to the survey if programs have moved into some of the original control villages. A few more villages will be added to the original program villages to allow comparison between program impacts in old and new program villages. And in each program village a few new participants will be interviewed to allow a comparison of impacts between old and new participants.

The study is expected to contribute to the understanding of the role of microcredit in poverty reduction, human capital development, economic growth, and thus the overall development process. Knowledge about the long-term effects of microcredit on income and other welfare indicators will help in analyzing how much poverty reduction is possible with microcredit. By quantifying the effect of the group, the study is expected to help in understanding the necessity of the group mechanism in microcredit. And by quantifying the noncredit effects of microcredit programs, the study should shed light on the importance of providing noncredit inputs through these programs.

Responsibility: World Bank Institute, Economic Policy and Poverty Reduction Division, and Development Research Group, Rural Development—Shahidur R. Khandker (skhandker@worldbank.org); and Development Research Group, Rural Development—Hussain Samad and Gershon Feder. With Mark Pitt, Brown University; and Binayak Sen and M. Abdul Latif, Bangladesh Institute of Development Studies.

Completion date: December 2000.

Poverty and the International Economy: What Are the Links?

This research investigates the effects of increased economic openness on the welfare of very poor people by analyzing the implications for the prices of goods and labor and then assessing the implications of these price changes for the welfare of poor households. It explores this issue with a particular focus on Indonesia and South Africa. The Indonesian study investigates how the price changes that occurred during the East Asian financial crisis affected the very poor, and the South African study looks at how the price changes that might come about as trade is liberalized will affect groups defined by race and income.

Both the Indonesian and the South African studies use detailed household survey data. The Indonesian study matches the household data with very recent (1997–98) and disaggregated price data organized by province. The South African data come from detailed household income and expenditure surveys and the 1996 census. The Indonesian study relies principally on nonparametric and descriptive econometric methods, while the South African study uses a more traditional demand analysis and nonparametric methods.

Findings for Indonesia show that the very poor are not so poor as to be essentially insulated from the economic shocks of the financial crisis. The very poor—especially

those in urban areas—were severely affected by the price changes that resulted. The findings also highlight the muting effect of self-production by the rural poor and the substantial geographic variation in the impact of the crisis. The results provide guidance on where aid might be targeted in Indonesia (both by region and by income class) to mitigate the impact of the crisis on the very poor.

The South African study shows that different racial groups have very similar demand parameters, although consumption baskets differ. Initial results suggest that price and tax reforms will induce similar demand responses across different racial groups. As trade liberalization results become available, they will allow better estimates of who will most suffer and who will most benefit from South Africa's continued integration into the global economy. Using recent census data, the project also investigates who is working and where, by occupation and industry.

The project has added a study of Mexico, taking advantage of newly available household data with relatively good information on household income generation as well as the living costs typically emphasized in household surveys.

To place the results of these studies in perspective and provide guidance for both policy formulation and future research, a conference will held in October 2000. Lessons from the research will be summarized in a paper.

Responsibility: Development Research Group, Trade—Will Martin (wmartin1@worldbank.org), Alessandro Nicita, Isidro Soloaga, and David Tarr, Public Economics—Shantayanan Devarajan, and Poverty and Human Resources—Martin Ravallion and Dominique van der Mensbrugghe. With Steven Berry, Yale University; Anne Case, Princeton University; and James Levinsohn, Wei Fan, Jed Friedman, Anderson Ichwan, and Edwin Pranadjaja, University of Michigan. The Swedish International Development Cooperation Agency and the Swedish Ministry of Foreign Affairs are contributing funding for the research.

Completion date: December 2000.

Report

Levinsohn, James, Steven Berry, and Jed Friedman. 1999. "Impacts of the Indonesian Economic Crisis: Price Changes and the Poor." NBER Working Paper 7194. National Bureau of Economic Research, Cambridge, Mass.

A New Approach to Valuing Mortality Risk Reductions: What Are Older People Willing to Pay to Reduce Their Risk of Dying?

In most industrial countries the mortality benefits of environmental programs accrue primarily to older people. In the case of air pollution controls the age distribution of statistical lives saved parallels the age distribution of deaths, implying that 75 percent of people saved are over 65 years old. Yet the most common method of valuing these risk reductions is to use compensating wage differentials from the labor market.

To remedy this difficulty, this study has developed a survey that asks people ages 40–75 what they would pay to reduce their risk of dying. Specifically, it asks respondents what they would pay for a drug (not covered by health insurance) that, if taken for the next 10 years, would reduce their chances of dying over this period by a stated amount. This question is preceded by exercises to familiarize respondents with the concept of risk of dying and with their own baseline risk of dying over the next 10 years. Also preceding it is a section discussing measures that people ages 40–75 commonly undertake to prolong their lives (such as cancer screening tests and drug therapy for high blood pressure or high cholesterol) and the quantitative risk reductions that such measures provide.

Pretests of the survey have been conducted in the United States, and the survey has been administered to 930 people in Canada and 600 people in Japan. In late 2000 the survey will be administered to a random sample of 1,200 people in the United States and to 900 people in Prince George's County, Maryland.

Results from the Canadian survey imply values for a statistical life of between $800,000 and $2.5 million (U.S. dollars), lower than the values currently used by either Health Canada or the U.S. Environmental Protection Agency. The reason for these lower estimates is not, however, the age of the respondents. The study has found that the willingness to pay to avoid the risk of death eventually falls with age, but this effect is modest: at age 70 it is 65 percent of the peak willingness to pay, which occurs at age 54. The lower willingness-to-pay value is consistent with the results of other stated preference surveys, which tend to produce values for a statistical life lower than those in revealed preference studies.

Interestingly, a chronic health condition has no impact on willingness to pay. But a respondent's mental health score (based on a standardized health questionnaire) is a significant correlate of willingness to pay: other things equal, people with higher mental health scores are willing to pay more to increase their life expectancy.

Responsibility: Development Research Group, Infrastructure and Environment—Maureen L. Cropper (mcropper @worldbank.org). With Anna Alberini, University of Colorado, Boulder; Ronald Goeree and Bernard O'Brien, McMaster University, Ottawa; Alan Krupnick, Resources for the Future, Washington, D.C.; and Nathalie Simon, U.S. Environmental Protection Agency. Funding for this project has come in part from a grant by the National Science Foundation and U.S. Environmental Protection Agency to Resources for the Future; Health Canada funded the administration of the Canadian survey.

Completion date: January 2001.

Evaluation of the Impact of Investments in Early Child Development on Nutrition and Cognitive Development

Early child development projects account for a rapidly growing share of World Bank lending. These programs combine nutrition, health care, and cognitive development to offset the disadvantages of growing up in poverty. Substantial evidence shows that poor health and an inadequate early learning environment lead to handicaps difficult to reverse later in life. Many children may never go to primary school without interventions that reach them in their early years. If they do attend primary school, they may be at high risk of dropping out early or repeating grades. That lowers the return to both public and private schooling. So early child development programs may both increase the efficiency of a range of other investments in human capital and promote equity in the population they serve.

Through early coordination with Bank operations, this research is evaluating the impact of investments in early child development in three projects: the Bolivian Integrated Child Development Project, the Uganda Nutrition and Early Child Development Project, and the Philippine Early Childhood Development National Investment Program. All three case studies investigate the effect of early child stimulation and coaching on the age of school enrollment and on indicators of cognitive development. They also relate indicators of early cognitive development to early primary school grade progression and performance. The research also assesses the suitability of measures of cognitive development and achievement for project evaluation.

The case studies include both home-based (center-based) and parental education approaches to child stimulation. Moreover, because Bolivia is considering the sustainability of its day care program, which operates in the homes of service providers but functions as a center-based program, that case study compares the cost-effectiveness of that approach with the cost-effectiveness of new, indirect approaches that will be implemented on a pilot basis.

Bolivia has operated an early child development program (Proyecto Integral de Desarrollo Infantil) with World Bank support since 1993. The program aims to improve children's health and cognitive development by providing day care in centers located in the homes of women living in the target areas. These women have been given training in child care as well as a combination of grants and loans (up to $500) to upgrade the facilities in their homes. The full-day program provides food intended to supply 70 percent of a child's nutritional needs. In addition, the centers monitor the children's health and nutrition and provide programs to stimulate their social and intellectual development. Each center has up to 15 children and two or three staff. About 15,000 children are enrolled.

A recent evaluation shows an unambiguous improvement in the cognitive development of program participants relative to the control groups. Because the program selected children of low height, those who have been in the program a short time are smaller than their counterparts. But as the length of time in the program increases, the gap diminishes. The program appears to be particularly effective in preventing severe malnutrition.

While the program is expensive—costing more than $40 a child a month, including donated food—the analysis found that the benefits exceeded costs by up to 70 percent. These benefits include the expected increase in earnings directly due to higher cognitive development and greater physical stature, and the indirect impact

on years of schooling mediated by improved health and learning capacity. Finally, the program appears to be well targeted to the poorest households in the selected communities.

The Uganda case study will evaluate separately the impact of deworming on children under the age of six. While deworming programs worldwide are targeted to school-age children, for whom worm loads are highest, work in progress in Lucknow, India, shows the potential for dramatic increases in weight for younger children following a mass deworming campaign. As no comparable evaluation has been undertaken for this age group in other countries or for other indicators, the Uganda experiment will be particularly informative.

The deworming pilot in Uganda will follow a standard experimental methodology in which there will be a random assignment of treatment and control communities. Both the treatment and the control groups will be chosen from communities deemed especially at risk based on results of a survey of parasites undertaken as part of the project in 1998. But this project, like the other two, includes components that are demand-driven (with communities selecting the programs they will support). So longitudinal data and community fixed effects will be used to address selection bias. The baseline data have been collected, and the child health days and other services will be launched in September 2000.

Implementation of the Philippine project has been delayed. However, the collection of baseline data is under way, and service delivery is expected to begin by the end of 2000.

Responsibility: Rural Development Department—Harold Alderman (halderman@worldbank.org); and Development Research Group, Poverty and Human Resources—Elizabeth King. With Jere Behrman, Yingmei Cheng, and Petra Todd, University of Pennsylvania; Patrice Engle, California Polytechnic State University; Donald Bundy, Oxford University; and N. B. Kabatereine, Vector Control Division, Uganda.

Completion date: March 2001.

Report

Behrman, Jere, Yingmei Cheng, and Petra Todd. "The Impact of the Bolivian Integrated 'PIDI' Preschool Program." University of Pennsylvania, Philadelphia.

The Impact of Prices, Taxes, Subsidies, and Stipends on Poverty

Policies affecting the prices of goods have important effects on the poor. There are many such policies, implemented through such instruments as import tariffs; sales and other indirect taxes; price subsidies for, say, food, energy, or transport; and stipends, for example, for increasing retention rates in schools.

The tools available for evaluating the poverty impact of changes in such policies have limits. They rely on particular measures of poverty (such as those of the Foster-Greer-Thorbecke class), particular poverty lines, and particular indicators of well-being (such as per capita income) without taking into account differences in need (as measured, for example, through alternative equivalence scales). That is, the tools do not provide tests for the robustness of the analysis—and thus the policy conclusions—to alternative value judgments relating to the poverty measure, indicator of well-being, and poverty line. With different assumptions and methodologies, the ranking of alternative pricing policies might be reversed. Without tests for robustness, an analyst suggesting policy changes to benefit the poor might end up proposing a regressive policy.

The goal of this research project is to provide new analytical tools that can contribute to the design of robust policies relating to prices, taxes, subsidies, stipends, and related instruments. These new tools will be developed theoretically and applied empirically to household-level data for several Latin American countries.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org). With Jean-Yves Duclos, Université Laval, Quebec; and Paul Makdissi, Vrije Universiteit, Amsterdam.

Completion date: March 2001.

A New Analytical Framework for Evaluating Social Programs

World Bank staff are constantly confronted with the difficult problem of evaluating social programs and policies. This research is developing a new analytical framework for performing such evaluations. The framework takes

into account not only flexible distributional weights for translating individual welfare gains into aggregate social gains but also the targeting performance of programs and the allocation of benefits among program participants.

The use of distributional weights is rarely made explicit in Bank work or in the broader literature, in part because the implications for policy may be disturbing. Yet the fact that policy reforms are evaluated using poverty measures implies that such distributional weights are being used. One problem with distributional weights based on standard poverty measures of the Foster-Greer-Thorbecke class is that they place no weight at all on the welfare of the nonpoor. The framework being developed in this project will provide an alternative in which the gains to all members of society are taken into account, albeit with different weights. Starting from a well-known social welfare function, two summary parameters (one for growth, one for redistribution) are estimated for each program or policy to assess the impact on social welfare. The parameters are flexible enough to take into account weighting schemes with various degrees of emphasis placed on poor members of society.

The summary parameters providing the necessary information on the impact of a program or policy on welfare consist of a growth term (the mean benefit of the program) and a distributional term (who is covered by the program and in what amount). The distributional component can be decomposed into several components. The first measures the targeting performance of the program (that is, who is participating and who is not). The second measures the impact of the allocation rules for the distribution of the benefits among program participants. The third takes into account the fact that some nonparticipants have measures of welfare in the range of participants, which means that if targeting is not perfect, a loss will be incurred.

The study will apply the framework to various social programs and policies using household-level data from several Latin American countries (including Bolivia, Guatemala, Honduras, and Mexico). The results will show how the overall performance of various programs depends on both targeting and allocation rules and how the choice between programs can be given a welfare interpretation by using distributional weights.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org). With Shlomo Yitzhaki, Hebrew University, Jerusalem.
Completion date: March 2001.

Africa Nutrition Database Initiative

Lack of access to good-quality nutrition information for Africa has constrained the formulation of effective nutrition policies and strategies and impeded proper planning, monitoring, and evaluation of nutrition programs. To address this problem, the Africa Nutrition Database Initiative (ANDI) was launched in February 1997. This initiative was aimed at creating a user-friendly database on the Web covering anthropometric measures, micronutrient deficiencies, food security, demography, and poverty. The ANDI Web site (www.africanutrition.net) allows users to compare African countries on several indicators and to access subnational-level information. Because ANDI uses data that are already available and are continuously updated by the participating agencies, the maintenance costs are expected to be negligible.

The World Bank served as a catalyst for the initiative, proposing the effort and funding work on the technical aspects of developing the interagency database. The United Nations Administrative Committee on Coordination, Subcommittee on Nutrition is coordinating the work of the participating UN agencies. A memorandum of understanding for database sharing has been signed by the Food and Agriculture Organization, UNICEF, and the World Bank, with UNESCO and the World Health Organization as cooperating partners.

ANDI has developed a novel approach to databases that has the potential to yield savings in both cost and time in obtaining good-quality information. The database functions through an update engine and a query engine, with each participating agency responsible for maintaining and updating a set of indicators and ensuring quality. At regular intervals the update engine extracts key indicators from the agencies' databases and puts them in a standard electronic format in a common database. The common database is then copied to the local area network of each agency. The query engine placed in each agency's local area network then accesses the com-

mon database to produce specific outputs (such as tables, graphs, and maps). The query engine is programmed to ensure data comparability. Thus ANDI allows users to go to a single site rather than to the separate sites of the participating agencies. And it provides access to reliable, good-quality data that are automatically updated. In 2001 ANDI will be reviewed by the UN agency partners to determine whether it should continue as a separate operation or be integrated into other data initiatives.

ANDI has provided a good foundation for preliminary work on models for in-country nutrition information systems in three pilot countries: Eritrea, Mali, and Zambia. A nutrition information system is being operationalized in Mali, and discussions on doing so in Eritrea are under way. These efforts will build local capacity to use the information for better research and more effective planning, monitoring, and evaluation of nutrition programs.

Responsibility: Africa Region Technical Families, Human Development 2—Richard Seifman (rseifman @worldbank.org), and Institutional and Social Policy—Antoine Simonpietri. The Italian Trust Fund is contributing funding for the initiative.

Completion date: June 2001.

The Dynamics of Urban Poverty in Rio de Janeiro and Implications for Public Policy

This study takes advantage of high-quality data gathered 31 years ago to shed light on the intergenerational persistence of urban poverty. The baseline data consist of interviews conducted with 750 residents of squatter settlements in Rio de Janeiro in 1969. The interviews formed the basis of Janice Perlman's award-winning book *The Myth of Marginality* (Berkeley: University of California Press, 1976). This project tracked down more than half of the original respondents and administered a specially structured interview tied to the original. It also interviewed past and present community leaders.

Data from the interviews make it possible to construct life trajectories of the families, trajectories that trace their fortunes and the main events in their lives over the past 30 years. The study maps these trajectories against the major political and economic transformations in Brazil over the same period, shedding new light on the effects of public policies, including some (such as state housing programs) specifically targeted to the poor. The study also explores the survival strategies of households and the effectiveness of community and nongovernmental organizations as resources and as mediators of the effects of policy and economic and political change.

Few, if any, longitudinal survey data of this quality exist anywhere, and they are expected to illuminate new areas of impact by national and local policy aimed at helping the poor. Many government and Bank policies operate with the received wisdom that improved access to education and tenure will help lift the poor from poverty. But preliminary data appear to indicate that this may not be the case. These data will be used to address such important issues as the effectiveness of community-based resources in coping with crisis, the role of education in improving welfare among the poor, and the importance of community facilities and tenure. Information on these questions can help inform Bank policy and assistance relating to basic sanitation, squatter settlement upgrading, primary education, and primary health care.

The findings of the first phase of work, completed in the fall of 1999, were presented at a Bank seminar in November 1999. Findings of the main phase of work will be disseminated through working papers and a book.

Responsibility: Private Sector Development and Infrastructure Vice Presidency, Urban Development Division—Tim Campbell (tcampbell@worldbank.org). With Janice Perlman, Trinity College; Andre Urani, secretary of labor, City of Rio de Janeiro; Carlos Vainer, and Pedro Abramo, Federal University of Rio de Janeiro; and Jorge Fiori, University College London. The Tinker Foundation has contributed funding for this research.

Completion date: June 2001.

Report

Perlman, Janice, Carlos Vainer, Pedro Abramo, Rick Huber, and Tim Campbell. 1999. "The Dynamics of Urban Poverty and Implications for Public Policy: The Case of Rio de Janeiro, 1969–99." World Bank, Private Sector Development and Infrastructure Vice Presidency, Urban Development Division, Washington, D.C.

The Economics of Malaria

This study is aimed at contributing to the renewed effort to fight malaria, which, according to recent estimates, causes between 1.5 and 2.7 million deaths and around 600 million clinical cases a year. The study examines economic aspects of malaria and malaria control, with the goal being to improve policy recommendations.

The project has several components. The first is an analysis of the relationship between the incidence of fever and its treatment in Sub-Saharan Africa. One branch of this analysis uses Demographic and Health Survey data from more than 20 Sub-Saharan African countries to explore the geographic relationship between poverty and the incidence of fever, as well as the household-level relationship between household wealth, the incidence of fever, and treatment seeking behavior. Early results show that poverty and the incidence of fever tend to be only weakly related, but that treatment seeking behavior is strongly influenced by a household's economic status. Another branch of this analysis extends earlier work on malaria in Eritrea by analyzing the links between household income, the reported incidence of malaria, and its treatment.

The second component is an analytical review of social and epidemiological conditions for malaria and how differences in these conditions might affect policy prescriptions. This review has led to several early findings. First, epidemiological and ecological situations do not have a one-to-one relationship with economic situations, so public sector interventions need to incorporate information on both of these in order to promote malaria control. Second, strengthening the health care sector and improving the regulatory effectiveness of government are key to improving outcomes. Third, economic analyses should incorporate information on the behavior of households and the functioning of the health sector, aspects that typically are not incorporated in cost-benefit and cost-effectiveness analysis. Finally, additional research is needed to ascertain which determinants of demand for and supply of malaria control have the greatest impact in improving the efficiency of malaria control.

The third component of the study is a modeling exercise that combines epidemiological models with economic behavioral parameters to assess the sensitivity of policy recommendations to assumptions about these parameters.

Responsibility: Development Research Group, Poverty and Human Resources—Deon Filmer (dfilmer @worldbank.org), Mead Over, Maureen Cropper, and Varun Gauri; and South Asia, Health, Population, and Nutrition Sector Unit—Emmanuel Jimenez. With Christie Poulos, University of North Carolina; Lakshmi K. Raut, Yale University; and Fadi Balesh, McGill University.

Completion date: June 2001.

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 for the choice of policies. 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 research 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 unlikely to change. There also are unavoidable value judgments underlying measurement practices. The quality of the World Bank's 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 examines 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 and small households). It also investigates the different methods used for setting poverty lines and how much they matter to the policy con-

clusions drawn. And it studies ways of making better use of such nonincome indicators of welfare as health and education indicators.

A new strand of the research is investigating the properties of subjective welfare indicators, such as self-rated assessments of the minimum income needed to make ends meet, of consumption adequacy, and of whether the respondent is poor or not. A series of case studies (including Jamaica, Nepal, and the Russian Federation) are examining these methods as potential complements to more conventional, objective methods of measuring poverty and welfare.

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

Responsibility: Development Research Group, Poverty and Human Resources—Martin Ravallion (mravallion @worldbank.org), Peter Lanjouw, Michael Lokshin, and Menno Pradhan.

Completion date: June 2001.

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Optimal Policies for Controlling Infectious Diseases

This project is designed to generate and describe the essential features of the optimal paths of preventive and curative interventions for the control of infectious diseases. It merges two distinct literatures: the mathematical epidemiology literature that models the process of disease transmission with sets of differential equations and the literature on the optimal control of such sets of equations widely used in economics. Previous work by the researchers has shown that general analytical solutions to the problem are difficult to obtain. Further progress requires numerical analysis of alternative specifications.

The research strategy is to select a few common models of disease transmission that are amenable to different control strategies. These models will then be solved, and the timing and intensity of the policies involved will be examined. The first models will be of directly transmittable diseases (such as tuberculosis or sexually

transmitted diseases) and common vector-borne diseases (such as malaria or schistosomiasis).

Earlier policy-oriented analyses of these models were flawed because the characterizations of policy and behavior were overly simple. To correct this, this project will analyze differences in the scale economies of control technologies and individual behavior in preventing illness and in seeking care once ill.

Responsibility: Development Research Group, Public Economics—Jeffrey S. Hammer (jhammer@worldbank.org). With Mark Gersovitz, Johns Hopkins University.

Completion date: June 2001.

Private Transfers in a Cross-Section of Developing Countries

Comparisons of private transfers across countries can provide insights into the relation between country-specific institutions and private transfers (private transfers from adult children to their elderly parents, for example, might be less important in countries with more generous public pensions). But most studies of private transfers examine a single country. This study departs from the single-country case study approach by building a database of several developing countries from different regions of the world.

The study begins with the simple question: To what extent are patterns in private transfers similar around the world? It then highlights differences in private transfer behavior, particularly with respect to age patterns. The ultimate goal of the research is to make inferences about the relation between public and private transfers on a cross-country basis.

The main data sources are the World Bank Living Standards Measurement Study (LSMS) surveys. Countries covered include Albania, Bulgaria, Jamaica, Kazakhstan, the Kyrgyz Republic, Nepal, Nicaragua, Panama, Peru, the Russian Federation, and Vietnam. The extensive coverage of the LSMS surveys provides a unique opportunity to perform a consistent cross-country econometric analysis of the determinants and magnitude of private transfers. These surveys overcome one of the main criticisms in the literature, namely, the difficulty of defining interhousehold transfers. The questionnaire design and data quality controls allow comparable definitions of private transfers and income; analyzing the responses to the same questions across countries will improve the accuracy of the analysis and yield insights into the underlying differences in behavior. The evidence should help assess the extent of crowding out of private transfers for countries at different stages of development.

Responsibility: South Asia Region, Education Sector Unit—Emmanuel Jimenez (ejimenez2@worldbank.org). With Emanuela Galasso; and Don Cox, Boston College.

Completion date: June 2001.

The Public Economics of Health Reform

This project encompasses research efforts that apply standard techniques of public economics—and develop and apply extensions to these techniques—to the problems of the health sector in developing countries. The approach is to formulate the problems of the sector in a way that is consistent with a public expenditure review—that is, to examine the equity, efficiency, and implementability of policies and expenditure regimes in the sector.

- *Equity.* This component is based on analyses of about 60 Demographic and Health Surveys. These surveys do not include direct measures of income or consumption but do have a battery of questions relating to housing characteristics and ownership of consumer durables. In the context of sector work in Brazil and India, the project developed an index of "wealth" from these questions using principal components analysis. This index is used to examine the relationship between health measures (infant and child mortality, nutritional status, incidence of disease) and family wealth. The analytic technique is a design-adaptive nonparametric regression. Results for infant and child mortality show pronounced nonlinear relationships, with the mortality rate falling steeply relative to "wealth" at various points in the wealth distribution in most countries.

For a subset of countries for which data are available on the distribution of income or consumption in terms of purchasing power parity U.S. dollars, the wealth index has been scaled to that distribution to yield a common consumption standard. The relative contribution of country-specific and common patterns is then assessed. In an interesting result, most countries exhibit a pronounced

"kink" in the graph of height-for-age as a function of this measure of income: nutritional status improves rapidly with income, then levels off sharply at a distinct point.

The research has also examined the principal determinants of health status. Results thus far confirm the results in the literature on the importance of the mother's education as a determinant of child mortality and show that there is often a strong relationship with water and sanitation. Results also point to a tight link between wealth and access to water and sanitation services. In the surveys that include data on the availability of public health care, it is difficult to find any relationship between that and health status.

• *Efficiency.* The private health care sector is characterized by two major types of market failure and the interaction between them: the principal-agent problem associated with a medical care provider's knowledge, and the general absence of insurance markets, due primarily to adverse selection and moral hazard. This part of the project attempts to develop tools for modeling markets with these characteristics, measuring the welfare loss from the lack of insurance and assessing the effect of different payment systems (fee for service, capitation, salaried positions) on health care.

• *Implementability.* Partly as a result of the efficiency problems, the public sector has always been a major provider of medical services. For standard public economics reasons—the inherent market failures—public intervention is warranted. But the quality of public provision has ranged from good to horrendous. This part of the project will look at alternative incentive arrangements for the delivery of public services, focusing initially on decentralization and contracts with nongovernmental organizations.

Responsibility: Development Research Group, Public Economics—Jeffrey S. Hammer (jhammer@worldbank.org) and Varun Gauri. With Paolo Belli, Harvard University; William G. Jack, Georgetown University; and Maria Eugenia Bonilla-Chacin, Johns Hopkins University.
Completion date: June 2001.

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Safety Nets in an Emerging Market Economy

Vietnam's transition to a market economy has stimulated strong growth. Continued broad-based growth will help raise living standards for most people. But many people will continue to be poor, and most will remain vulnerable to risk. Under the former command economy, lack of mobility ensured community and family solidarity, and households belonged to local cooperatives that provided for the welfare of their members. Developing a reliable and effective system of redistributive transfers and safety nets to replace these faltering institutions is an important part of the successful transition to a market economy.

This project consists of two parts. The first uses Vietnam as a case study with which to assess the strengths and weaknesses of an existing safety net program. Because of the lack of good data, the study provides a broad qualitative assessment, identifying key issues on which more needs to be learned. A paper presents a critical overview of existing public safety net programs, describes the principal sources of household vulnerability, and summarizes what is known about coping strategies. It also includes an agenda for strengthening the design and implementation of the main safety net programs.

The recently released 1998 Vietnam Living Standards Survey provides previously unavailable data on policy coverage across communes and, in some cases, households. Quantitative analytical work can now be performed to better understand and assess the performance of programs aimed at reducing poverty and providing insurance to poor households. Information on who the poor are can now be combined with information on needs, program participation, levels of social relief dis-

bursements, and outcomes. In addition, the new survey's coverage of many of the same households and communities that were interviewed in the 1992 survey creates a panel that can be used to test and monitor the performance of interventions.

The second part of the project examines whether equally poor communes in different provinces are treated equally and evaluates how well the safety net and its components perform dynamically. It assesses how well the safety net protects people against poverty, as opposed to promoting them out of poverty. The determinants of consumption changes over time will be modeled as a function of (among other things) program placement at the household level. Poverty transition matrices will then be compared with and without safety net programs, in order to assess the performance of the safety net.

Responsibility: Development Research Group, Public Economics—Dominique van de Walle (dvandewalle @worldbank.org).

Completion date: June 2001.

Reports

van de Walle, Dominique. 1999. "Protecting the Poor in Vietnam's Emerging Market Economy." *Vietnam's Socioeconomic Development: A Social Science Review* 19: 59–80.

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Welfare Impacts of Policy under Conditions of Inequality

This study examines the welfare impact of policies on the poor and disadvantaged when there is inequality among groups, such as ethnic and gender groups. The project examines the sources of inequality among ethnic groups in Vietnam, where ethnic minorities tend to be concentrated in remote rural areas and typically have lower standards of living than the ethnic majority. The research examines how much of minorities' lower living standards is attributable to poor economic characteristics and how much is due to low returns to characteristics and whether a self-reinforcing culture of poverty exists, reflecting patterns of current and past discrimination. The results show that differences in returns to productive characteristics are an important explanation for ethnic inequality, particularly in areas where both groups reside. There is evidence of compensating behavior on the part of minorities.

The results suggest that it is not enough to target poor areas to redress ethnic inequality. Policies need to reach minority households within poor areas and to explicitly recognize behavioral patterns that have served the minorities well in the short term but intensify ethnic differentials in the longer term. The majority group's model of income generation can serve as a guide on how to fight poverty among ethnic minority groups.

This research has been disseminated through seminars at the World Bank (August 1999); Delta-INRA, Paris (December 1999); ARQADE, Université de Toulouse (October 1999); and Tinbergen Institute, Amsterdam (March 2000).

Responsibility: Development Research Group—Dominique van de Walle (dvandewalle@worldbank.org). With Dileni Gunewardena, University of Peradeniya, Sri Lanka.

Completion date: June 2001.

Report

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Patterns of Inequality and Government Intervention

The Deininger-Squire database on income distribution has become a standard source in cross-country analysis of the relationship between inequality and growth. This project aims to update and improve the database, thus increasing its usefulness.

Taking advantage of the large number of microeconomic data sets that have become available since the database was first put together, the project will increase both the number of countries and the observations covered by the database. It will incorporate data on decile income shares and a rural-urban disaggregation. And it will add data on access to key social services by income decile, facilitating more comprehensive analysis of changes in

the welfare of the poor, their access to economic opportunities, and the role of government programs in expanding these opportunities.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org), and Development Economics Senior Vice Presidency, Global Development Network—Lyn Squire. With Kihoon Lee, University of Maryland; and Changquing Sun, University of California at Berkeley.

Completion date: July 2001.

Poverty and Health

This research project takes as its starting point the two principal objectives of the World Bank's Health, Nutrition, and Population Network: to improve health and nutrition outcomes for the world's poor and to reduce the impoverishing effects of adverse outcomes. Using data from household surveys, this research aims to shed light on a number of questions raised by these objectives: For example, how large are the poor-nonpoor gaps in health and nutrition outcomes in different countries? Why do the gaps exist, and what explains the differences in such gaps across countries and over time? What effects have specific programs and policies had on poor-nonpoor differences in health and nutrition outcomes? To what extent do adverse outcomes impoverish households, and how do the effects vary across countries? What role do health insurance and prepayment schemes play in cushioning households from the impoverishing effects of adverse outcomes?

New research to measure poor-nonpoor inequalities in health and nutrition outcomes has applied methods based on concentration indexes. New research on the causes of such inequalities has developed decompositions of the concentration index measure of outcome inequalities—a decomposition for levels of inequality and another for changes or differences in inequality. Both involve linking regression-based estimates of the elasticities of health and nutrition outcomes with respect to their causes with data on inequalities in these causes.

The research on poor-nonpoor inequalities in health and nutrition outcomes has produced a number of findings. For example, work on malnutrition has shown that rates of malnutrition decline with rising household consumption in almost all countries studied, and that although the poor-nonpoor inequalities appear to vary across countries, the levels of inequality are often not significantly different from one another. Egypt and Vietnam repeatedly emerge as countries with the least pro-rich distributions, while Morocco, Nicaragua, and Peru emerge with the most unequal distributions. The work on the causes of health inequalities has shown that in both the countries studied to date, inequalities in education and in income are the biggest sources of health inequalities. By contrast, inequalities in access to medical care appear to account for much less of the inequality in health outcomes.

The research on the impoverishing effects of adverse health and nutrition outcomes initially involves examining the reduction in living standards associated with out-of-pocket payments for health services, both as a proportion of household consumption and relative to a poverty line; seeing how these vary at different points in the consumption distribution; and determining the extent to which out-of-pocket payments contribute to poverty. Regression models will be developed to examine the role of insurance and prepayment schemes in cushioning households from the impoverishing effects of out-of-pocket payments.

Results from this research thus far indicate that the impact of out-of-pocket payments on poverty appears to vary across countries, with large impacts in such countries as Bangladesh and China, and smaller impacts in such countries as Bulgaria and Egypt. The point of impact also seems to differ. In Bangladesh the poverty impact appears to reflect increased poverty among households that would not have been poor had they not spent so much on health services, while in China it largely reflects the increased poverty of households that would have been poor even in the absence of out-of-pocket payments.

Findings have been presented at the International Health Economics Association Congress in Rotterdam in June 1999; the U.K. Department for International Development in London in October 1999; the Rockefeller Foundation's Global Health Equity Initiative in Puyuhuapi, Chile, in November 1999; the Pan-American Health Organization in Washington, D.C., in November 1999; an interagency meeting on poverty and

health in London in January 2000; and an Argentine and Latin American health economics associations conference in Iguazu, Argentina, in April 2000. Findings and methods are also discussed in the Bank's source book on poverty reduction strategy papers.

Responsibility: Human Development Network, Health, Nutrition, and Population Team—Adam Wagstaff (awagstaff@worldbank.org). The Belgian and Japanese Trust Funds contributed funding for the research.

Completion date: August 2001.

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Social Exclusion and Poverty

This project examines how social exclusion prevents people from participating in and benefiting from the opportunities provided by human development programs and economic growth. It looks at how social institutions interact with formal institutions to shape development outcomes in poor communities. And it investigates how policies can be reshaped to reduce social exclusion and increase synergies between informal and formal institutions.

Several studies served as background tothe World Bank's *World Development Report 2000/2001: Attacking Poverty* (New York: Oxford University Press, 2000): a theoretical analysis of social exclusion, a study of the ramifications of gender-based exclusion for poverty and development, a cross-country study of how land and other agrarian reforms interact with changes in local administrative institutions to generate state-community synergies for development, and an analysis of the links between social exclusion, poverty, and health. Two additional studies are under way—an analysis of social exclusion in the context of urban poverty and a study of public health programs, which provide a public good and are therefore intrinsically targeted toward the poor.

The research draws on extensive analysis of secondary source material as well as analyzing existing data sets and

collecting new data. It has been conducted in close collaboration with major institutions (such as Harvard University), government agencies (All-India Institute of Medical Sciences), and research institutions in developing countries (Institute of Economic Growth and National Council of Applied Economic Research, both in New Delhi).

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org), Monica Das Gupta, and Michael Woolcock, and Poverty and Human Resources—Vijayendra Rao and Ananya Basu. With Kameshwar Prasad, All-India Institute of Medical Sciences, New Delhi; Debendra Gupta, National Council of Applied Economic Research, New Delhi; and Paolo Belli, Harvard University. The Netherlands Trust Fund has contributed funding for the research.

Completion date: December 2001.

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The Impact of Deworming Treatment on Primary School Performance in Busia, Kenya

This research project follows a preliminary feasibility study that measured the prevalence and intensity of parasitic infection among children in 25 schools in Busia District, Kenya, and determined whether such characteristics as socioeconomic status, access to sanitation, and personal hygiene are correlated with infection status. Information on such characteristics was collected through oral interviews of pupils and through direct observations by field interviewers. The study then estimated the relationship between observed characteristics and infection. Through this modeling, it calculated the "propensity scores" of infection for all pupils. The propensity score is the conditional probability of being moderately or heavily infected given a pupil's observed characteristics.

The present study is evaluating the effect of mass deworming treatment (treating all students in a school) on education outcomes in Busia District. The deworming treatment is being phased in at 75 primary schools (with an enrollment of about 15,000 students). The treatment is being provided to randomly assigned schools, while the schools not selected for treatment serve as a control group. The propensity score method will be used to identify pupils likely to be moderately or heavily infected in the control schools without the need to collect medical and parasitological information in these schools.

In the first phase of the project, in 1998, deworming treatment was provided to 25 of the 75 schools. The remaining 50 were a control group. During the second and third years of the project, 1999 and 2000, treatment is being provided to the initial 25 schools plus an additional 25. Twenty-five schools will thus remain as a control group. This experimental design will allow an unbiased estimation of the impact of deworming treatment on education outcomes—school attendance, grade progression, dropout rates, and academic performance.

Preliminary results show that after one year of treatment students are less likely to be absent or to drop out. In contrast, these preliminary results show no impact of treatment on student performance on academic tests.

The findings from this study will be disseminated through published papers and through seminars at the World Bank and the Oxford University Centre for the Epidemiology of Infectious Disease.

Responsibility: Development Research Group, Poverty and Human Resources—Paul Glewwe (pglewwe @worldbank.org) and Sylvie Moulin; and Human Development Network, Education Team—Donald Bundy. With Edward Miguel and Michael Kremer, Harvard University; Simon Brooker, Oxford University Centre for the

Epidemiology of Infectious Disease; Alfred Luoba, Kenya Division of Vector Borne Diseases; and Internationaal Christelijk Steunfonds, Nairobi.
Completion date: April 2002.

Report

Miguel, Edward, and Michael Kremer. "The Educational Impact of Deworming in Kenya." Harvard University, Department of Economics, Cambridge, Mass.

The Economics of Political and Criminal Violence

This research seeks to answer the following questions: Why do civil wars occur? What are the determinants of violent crime? What are the economic causes and consequences of political and criminal violence? Can we predict and prevent these phenomena? What economic policies are appropriate in countries that have undergone periods of large-scale violence and political conflict?

The project uses several methodologies, including game-theoretic modeling, econometric modeling, and hypothesis testing. Its multidisciplinary approach combines perspectives from law, economics, criminology, sociology, and political science.

The project has developed a large database on crime and violence in 161 countries, including most developing countries, combining social, economic, and political indicators. To build this database, the project has drawn on other World Bank databases and on related projects in academic institutions.

The project's findings are expected to contribute to the Bank's advice on the microeconomic and macroeconomic management of countries under risk of civil war and on policies during postconflict reconstruction. In addition, it is hoped that the project will identify sets of optimal policies for countries under different levels of risk of war and for countries with different backgrounds of conflict. Toward this goal, the project has developed a close working relationship with the Bank's Postconflict Unit and has begun to develop a set of conflict indicators that Bank country teams will be able to use to determine the optimal allocation of funds among countries that are or may be affected by violent conflict.

The project has built a strong local research capacity in developing countries by incorporating researchers from such countries; during the case study phase it will pair U.S.-based researchers with scholars in the countries studied. It has also built a strong network of researchers through its Web site, using it to disseminate information and research findings and to facilitate communication among researchers around the world who are interested in this topic.

The project was launched with a workshop in February 1999. Since then it has held a conference at Princeton University to present findings on the causes of civil war. The papers presented at that conference will be published as a special issue of the *Journal of Conflict Resolution*. Two more conferences are planned—one on war duration and postconflict issues, at the London School of Economics and Political Science, and another to present final results, in Olso, Norway.

Papers and data from the project are posted on its Web site, at www.worldbank.org/research/conflict/index.htm.

Responsibility: Development Research Group, Office of the Director—Paul Collier (pcollier@worldbank.org), Public Economics—Shantayanan Devarajan, Ibrahim Elbadawi, and Nicholas Sambanis, Macroeconomics and Growth—Norman Loayza, William Easterly, and David Dollar, Trade—Maurice Schiff and Roberta Gatti, and Poverty and Human Resources—Emmanuel Jimenez and Vijayendra Rao; and Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit. With Anke Hoeffler, Oxford University; Jeffrey Herbst and Michael Doyle, Princeton University; Patrick Regan, Binghamton University; Robert Bates and Edward Glaeser, Harvard University; Nadeem ul Haque, International Monetary Fund; Gregory Hess, Oberlin College; Njuguna Ndung'u, University of Nairobi; Jean-Paul Azam, Université de Toulouse; Barbara Walter, University of California at San Diego; James Fearon and Stephen Stedman, Stanford University; Joshua Epstein, Miles Parker, and John Steinbruner, Brookings Institution; Steve Levitt, University of Chicago; Pablo Fajnzylber, Federal University of Minas Gerais; Ann Piehl, University of California at Berkeley; Mauricio Rubio and Oriana Bandiera, Universidad Carlos III de Madrid; Nils Peter Gledisch, Indra de Soysa, and Havard Hergre, International Peace Research Institute; Scott Gates, International Peace

Research Institute and Michigan State University; and Anthony William Gerrard, University of Birmingham. **Completion date:** June 2002.

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World Poverty Monitoring

Is poverty declining in the developing world? Because little effort has gone into compiling and analyzing distributional data on a reasonably comparable basis, this question is surprisingly difficult to address. Yet there is a clear need to do so, both 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 uses primary data sources and reestimates all poverty measures on a consistent basis, converting local currencies to constant purchasing power parity values. It also tests the robustness of comparisons across regions and over time to measurement assumptions. The data set covers 83 countries, with data for two or more points in time for 50 countries.

The estimates indicate that by 1998, 1.2 billion people—roughly one quarter of the population covered—were living on less than a dollar a day at 1993 prices. The incidence of absolute poverty in the devel-

oping world as a whole fell slightly between 1987 and 1998, and the total number of poor remained the same. But there is marked variation among regions and countries, with the number of poor rising in most of Africa, Europe and Central Asia, and Latin America and the Caribbean and falling in East Asia.

Results of this research are reported in the World Bank's annual *World Development Indicators* and in its *World Development Report 2000/2001: Attacking Poverty* (New York: Oxford University Press, 2000). The data from this project have also been used in a number of studies of cross-country differences in progress in reducing poverty and inequality.

Responsibility: Development Research Group, Poverty and Human Resources—Martin Ravallion (mravallion @worldbank.org) and Shaohua Chen.

Completion date: June 2002.

Reports

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Urban Poverty, Risk Management, and Social Capital

This project develops an interdisciplinary and multimethod approach to study how social and cultural institutions help poor households in urban areas cope with risk and vulnerability. The study has both a substantive and a methodological purpose. The substantive purpose is to study aspects of the relation between social institutions and poverty in urban India in order to improve the effectiveness of poverty reduction policies and programs. The methodological purpose is to help develop an integrated qualitative and quantitative approach that combines econometrics and ethnographic methods with economic and social theory to study how poor urban households use social resources to manage risk.

The data sources for the study are primary survey data and qualitative information from focus groups and in-depth interviews. Fieldwork began in October 1999 and was completed in January 2000. The data were then entered and cleaned. Data analysis has just begun. The results are expected to inform the design of slum infrastructure projects and social protection programs for the urban poor.

Responsibility: Development Research Group, Poverty and Human Resources—Vijayendra Rao (vrao@worldbank.org) and Michael Woolcock. With Arup Mitra, Institute of Economic Growth, Delhi; and Soumya Chattopadhyaya, University of Maryland at College Park. The Netherlands Trust Fund is contributing funding for this research.

Completion date: October 2002.

The Living Standards Measurement Study, Phase 3

The Living Standards Measurement Study (LSMS) was established by the World Bank in 1980 to explore ways of improving the type and quality of household data in developing countries. The LSMS has contributed to both the quantity and the quality of research possible on poverty and human resource issues. It has generated methods of data collection and survey design and provided support for new, high-quality, multitopic household surveys as well as further research into improving survey data and analysis. LSMS surveys have been conducted

in more than 20 countries, generating more than 40 data sets. These data sets have been the key input for much of the work on poverty in the World Bank and have supported nearly 400 academic studies. The LSMS has provided policymakers with timely data for designing and evaluating social and economic programs.

The present phase of the work focuses on supporting the decentralization of the LSMS program while maintaining high-quality data collection and analysis. Demand for new surveys continues to come from countries and Bank operational units, and the LSMS provides tools, expertise, and research that respond to the needs of survey planners, policymakers, and analysts:

- Tools for survey planners (manuals and training courses on surveys and analysis).
- Research on survey design methods (questionnaire design, measurement of consumption for welfare, the effect of sampling error, and various experiments in measurement).
- Operational support for new surveys (from appraisal to supervision to evaluation).
- A data bank (archiving the LSMS surveys with the necessary documentation and disseminating data sets).
- Publications and dissemination (the LSMS Working Paper Series).
- The LSMS Web site (www.worldbank.org/lsms), which contains information on all the LSMS surveys as well as the data sets or information on how to obtain them.

As part of the decentralization and capacity building efforts in phase 3, the Bank staff and consultants involved in the LSMS program work closely with counterparts and clients in the Bank and externally, including statistical offices in developing countries, the Inter-American Development Bank, the Economic Commission for Latin America and the Caribbean, the United Nations Development Programme, the U.S. Bureau of the Census, and the U.S. Bureau of Labor Statistics.

Responsibility: Development Research Group, Poverty and Human Resources—Kinnon Scott (kscott1@worldbank.org), Martha Ainsworth, Harold Alderman, Calogero Carletto, Diane Steele, and Tilahun Temesgen. With Benedicte de la Briere.

Completion date: Ongoing.

Social Capital

The social dimensions of development are increasingly recognized as important determinants of individual well-being and institutional performance. This project consists of a number of studies that investigate the social dimensions of development, with the aim of improving the theoretical foundations, empirical support, and quality of the policy recommendations emerging from research on this subject.

The studies use several analytical approaches, including formal modeling, econometric analysis, and qualitative analysis. And they draw on a variety of sources, ranging from literature reviews and secondary sources (such as the World Bank Institute) to original fieldwork consisting of interviews and household surveys.

The principal findings pertain to how different types of social networks in poor communities are deployed for different purposes in managing risk and opportunity. The findings have implications for how external agents (governments, aid agencies, nongovernmental organizations) can best intervene in poor communities and how they can leverage—or even build—social ties connecting the poor to markets and to formal institutions. This work has directly informed the *World Bank's World Development Report 2000/2001: Attacking Poverty* (New York: Oxford University Press, 2000).

The research is expected to improve the quality of Bank-supported projects that are concerned, implicitly or explicitly, with encouraging the participation of the poor and improving institutional quality. Bank operations staff have been asked to contribute to future work examining the impact of social capital on development projects.

In Colombia and Romania this work has become the foundation for major conceptual and policy analysis. In Colombia social capital has served as the basis for a new urban renewal initiative designed to lower crime and increase citizen well-being. In Romania a social capital framework has become the basis for building a dialogue among stakeholders (unions, government officials, media representatives) that for decades have not communicated with one another. And in India the findings of one study have led to changes in the public distribution system for foodgrains.

Results from this research project were presented in the World Bank Institute's civil society program in Romania and at conferences at Boston University, Cambridge University, Michigan State University, Middlebury College, Oxford University, the University of Tasmania, the University of Technology at Sydney, the Ford Foundation, the Kettering Foundation, the Australian Institute of Family Studies, the Australian Department of Family and Community Studies, the Organisation for Economic Co-operation and Development, the United Nations World Summit for Social Development, and meetings of the American Agricultural Economics Association. The work also forms the foundation for a new course to be offered at Harvard University.

Responsibility: Development Research Group, Poverty and Human Resources—Vijayendra Rao (vrao@worldbank.org) and Michael Woolcock.

Completion date: Ongoing.

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Bloch, Francis, and Vijayendra Rao. 2000. "Statistical Discrimination and Social Assimilation." World Bank, Development Research Group, Washington, D.C.

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Labor Demand and Reform

There are increasing fears that trade reform—and globalization more generally—will increase the uncertainty faced by average workers, particularly the unskilled. One channel through which this may occur, it has been argued, is the wage elasticity of labor demand—the percentage by which employment falls if the wage rises 1 percent. It is argued that the increased competitiveness of product markets and the greater access to foreign inputs may increase wage elasticities, implying that any shock to firm demand will necessarily lead to a larger fall in wages or, if wages are sticky, to a greater fall in employment. It has also been posited that the higher elasticity for unskilled workers contributes to the worsening of unskilled relative to skilled wages observed in some liberalizing countries.

This research project tested that argument: Does globalization lead to higher labor demand elasticities and thus greater volatility for workers? Or, in concrete terms, what impact does trade liberalization have on own wage labor demand elasticities, for both continuing firms and those entering and exiting?

The study estimated consistent, state-of-the-art labor demand elasticities using establishment-level panel data from Chile and Colombia (cases of increased trade restrictions followed by liberalization) and Mexico and Peru (cases of rapid liberalization). This was done using the Arellano-Bond generalized method of moment in differences, Blundell and Bond systems estimators, and ordinary least squares regressions.

The study first focused on movements in labor demand within continuing firms, deriving necessary theory and empirical specifications from standard neoclassical production or cost functions. But as has now been documented extensively in the United States and in this study as well, a large fraction of movements in the stock of jobs, somewhere between 20 percent and 40 percent, is driven by the entry and exit of firms. Understanding the overall labor demand elasticities that workers face therefore requires focusing on both continuing firms and entering and exiting firms.

The study's findings suggest that trade liberalization has relatively little impact on demand elasticities. Moreover, estimates depend greatly on technique and time period, suggesting that drawing policy conclusions from comparisons of demand elasticities may be difficult. The entry and exit of firms is responsible for a substantial fraction of net job creation. The elasticities of net job creation for this group are similar to those for continuing firms and also show ambiguous effects of trade liberalization.

The research has several implications for operations in the World Bank. It produced the most precise estimates to date of own wage labor demand elasticities, necessary for estimating the impact of minimum wages, labor market distortions, and other variables that affect the cost of labor. Its work on firm dynamics is central to understanding the process of job creation in liberalizing countries. Its findings suggest that policy not be based on comparative labor demand elasticities unless the numbers are truly comparable in methodology, data, and position in the business cycle. And finally, its results should reduce fears about workers facing greater risk as a result of globalization.

The research also contributed directly to operational activity. The elasticities it generated were used in the simulations for the Colombia Emergency Employment Program. And the final working paper will serve as a guide to best practice in estimating labor demand elasticities.

Results have been presented at the Latin American and Caribbean Economic Association meetings (October 1999, in Chile), the Latin Meetings of the Econometric Society (August 1999, in Mexico), and the Sixth Annual Bank Conference on Development in Latin America and the Caribbean (June 2000, in Washington, D.C.). In addition, the main report produced by the project is being disseminated through a "road show" throughout Latin America, with the aim of generating discussion about appropriate policies for dealing with economic

risk in the global economy. Presentations have also been made in the Bank.

Findings are available on the Web at wbln0018.worldbank.org/external/lac/lac.nsf.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—William Maloney (wmaloney@worldbank.org). With Pablo Fajnzylber, Federal University of Minas Gerais; Eduardo Ribeiro, Federal University of Rio Grande do Sul; and Jaime Saavedra and Maximo Torero, Grupo para Desarrollo (GRADE).

Completion date: April 2000.

Report

de Ferranti, David, Guillermo E. Perry, Indermit S. Gill, and Luis Servén. 2000. *Securing Our Future in a Global Economy.* Latin American and Caribbean Studies Series. Washington, D.C.: World Bank.

Income Support for the Unemployed: Mandatory Severance Pay in Peru

This research was part of a broader project on income support programs for the unemployed in Latin America, undertaken jointly by the Latin America and the Caribbean Region's Office of the Chief Economist and the Development Research Group. The broader project was aimed at improving the understanding of who the unemployed are and assessing five income support programs that have been tried in middle-income countries: public work, unemployment insurance, mandatory severance pay, individual unemployment savings accounts, and training for the unemployed. This research dealt with mandatory severance pay, focusing on Peru in the 1990s.

In Peru, as in many other developing countries, employers have a legal obligation to grant severance pay to workers dismissed through no fault of their own. This research assessed the effects of this mandate using individual records from three rounds of a household survey. Relying on five indicators of coverage, the research found that roughly 20 percent of private sector workers are legally entitled to severance pay, but only half those covered are likely to get it in the event of dismissal. Legal coverage and, especially, actual coverage are more prevalent among wealthier workers. Few among the unemployed receive severance pay, which suggests that those covered are less likely to lose their jobs. Combining several empirical strategies, the research also found that covered workers do not "pay" for their severance pay through lower wages. Finally, it found that consumption among unemployed workers who received severance pay was 20–30 percent higher than among those who did not.

Findings were disseminated through a conference in Washington, D.C., in June 2000. The conference released the report *Securing Our Future in a Global Economy* (Washington, D.C.: World Bank, 2000), to which this research contributed.

Responsibility: Development Research Group, Poverty and Human Resources—Martín Rama (mrama@worldbank.org) and Donna MacIsaac. The Canadian and Japanese Trust Funds contributed funding for the research.

Completion date: June 2000.

Report

MacIsaac, Donna, and Martín Rama. 2000. "Mandatory Severance Pay in Peru: An Assessment of Its Coverage and Effects Using Panel Data." World Bank, Development Research Group, Washington, D.C.

Job Turnover and Total Factor Productivity: Microeconomic Evidence from Taiwan (China)

A crucial factor in economic performance is how well a country reallocates its resources from less productive to more productive uses in response to long-term changes in demand patterns and technology. Recent studies have suggested that the fortunes of individual firms are only marginally determined by industry-level changes, and firm-level data are thus vital for exploring issues in the evolution of industries.

This research project focused on labor as one such resource that must be reallocated as the fortunes of the employing firms change. The analysis was based on detailed firm-level data from the Manufacturing Censuses of Taiwan (China), for 1986 and 1991. Taiwan (China), is an interesting case because, in contrast to several of its struggling neighbors, it has so far escaped the effects of the East Asian financial crisis with a small devaluation of its currency and modest declines in share prices. Economic performance remains strong. Thus one of the

main objectives of the research was to understand the extent to which the industrial structure of Taiwan (China), particularly its labor market, has contributed to its ability to withstand macroeconomic shocks.

Using measures of firms' job creation and destruction rates, with the firms classified by their turnover status, the study addressed two questions. First, what is the underlying pattern of gross job flows and the importance of incumbent firms relative to turnover firms in the net growth of jobs in Taiwanese manufacturing? And second, what types of firms are most proficient at creating new jobs? To address the second question, firms were further classified by quartiles of employment size and total factor productivity.

The results show that while the manufacturing sector gained fewer than 9,000 workers in 1986–91, more than one million jobs were created and more than one million destroyed. In any given year an average of about 12 in 100 manufacturing jobs open up (compared with 10 in 100 in the United States), and a similar number disappear. This large-scale reshuffling of employment is generally interpreted to reflect a flexible and fluid labor market. In addition, of the 1.89 million jobs in 1986, only about 40 percent were retained jobs held in continuing firms. The rest were lost through the contraction of incumbents or through shutdowns. In 1991 the vast majority of jobs were new positions created by entrants rather than by the expansion of existing firms.

Thus while the overall job creation and destruction rates in Taiwan (China) are in line with those in other countries—industrial (Canada and the United States) and developing (Chile and Colombia)—the findings indicate that, unlike in these economies, in Taiwan (China) the entry and exit of firms is the primary source of job turnover, not the expansion and contraction of continuing firms.

The findings also show that job destruction rates are negatively correlated with total factor productivity across all industries, while job creation rates are not systematically related to total factor productivity. Together, these findings mean that net employment growth increases with total factor productivity, with high-productivity firms having higher net job creation rates than low-productivity firms.

Finally, the study shows that, just as in the United States, smaller employers have a much higher gross job creation rate than their larger counterparts. But unlike in the United States, gross job destruction rates decline sharply with size in only a handful of industries and actually increase with size in others. Given the predominance of small enterprises, this evidence suggests that, contrary to findings in the United States, this group of firms makes an important contribution to net job creation.

Responsibility: Private Sector Development Department, Business Environment Unit—Geeta Batra (gbatra @worldbank.org). With Bee Aw and Tor Winston, Pennsylvania State University.

Completion date: June 2000.

Report

Aw, Bee, and Geeta Batra. 2000. "Job Turnover and Total Factor Productivity: Micro Evidence from Taiwan (China)." PSD Occasional Paper 43. World Bank, Private Sector Development Department, Washington, D.C.

Gender, Law, and Development

Gender outcomes of development policy are determined in part by a country's institutional environment. That environment reflects social and cultural norms that shape the roles of men and women; the legal and regulatory framework, which may validate gender differences whether or not they improve individual welfare; and the economic context, which includes technology, the state of markets, and the prevailing gender division of labor. These institutions create incentives and opportunities that shape individual and group choices and behaviors, including how men and women are able to respond to incentives from development policies and programs.

This research reviews the cross-country evidence on how different aspects of the law treat men and women. It includes a study on family law (including laws relating to divorce, child custody, separation rights, and punishment for domestic violence) and another on labor law (including protection and minimum wage laws). Both studies present evidence on the legal framework in different countries and the mechanisms for enforcing these laws, and both review the effect the laws have had on the welfare of men and women.

The first study is a comprehensive survey of the incidence and types of gender-specific, gender-neutral, and gender-blind labor market laws and policies in developing countries, focusing on East Asia. It presents a theoretical context for understanding the impact of these labor market policies on women's employment, wages, and working hours. The study concludes that social policies designed to protect female workers and promote workplace equality have controversial effects on labor market outcomes. Working-hour restrictions and mandated maternity benefits help safeguard women's family responsibilities and ensure their physical security, but these regulations can raise the cost to firms of hiring women. Equal pay and equal opportunity measures potentially increase women's relative earnings and reduce occupational segregation, but they are difficult to implement and enforce. Although not explicitly designed to target women's well-being or equality, seemingly gender-blind policies can yield different outcomes for men and women.

The second study examines the meaning of equal protection laws as given in different international conventions and national constitutions, reviews how laws can discriminate against women or men and provides concrete examples of such discrimination in different countries, and relates discriminatory laws to intrahousehold allocation of power and resources. In particular, it investigates whether laws relating to violence against women have been effective in protecting women. It also assesses the extent to which law matters (that is, whether legal literacy programs, judicial training, test case strategies, and legal reform initiatives work and whether law creates social consensus or follows it).

Responsibility: Development Research Group, Poverty and Human Resources—Elizabeth King (eking@worldbank.org); and Poverty Reduction and Economic Management Network, Gender Division—Andrew D. Mason. With Anne Tierney Goldstein, International Women Judges Foundation and George Washington University Law Center; and Yana van der Meulen Rodgers, College of William and Mary.

Completion date: September 2000.

Report

van der Meulen Rodgers, Yana. 1999. "Protecting Women and Promoting Equality in the Labor Market: Theory and Evidence." Policy Research Report on Gender and Development Working Paper 6. World Bank, Development Research Group, Washington, D.C. [www.worldbank.org/gender/prr].

Policy Research Report on Gender and Development

Over the past several decades gender issues have gained greater prominence in the debate on development. Yet the importance of bringing a gender perspective to policy analysis and design still is not widely understood, nor have the lessons for development been fully integrated by donors and national policymakers.

This research has focused on the many links between gender, policy, and development outcomes—and on such topics as the gender dimensions of poverty, how intrahousehold resource allocation and social capital affect gender outcomes, and how legal and regulatory environments promote or inhibit gender equality (see the abstract in this volume for Gender, Law, and Development). The findings are reported in a draft World Bank Policy Research Report on gender and development (currently titled *Engendering Development*). The report strengthens the analytical and empirical underpinnings of promoting gender equality and, in doing so, clarifies the value added of bringing a gender perspective to the analysis and design of development policies and projects. The study has drawn on existing analytical and empirical work on gender, recent policy and program experience, about 30 background papers prepared by a multidisciplinary group of researchers, and analysis of new empirical evidence.

Among the key conclusions:

- Despite progress, gender inequalities are still pervasive worldwide and exist across many dimensions of life. In no developing region do women experience equality with men in legal, social, and economic rights. Gender gaps remain widespread in access to and control of resources, in economic participation, in power, and in political voice. These gaps are wider in poorer countries and in the poorest groups within countries.
- While girls and women are most disadvantaged by gender disparities, these inequalities reduce the well-being of all people. Societies that discriminate on the basis of gender pay a significant price—in more poverty, slower economic growth, weaker governance, and a lower qual-

ity of life. Where gender inequalities impose high human costs and constrain countries' development prospects, there is a strong argument for a state role in promoting gender equality.

• Promoting gender equality in basic rights and economic development is central to a long-term strategy for achieving equality. Societies that establish an institutional environment supportive of gender equality and that promote economic development are likely to be more effective in reducing gender disparities than those that focus on growth—or on rights—alone.

• But even an approach of equal rights and economic development may not lead quickly to major gains. The processes of institutional change and of economic growth and development can be slow and uneven. Active measures are needed to redress persistent gender disparities in the short to medium term.

• The evidence argues for a three-part strategy to promote gender equality: reforming legal, economic, and social institutions to establish a foundation of equal rights and equal opportunities for women and men; implementing policies for sustained economic growth and development; and initiating active policy measures to reduce gender disparities in the command of resources and political voice.

The report, scheduled for publication in fall 2000, has been broadly reviewed and discussed inside and outside the World Bank. It was discussed on the Web through the Global Development Forum and at a panel session at the Beijing Plus-5 meetings at the United Nations in New York in June 2000. Some of the background papers are available on the project Web site (www.worldbank.org/gender/prr).

Responsibility: Development Research Group, Poverty and Human Resources—Elizabeth King (eking@worldbank.org) and Ananya Basu; World Development Report Office—Claudio Montenegro; Poverty Reduction and Economic Management Network, Gender Division—Karen Mason and Andrew D. Mason; and Global Development Network—Lyn Squire. With Tai Lui Tan, Lihong Wang, Cristina Estrada, Owen Haaga, and Branko Jovanovic. The government of the Netherlands and the Royal Ministry of Foreign Affairs, Norway, have contributed funding for the research.

Completion date: September 2000.

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Does Microcredit Empower Women? A Study of Grameen Bank, BRAC, and the RD-12 Project in Bangladesh

This research is aimed at determining whether microcredit programs empower women, the main participants in these programs. Participatory and focus group research involving women, men, village and urban elites, academics, program organizers, and leaders of women's groups was used to develop indicators for three concepts of empowerment—economic, social, and political. Questionnaires based on indicators of empowerment were then administered to women in both program and nonprogram households in program villages and in target and nontarget households in nonprogram villages. Participatory or other qualitative approaches were used to study empowerment issues in selected households in the same study villages.

The data have been entered and are currently being cleaned. The process has been slowed by interruptions from political disturbances, which prevented regular operation of the Bangladesh organization (the Bangladesh Institute of Development Studies) responsible for data entry and cleaning. Clean data are expected by July 2000, after which analysis will begin.

Survey data will be processed with appropriate weights to develop indexes of social, economic, political, and overall empowerment. Once both empowerment and its quantitative dimensions are defined, the impact of microcredit on women's empowerment status will be estimated.

Responsibility: World Bank Institute, Economic Policy and Poverty Reduction Division, and Development Research Group, Rural Development—Shahidur R. Khandker (skhandker@worldbank.org); and Development Research Group, Rural Development—Hussain Samad. With Mark Pitt, Brown University; and Rita Afsar, Bangladesh Institute of Development Studies.

Completion date: December 2000.

Gender Data and Labor Markets

Labor market participation and remuneration in Latin America differ by gender, as they do in all regions, but there is scant evidence on why they differ and what implications the differences have for the well-being of men and women. Moreover, little is known about how these differences have evolved over the past 10 years of economic reform. This research project identifies the changes in labor market outcomes for men and women in Latin America over the past decade and examines the importance of gender roles in shaping these outcomes.

The project has two parts. First, it constructed a database of gender-disaggregated statistics, to provide analysts and policymakers with the information needed to recognize men and women as different economic agents with distinct sets of preferences and constraints. The database was constructed from household and labor market surveys and existing databases. The surveys generated statistics on education, gender roles, labor markets, social

capital, and household structure for 13 countries. Statistics on health, violence, and gender expectations and attitudes were drawn from other sources and reported for all countries for which the data are available.

Second, the project is undertaking an empirical study of the causes of the observed differences in labor force participation, unemployment, sectoral allocation, informal sector employment, entrepreneurship, and wage trends both between men and women and within each gender group. The study draws on the database and complements it with econometric analysis of the determinants of differential labor market outcomes. The results are used to build alternative explanations of gender differences in the labor market by taking into account the opportunities and constraints created by gender roles and how these shape labor market choices and outcomes. A better understanding of these opportunities and constraints will allow more tailored design of labor market policies and projects and enhance project effectiveness.

Three preliminary results have emerged from the ongoing work:

- Women's and men's labor market behavior and returns are becoming more similar over time, but that does not necessarily mean that women are better off than before. New challenges are arising for both men and women in the home and workplace as workloads increase and wages become more equal.
- The interface between household roles and gender is important in explaining observed labor market outcomes. Often there are more similarities in labor market behavior between those with similar roles in the household (primary breadwinner or primary caregiver) than between those of the same sex.
- The most vulnerable groups—women, informal sector workers, and the least educated—saw the most rapid gains in wages, employment, and formal sector employment over the 1990s. Women experienced particularly rapid gains.

Responsibility: Latin America and the Caribbean Region, Gender Sector Unit—Wendy Cunningham (wcunningham @worldbank.org) and Raquel Artecona. With Luz Saavedra, University of South Florida; and Omar Arias, Inter-American Development Bank.

Completion date: January 2001.

Reports

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

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. From 14 schools, 7 were randomly chosen to receive the organization's standard package of assistance. Pretests were administered at the beginning of 1995, and posttests in the fall of 1995. Preliminary results show a large increase in student attendance, probably due to the provision of free school uniforms, which effectively lowered the price of schooling. However, test scores show no improvement.

The project expanded in 1996 to 100 schools, of which 25 were randomly chosen to receive a large number of textbooks. Pretests were administered in early 1996, and posttests near the end of that year. The children were followed for two more years (1997 and 1998) to assess whether the initial effects endure for several years. Preliminary results suggest that the impact of textbooks is not as strong as some earlier studies had indicated. Of particular interest is the finding that the provision of textbooks benefited only the top 20 percent of students, as identified by the scores on the 1996 pretests. And textbook provision had little effect on dropout rates or grade repetition.

In 1997 another 25 of the 100 schools were selected to receive block grants that could be spent on several options, such as textbooks, other school supplies, or construction of new classrooms. The purpose of this intervention is to see whether schools use funds more effectively when they are given a choice on how to spend them. Preliminary analysis shows a small but statistically significant impact on overall test scores after one year.

In 1998 another randomization was done for all 100 schools. Fifty schools participated in a program in which teachers received rewards if their students' performance on standardized tests improved; the other 50 schools did not participate. The data from this experiment are being analyzed.

Findings have been presented at Brown, Cornell, Harvard, Hebrew, Michigan, Minnesota, Toronto, and Yale Universities; the MacArthur Foundation; and the International Food Policy Research Institute.

Responsibility: Rural Development Department—Harold Alderman (halderman@worldbank.org); and Development Research Group, Poverty and Human Resources—Stacy Nemeroff and Nauman Ilias. With Paul Glewwe, University of Minnesota; Michael Kremer, Harvard University; Sylvie Moulin, Hillary Rodham Clinton Women's Empowerment Center, Morocco; and Alexander Wolfson, Massachusetts Institute of Technology. Funding for the research has been contributed by International Christian Humanitarian Services, the Netherlands; and the U.S. National Science Foundation.

Completion date: March 2001.

Migration and Poverty in Latin America

Migration is one of several ways through which households adapt to such structural shifts as the transformation of a rural agricultural economy into an urban industrial one. Households may use migration, which offers the promise of higher earnings, as a strategy for escaping poverty. They may use migration to overcome credit constraints due to imperfect markets or to overcome other forms of rationing, such as lack of access to education and health services. And they may use migration—permanent or temporary, internal or international—as a strategy for coping with both macroeconomic and idiosyncratic shocks.

This study aims to provide a balanced view of the gains from and costs of migration by analyzing its impact on both monetary and nonmonetary outcomes. It is both reviewing the literature and undertaking new research on the geographic determinants of income and other indicators of well-being, the impact of rural cash transfers on migration, and the impact of remittances on inequality, education, and housing.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org). With Gabriel Gonzalez, Victoria Malkin, and Corinne Siaens.

Completion date: March 2001.

The Impact of Labor Market Policies and Institutions on Economic Performance

This study—the second phase of a project that assesses the effect of labor market interventions on labor market outcomes and aggregate economic performance—seeks to understand how the reform of labor market interventions should be approached. It focuses on a set 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, job security, and unionization.

The research combines theoretical work, detailed case studies based on household- and plant-level data from countries in which labor market distortions are believed to be acute, and cross-country analysis. Several

detailed studies are carried out for each labor market intervention. The cross-country analysis is made possible by the construction of a cross-country time-series database of labor indicators, which comprises data collected from cross-country and country-specific sources. The database is used to extend the now standard growth regression analysis so as to take labor market policies and institutions into account. The theoretical work deals with the political economy of labor market distortions and its implications for the design of economic reforms.

Several of the case studies have been finalized, and preparation for the cross-country work has begun. A key input in this respect was the completion of the cross-country database of labor market indicators. This database includes 44 variables relating to labor force participation, employment and unemployment, wages and productivity, conditions of work and benefits, trade unions and collective bargaining, public sector employment, and labor standards. The database covers 121 countries and 11 five-year periods, starting immediately after World War II. The consistency and completeness of the data are being checked country by country, and the accompanying documentation is being organized for public release. No comparable labor market database is currently available to researchers and practitioners.

The research findings have been disseminated through workshops, training sessions, and seminars for researchers, government officials, and trade union leaders. A policy-oriented volume, which would combine the study's results with lessons drawn from other research on labor market policies and institutions in developing countries, is planned.

Responsibility: Development Research Group, Poverty and Human Resources—Martín Rama (mrama@worldbank.org). With Raquel Artecona; Iyabode Fahm; Alema Siddiky; Jean-Paul Azam, Université d'Auvergne; Ann Bartel and Ann Harrison, Columbia University; Kristin Butcher, Boston College; Alex Cukierman, Tel Aviv University; Francesco Daveri, Università di Brescia; Alvaro Forteza, Universidad de la República, Uruguay; Anna Fruttero and Guido Tabellini, Università Bocconi, Milan; Donna MacIsaac, Inter-American Development Bank; Dani Rodrik, Harvard University; Cecilia Rouse, Princeton University; and Manisha Singh, University of Maryland.

Completion date: June 2001.

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Public Sector Retrenchment, Phase 2

This is a follow-up to a research project on how to deal with redundant labor in the public sector. Economic reforms often require shrinking or divesting public sector agencies and enterprises, which in turn sometimes requires massive layoffs. But experience shows that the process can be badly mishandled.

The first phase of this research investigated the optimal design of downsizing operations, combining three approaches. It used the public economics perspective to assess the financial and economic returns to downsizing. It used the labor economics perspective to predict the losses public sector workers may experience as a result of displacement. And it used the principal-agent approach to identify the self-selection mechanisms appropriate when individual productivity is not observable in the public sector. However, the research itself made it obvious that several important policy questions had not been addressed. It also showed that the answers to some of the questions that were addressed have never been applied in practice, so that the potential obstacles to their implementation are unknown. And it left unclear whether the partial implementation that can be expected in practice would substantially improve the outcome of downsizing operations.

This second phase of the research combines experimentation with and evaluation of downsizing mechanisms, microeconometric analysis within countries, and macroeconometric analysis across countries. From a research perspective, the main advantage of the experimentation and evaluation component is that it circumvents some of the typical identification problems in econometrics; from a practical perspective, this approach ensures that research has a direct impact on operations.

This phase of the research tries to answer the following questions: How can the extent of overstaffing be assessed at the country level? At the sectoral level? Can the "right" self-selection mechanisms be implemented? Can compensation for displacement be appropriately tailored? What are the relevant characteristics for tailoring compensation in the setting of postconflict demobilization? How much do early retirement programs cost? Does downsizing increase public sector productivity? Is it worth it to downsize before privatization?

Findings of the project have been disseminated through presentations on public sector downsizing for policymakers in Vietnam, Yemen, Africa, and Europe and Central Asia. Presentations have also been made at seminars and conferences. In addition, a module on downsizing is being prepared for a World Bank Institute course on labor policies. The project's main findings and the papers it has produced are available on the Web at www.worldbank.org/html/prdph/downsize/home.htm.

The project has had a significant operational impact, providing input and materials for downsizing operations in several countries, including operations managed by the Asian Development Bank and the Inter-American Development Bank. This phase of the project combines research with involvement in the preparation of two structural adjustment credits aimed at supporting large downsizing operations, in the state-owned enterprises of Vietnam and in the civil service of Yemen.

Responsibility: Development Research Group, Poverty and Human Resources—Martín Rama (mrama@worldbank.org) and Alice Hong. With Sarah Bales; Alberto Chong; Kaushik Basu, Cornell University; Doh-Shin Jeon and Jean-Jacques Laffont, Université des Sciences Sociales, Toulouse; and Florencio López-de-Silanes, Harvard University.

Completion date: June 2001.

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Environmentally Sustainable Development

Agricultural Expansion in Forest Villages in Chiang Mai, Thailand

When searching for policies to alter the rate of deforestation, it is important to distinguish two competing theories of agricultural expansion—the population-driven, or subsistence, model and the market-driven expansion, or perfect markets, model. According to the subsistence model, agricultural decisions are made by households that are imperfectly mobile and have limited opportunities to work off-farm. In the simplest such model each household's goal is to achieve a fixed level of consumption, either by consuming what it produces or by selling its output in the market. Two key predictions of this model are that an increase in agricultural population will increase the area cultivated and that an increase in agricultural productivity will reduce the area cultivated. An immediate implication of this is that programs aimed at agricultural intensification, such as subsidies for inputs or provision of high-yielding seeds, will ease the pressure on forests.

The perfect markets model leads to the opposite implication. This model assumes that complete labor markets exist, that on- and off-farm labor are perfect substitutes, and that agricultural households maximize profits. The amount of agricultural land cultivated does not depend directly on population, but on output and input prices, especially the wage rate. Thus in the perfect markets model an exogenous increase in output per hectare increases the cultivated area, implying that programs to raise farm incomes may have adverse environmental consequences.

This study attempted to distinguish these two hypotheses using data for 1,200 villages in Chiang Mai, Thailand, for six years between 1986 and 1996. Specifically, it hypothesized that villages located in reserved forests, which are more remote from markets and have insecure property rights, are more likely to follow the subsistence model. In contrast, agricultural expansion in villages outside reserved forests is more likely to be market-driven. To test this hypothesis, fixed effects models were estimated to explain the amount of land cultivated by each village as a function of the price of rice (the primary crop), the agricultural wage, village population, and soil quality. Separate models were estimated for villages in reserved forests and those outside forests.

Preliminary results suggest that villages in reserved forests do not fit the simple subsistence model. Agricultural land in these villages expanded over the period 1986–96, and the expansion was responsive to input and output prices. This suggests that in formulating agricultural policies, policymakers in Thailand face a tradeoff between improving rural incomes and promoting deforestation. But employment policies that raise wages may increase incomes and take pressure off forests.

The study's findings were presented at the American Agricultural Economics Association meetings in Tampa, Florida, on August 1, 2000.

Responsibility: Development Research Group, Infrastructure and Environment—Maureen L. Cropper (mcropper @worldbank.org) and Jyotsna Puri. With Siripun Taweesuk, Syracuse University.

Completion date: December 1999.

Health, Environment, and the Economy

Economic development is related to public health in interlinked ways. Increased prosperity improves the provision and quality of public health services. At the same time, industrialization and urbanization increase environmental damage and exposure to pollutants. This research project empirically analyzed these links, combining classification tree analysis—which allows control for thresholds, cross-dependencies, and other nonlinearities—and multivariate regression analysis. The research was based on a new data set combining information on specific pollutants, data on deaths from diseases associated with these pollutants, general public health indicators, and measures of economic development. The data cover 1983, 1988, and 1993 for the largest available set of countries.

The empirical work documented robust links between pollutants and mortality on the cross-sectional level, alongside strong income thresholds on deaths from specific diseases. The findings, once extended to the analysis of the development–public health nexus, suggest that attention to public health in the early stages of industrialization is important and has strong additional benefits in terms of growth potential.

One strand of the research explored the determinants of cross-country differences in malaria morbidity and examined the link between malaria and economic growth. Using a classification rule analysis, it confirmed the dominant role of climate in cross-country differences in malaria morbidity. But the data do not suggest that tropical location is destiny: controlling for climate, the research found that income equality and access to rural health care influence malaria morbidity.

In a cross-section growth framework the study found a significant negative association between higher malaria morbidity and the growth rate of GDP per capita. This relationship is robust to a number of modifications, including controlling for reverse causation. The estimated absolute growth impact of malaria differs sharply across countries; it exceeds 0.25 percent a year in a quarter of the sample countries. Most of these countries are in Sub-Saharan Africa (with an estimated average annual growth reduction of 0.55 percent).

Responsibility: Development Research Group, Infrastructure and Environment—Zmarak Shalizi (zshalizi @worldbank.org) and Yi Wu; and Operations Policy and Strategy Group—F. Desmond McCarthy. With Holger Wolf, Georgetown University.

Completion date: December 1999.

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The Role of the Nonfarm Rural Sector and Periurban Agriculture in Tanzania's Rural Development

There is a growing recognition among policymakers of the importance of promoting rural nonfarm employment opportunities. In many developing countries agriculture alone can no longer absorb the rapidly growing rural population, and undeterred labor migration to urban areas in most cases brings only higher social costs. There is also a recognition that in most developing countries, deliberately exploiting the dynamic interplay between agricultural and nonagricultural sectors in rural settings can lead to sustained development and poverty reduction. So there is an interest among policymakers in the design of policies that not only promote rural nonfarm opportunities but also develop and support the virtuous cycle of mutually reinforcing progress in rural farm and nonfarm activities.

Periurban areas, by definition, are at the margin demarcating urban and rural areas and thus are areas where farm and nonfarm opportunities are likely to coexist. The objectives of this study were to review the range of nonagricultural activities among periurban households and their links to the agricultural economy, to identify the determinants of nonagricultural employment and incomes, and to explore key factors affecting yields and farm incomes in periurban areas.

The study analyzed household and village data from the 1998 Tanzania Periurban Survey, which collected information from 592 households in 48 periurban villages surrounding six main Tanzanian cities. The survey gathered data on household income and its sources, employment in farm and nonfarm activities, socioeconomic and other constraints to these activities, the availability and use of basic services (such as health, education, and extension services), food consumption expenditures, social capital, and private asset ownership and structure.

The main empirical analysis involved first estimating a probit model of the probability of household involvement in business activities and then estimating a business income regression to draw out the factors explaining business earnings. These two steps were repeated for wage employment and wage earnings.

The findings show that nonfarm earnings contribute some 24 percent of household income in the periurban areas studied—ranging from 9 percent for Moshi to 32 percent for Dar es Salaam. Most (75 percent) comes from own business activities. Nonfarm activities contribute about 15 percent of employment.

Business activities occur most frequently in villages with access to asphalt roads, in those where nonfarm activities account for an important share of employment, and in those where the agricultural potential of land is relatively low. Trust and other social capital variables are also important, with very strong tribal or kinship ties and high household participation in communal activities reducing the probability that a periurban household will engage in own business activities. Nonfarm business activities tend to be run by men under 45, with primary (but typically not higher) education, and occur most frequently in households with small landholdings.

Own business activities offer an important alternative to agriculture as a source of livelihood. But access to such activities appears to be limited to men and influenced by infrastructure. Nonagricultural wage employment is dominated by men ranging in age up to the mid-forties and is strongly correlated with education (primary and secondary). Such employment is most frequent (and the earnings it produces highest) in villages with high population density. Earnings tend to rise with education level and with proximity to the urban center.

The initial findings were discussed in May 1999 with government policymakers, donors, academics, and other members of civil society in a seminar in Dar es Salaam organized by the World Bank's resident mission. The research was also discussed with units in the Bank's Africa Region, and results were used in preparation of the country assistance strategy for Tanzania. The data provide a valuable benchmark for future household-level studies in the country.

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org), Jaime Quizon, and Peter Lanjouw.

Completion date: January 2000.

Report

Lanjouw, Peter, Jaime Quizon, and Robert Sparrow. "Nonagricultural Earnings in Periurban Areas of Tanzania: Evidence from Household Survey Data." World Bank, Development Research Group, Washington, D.C. Draft.

Commodity Marketing Systems

Two decades ago governments controlled most agricultural commodity pricing and marketing in developing countries. Today agricultural commodity subsectors in most developing countries have undergone market reform, and many have been completely liberalized. These changes were brought about by several factors, including changes in development economists' perception of the roles of government and of agriculture in economic development, such international events as the collapse of the Soviet Union and of international commodity agreements, and changes in the lending policies of international financial institutions.

This study carried out case studies of commodity market reforms in a number of countries. Through detailed exploration of these cases, it attempted to clarify why and how market reform has been conducted, what the consequences were, and what lessons can be learned. The study found that the factors impeding and the factors prompting market reform are more political than economic. Thus one of the main consequences has been a shift of financial and political power from the government to the private sector. In addition, market reforms in many countries introduced institutional changes in commodity pricing and marketing.

Market reform is probably a necessary condition for long-term economic development, but not a sufficient one. The case studies clearly suggest that reform has had a rather limited impact in countries where the private sector is weak and social and physical infrastructure inadequate. Moreover, market reform raised new issues in some countries, such as weakened research and extension, volatile producer prices, and the disappearance of crop, investment, and export financing. So it is no panacea for agricultural sector development, which requires a new approach in this changed context.

Responsibility: Development Research Group, Rural Development—Panos Varangis (pvarangis@worldbank.org), Takamasa Akiyama, and Donald Larson; and Development Prospects Group—John Baffes. With Jonathan Coulter, National Resources Institute, United Kingdom.

Completion date: June 2000.

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Varangis, Panos. 1999. "The Impact of Coffee and Cocoa Market Liberalization and Key Factors to Successful Reforms." Paper presented at Sustainable Tree Crop Development Forum, Strengthening Africa's Competitive Position in Global Markets, U.S. Agency for International Development and Chocolate Manufacturers Association, October 19–21, Arlington, Va.

Pricing Carbon Offset Projects

This research drew on pioneering experiences in the incipient market for carbon offsets to derive lessons for participants in greenhouse gas mitigation projects as they consider new investments and for policymakers as they construct the rules and institutions that will shape future carbon markets. The study reviewed past price outcomes and modeled forecasts of offset prices and argued that both are poor predictors of market prices under an implemented carbon emissions agreement. Consequently, managing price risk and related uncertainty will be key for early market participants. The study reviewed innovative risk management solutions in early transactions and suggested roles for public and private institutions in promoting the development of markets for tradable offsets.

The Kyoto Protocol remains a framework with key implementation rules undefined and enabling domestic regulations absent. This encourages firms to delay investing in carbon market assets because the value of such assets is determined largely by rules governing their creation and use. Consequently, most early participants were motivated by a desire to influence outcomes, establish feasibility, or gain know-how.

These incentives for participating in pioneering activities have consequences for the types of lessons that can be drawn from them. It also suggests that past transactions are poor indicators of future market prices that might prevail under well-defined rules. For similar and additional reasons, economic model forecasts of future prices are also in doubt. Early activities are best used to draw lessons about contractual arrangements that address issues of price and performance risk. Until secondary markets develop, early project participants will need to find contractual solutions, suitable to all parties, that address price and quality uncertainty. Pioneering projects demonstrate a variety of potential solutions.

The research was conducted in support of the World Bank's Prototype Carbon Fund. Results from the research are posted on the Web at www.prototypecarbonfund.org/ and were recently used to inform policymakers in Latvia responsible for what is potentially the first Prototype Carbon Fund investment.

Responsibility: Development Research Group, Rural Development—Donald F. Larson (dlarson@worldbank.org).
Completion date: June 2000.

Report

Larson, Donald F. "Pricing Carbon Offset Projects and Promoting Offset Markets: Issues and Lessons." World Bank, Development Research Group, Washington, D.C.

Market Development and Allocative Efficiency: Irrigation Water in the Punjab

This study examines how farmers in the Punjab of Pakistan cope with an erratic supply of canal irrigation. It examines the informal markets that have emerged to diversify and buffer farmers against this risk and the impact these markets have had on agricultural production.

Active informal canal water and groundwater markets are common in South Asia and elsewhere. Despite the obvious importance of irrigation in agriculture, the workings of these markets remain largely unexplored, however, mainly because of the paucity of good micro-level data. A major objective of the study is to estimate a dynamic model of irrigation decisions with uncertainty in water supply, using panel data from a watercourse in the Punjab. Using these estimates, the study will simulate the impact on farm income of an increase in the reliability of canal supplies—the main goal of recent Bank-sponsored water management reforms in Pakistan's Punjab.

Trading of sanctioned canal water turns and groundwater extracted from private tubewells is observed in the region. Exchanges of canal turns are a form of mutual insurance among neighboring farmers, but such insurance is limited by the high covariance of shocks, coordination

problems, and the high cost of transporting water. Groundwater, by contrast, is always available, at least to those with a tubewell nearby, but it is expensive to extract. It is thus used as a last resort—a buffer stock—in case the canal is dry and rainfall is sparse.

The study's results thus far suggest that the informal exchange of canal water helps farmers insure against uncertain canal water supplies. A large component of canal risk cannot be diversified, however, because coordination problems restrict trading to small neighboring groups of farmers whose endowments are highly correlated. This leaves considerable scope for insurance through participation in groundwater markets.

Reduced form estimates of demand for groundwater confirm the role of dynamics in irrigation decisions: two-week lagged water use has a negative effect on current use. Tubewell owners and share tenants of tubewell owners use significantly more groundwater than buyers, which is consistent with other findings that tenants and owners face lower groundwater prices than buyers. In future work, these results will be refined to produce estimates of the price elasticity of demand for water, which in turn will feed into policy simulations.

Responsibility: Development Research Group, Rural Development—Hanan Jacoby (hjacoby@worldbank.org) and Rinku Murgai. With Saeed Ur Rehman, International Water Management Institute, Lahore, Pakistan.
Completion date: December 2000.

Markets for Agricultural Inputs and Outputs in Sub-Saharan Africa

This study examines whether markets for agricultural outputs and inputs minimize transactions costs and foster competition. The analysis is based on the results of surveys conducted in Benin and Malawi in collaboration with the International Food Policy Research Institute. On the output side, the survey results will be used to contrast the market organization of food and cash crops (cotton in Benin, tobacco in Malawi). On the input side, the study will examine the institutional arrangements that make trade in agricultural inputs possible.

The study is expected to show that traders with better networks collect rents because relationships help reduce transactions costs; that these rents are not dissipated despite the existence of a competitive fringe of small traders with high transactions costs; that networks may or may not be correlated with ethnicity; and that the fear of being cheated prevents some mutually beneficial trades, especially in agricultural input markets in which farmers need credit and insurance.

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org) and Marcel Fafchamps. With Soule Goura, Laboratoire d'Analyse Regionale et d'Expertise Sociale; and Richard Kachule, International Food Policy Research Institute.
Completion date: December 2000.

Brazil Global Overlay Study

This study analyzes emerging policy issues and proposed economic mechanisms related to forest protection and forest establishment in Brazil, looking at the implications for biodiversity protection, mitigation of climate change, and local economic benefits. The study uses spatial simulation and other methodologies to assess how policies will change spatial patterns of incentives for forest preservation, management, and conversion—and how alternative spatial patterns of exploitation and conversion affect carbon sequestration or emissions and the conservation of habitats important to biodiversity.

The study has three components:

- *Transferable development rights and greater flexibility under the legal forest reserve requirement.* Brazilian law requires land owners to maintain at least 20 percent of each property under natural forest cover as a forest reserve. There is active discussion about allowing property owners to meet this requirement on a different property, to reduce compliance costs and increase the environmental effectiveness of the measure. This component examines the costs and benefits of alternative proposals for making the reserve requirement more flexible, focusing primarily on the state of Minas Gerais as a case study. Preliminary findings suggest that restricting enforcement and trading of legal reserves to the largest properties might substantially reduce compliance and enforcement costs while satisfying much of the aggregate requirement.
- *Native forests, planted forests, and coke in Minas Gerais.* This component examines a nexus of issues related to

the substitutability between charcoal from native woodlands, charcoal from plantations, and mineral coke in meeting the energy needs of Minas Gerais's large iron and steel industries, assessing policies that would internalize the environmental benefits of using sustainable sources of energy.

• *Land use in the Amazon.* This component examines the economic and environmental costs and benefits of supporting and complementary land use policies, including placement of the national forests, trade in legal reserves under alternative rules, and impacts of royalty charges for forest clearance. It will assess the potential impact of these policies on agricultural output, carbon emissions, and biodiversity.

The research project is expected to contribute to policy discussions in Brazil, to the design and implementation of World Bank projects related to land use and sustainable development in Brazil, and to worldwide discussions of innovative approaches to conservation.

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth Chomitz (kchomitz @worldbank.org). With Aline Tristão Bernardes and Antonio Salazar Brandão, Santa Ursula University; Peter May, Federal Rural University of Rio de Janeiro; Instituto do Homem e Meio Ambiente da Amazônia (Imazon); and Timothy Thomas, Sociedade de Investigaçoes Florestais. Instituto Brasileiro de Geografia e Estatística (IBGE) and the International Environment Forum are collaborating in the research. The Global Overlay Program (Danish Trust Fund) has contributed funding for the research.

Completion date: January 2001.

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Chomitz, Kenneth. 1999. "Transferable Development Rights and Forest Protection: An Exploratory Analysis." World Bank, Development Research Group, Washington, D.C.

Chomitz, Kenneth, and Timothy Thomas. 2000. "Geographical Patterns of Land Use and Land Intensity in the Brazilian Amazon." Draft.

Gerwing, Jeffrey J., Rodney Salomao, and Christopher Uhl. 2000. "Land Cover and Carbon Density Maps for the Brazilian Legal Amazon." Draft.

Economic Instruments for Conservation

As pressures for both agricultural expansion and biodiversity protection increase, land must be allocated and managed as efficiently as possible to meet these two needs. This project is aimed at improving the ability to meet those dual needs through three objectives:

• Developing a quantitative, operational definition of biodiversity useful for assessing large-area conservation policies.

• Developing and demonstrating a methodology for assessing biodiversity and development tradeoffs arising from land allocation decisions or policies.

• Applying that methodology to assess the potential environmental impact of economic instruments for conservation, with particular attention to incentive payments for land uses consistent with conservation.

The study site for the research is the Atlantic Forest of southern Bahia, in Brazil, an area that exemplifies the issues that arise when economic pressures threaten important biodiversity resources. The Atlantic Forest has an extremely high level of biodiversity, and many conservation biologists rank it among the habitats with highest priority for conservation. The Bahian section of the forest is now reduced to relatively small fragments, making up perhaps 7 percent of the forest's original area. Less than a fifth of this is protected. The remaining area is threatened by conversion, often to uses with low economic value and little impact on employment.

The project will build a spatially explicit bioeconomic model. The economic component of this model will represent landholder responses to alternative economic instruments and assess the instruments' economic and social impacts. The biological component will assess the impact of resulting land use configurations on the ecosystem, taking into account both the representation of diverse species or elements and the viability of plant and animal populations. The model will use secondary data,

including geographic information system (GIS) data and data from the census and other sources, and primary data on land values and biodiversity to be collected by Brazilian partners under a parallel project. It will also be informed by focus group interviews with stakeholders on the acceptability of alternative economic instruments.

The research is expected to contribute directly to the design and implementation of the Parks and Reserves Project (administered by the World Bank for the Pilot Program for the Tropical Brazilian Forests). And it will shed light on the feasibility of new, market-like approaches to conservation that may be of broad interest to the Bank and its clients.

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth Chomitz (kchomitz @worldbank.org). With the Instituto de Estudios Sócioambientais do Sul da Bahia; Institute for Computational Earth System Science, University of California at Santa Barbara; Timothy Thomas; and Industrial Economics. The parallel project is funded by Programa Estadual para a Conservação da Biodiversidade (PROBIO).

Completion date: June 2001.

Report

Hardner, Jared. 1999. "Land Use Trends and Conservation Opportunities in the Atlantic Forest of Southern Bahia, Brazil." World Bank, Development Research Group, Washington, D.C.

Environmental Data Accounting

This project investigates how the depletion of natural resources and degradation of the environment by air and water pollution could be incorporated into a system of conventional national accounts to measure economic performance and sustainability. Through participation in the London Group of environmental data experts, the project supports international initiatives to revise the United Nations' Recommended System of Integrated Environmental and Economic Accounts (SEEA). In conjunction with related research activities by the United Nations, Eurostat, the Organisation for Economic Cooperation and Development, and leading industrial countries, the project is working to develop a general measure of sustainability. It is also reviewing various approaches for creating a coherent set of environmental accounts and assessing how well each fits with internationally established economic accounting methods that link asset stocks with flows. Recent activities also include participation in a workshop sponsored by the United Nations to disseminate the final report of the Nairobi Group (*Integrated Environmental and Economic Accounting: An Operational Manual*, New York: United Nations), which proposes a set of guidelines to help developing countries estimate the environmental impact of economic activities in different sectors.

All these activities are closely tied to efforts within the World Bank to expand the range of environmental indicators, strengthen their relevance, and produce and refine associated statistical series. This initiative thus forms an important part of the Bank's commitment to providing suitable data for monitoring newly agreed on international development goals for the environment in the 21st century.

Some of the data collected to better understand the links between the economy and the environment appear regularly in the World Bank's annual *World Development Indicators*. Working papers on the revised SEEA have been prepared for review by the London Group.

Responsibility: Development Data Group—M. Saeed Ordoubadi (mordoubadi@worldbank.org) and Michael Ward (through March 2000).

Completion date: June 2001.

Land Markets, Gender, and Access to Land in Latin America

This project investigates how recent property rights reforms aimed at improving the functioning of rural factor markets in Honduras, Mexico, and Nicaragua have affected agricultural productivity and the lives of the rural poor. The study is part of a broader research agenda to assess the effectiveness of land markets (rental and sales) as a mechanism for allocating land efficiently across heterogeneous households; to examine the effect of imperfections in rural markets on the direction of land transfers, the type of contracts adopted, and the ensuing changes in the agrarian structure; and to identify policies that can help make land markets function better and increase productivity and equity. The study also inves-

tigates how recent property rights reforms have affected the property rights of women in rural areas and, therefore, rural household well-being.

The project relies on microeconometric analysis of recently collected panel data and data collected in the course of the project. Data for Mexico are from a survey of about 1,500 smallholders, including information on about 400 smallholdings, undertaken by the Food and Agriculture Organization (FAO), the Mexican Ministry of Agriculture, and the University of California at Berkeley in 1994 and 1997. Data for Nicaragua come from a 1996 survey of 1,500 producers by the FAO and the University of California at Berkeley. The survey, which is representative of the main agricultural areas of the country, is complemented by a resurvey of the respondents conducted in 1999. Data for Honduras come from a 1992 survey conducted by the University of Wisconsin.

Preliminary results for Mexico indicate that elimination of rental restrictions has significantly reduced the transactions costs associated with land rentals. But because of credit market imperfections, the poor were often unable to take advantage of the increased market opportunities.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org) and Rinku Murgai. With Michael Carter and Bradford Barham, University of Wisconsin at Madison; and Alain de Janvry and Elisabeth Sadoulet, University of California at Berkeley. The U.S. Agency for International Development contributed funding for the surveys in Honduras and Nicaragua.

Completion date: June 2001.

Land Reform

New opportunities and lingering problems have renewed the interest of governments in agrarian reform:

- The inability to address rural violence, deep-rooted poverty, and inequality of opportunity through conventional means, and the expectation that a redistribution of productive assets would improve the access of the poor to economic opportunities.
- The potential for improving productivity and equity given the large tracts of unutilized or underutilized land on large farms, the inverse relationship between farm size and productivity, and the desire of large landlords to liquidate their landholdings.
- The failure of old-style land reform, the continuing political pressure for land reform, and the drop in land prices following the elimination of many distortions favoring agriculture.

This research project aims to quantify the scope for and economic potential of land reform, help in the design of programs that would realize this potential, and mount monitoring and evaluation systems that would allow in-depth evaluation of the impact of such programs on both productivity and poverty reduction. The project combines ex ante analysis of land reform based on farm budget analysis with econometric analysis of survey data for Brazil, Colombia, the Philippines, South Africa, and Zimbabwe. Country-specific results and international experience provide immediate feedback on ongoing efforts.

In addition to helping to establish baseline surveys, the project has undertaken several case study evaluations. In general, these demonstrate the scope for increasing productivity through land reform and the advantages of a demand-driven approach. But they also highlight the importance of designing mechanisms for implementing incentive-compatible reforms to ensure replicability and economic viability.

The findings support the World Bank's stance in favor of land reform, and the efforts in developing countries to address long-standing issues of maldistribution of assets. They also emphasize the importance of placing such efforts in a broader policy context.

The project has contributed to the design of Bank operations by pointing to elements critical for success (focusing on integrated productive projects, involving financial intermediaries, and using a decentralized approach) and by elaborating a framework for monitoring and evaluating projects that will eventually allow an in-depth assessment of their impact. The research has also helped to inform the policy debate and clarify the potential and limits of land reform in countries where it remains highly controversial (the Philippines, Zimbabwe). Results have been disseminated at conferences and workshops for policymakers in Brazil, the Philippines, South Africa, and Zimbabwe.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org)

and Pedro Olinto. The Swiss Trust Fund and the Brazilian government are contributing funding for the research.
Completion date: June 2001.

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Deininger, Klaus, and Julian May. Forthcoming. "Is There Scope for Growth with Equity? An Initial Assessment of Land Reform in South Africa." Policy Research Working Paper. World Bank, Development Research Group, Washington, D.C.

Deininger, Klaus, M. Maertens, Pedro Olinto, and F. Lara. 2000. "Redistribution, Investment, and Human Capital Accumulation: The Case of Agrarian Reform in the Philippines." World Bank, Development Research Group, Washington, D.C.

Land Rental Markets and Agricultural Efficiency in Ethiopia

This study investigates the extent to which land rental markets in rural Ethiopia support allocative efficiency and whether the choice of land rental contract has detrimental effects on work incentives and input use. Data collected by the International Livestock Research Institute are analyzed in collaboration with the International Food Policy Research Institute. The research is expected to provide essential background information to Ethiopian policymakers exploring land reforms and to land tenure institutions in the country. Several meetings have been held in Washington, D.C., and in Addis Ababa with the external collaborators to discuss conceptual issues, research strategies, and data needs.
Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org) and Marcel Fafchamps. With John Pender, International Food Policy Research Institute; and Simeon Ehui and Amare Teklu, International Livestock Research Institute, Addis Ababa.
Completion date: June 2001.

Nature Tourism's Contribution to Economic Development and Conservation Finance

Improperly managed nature tourism can degrade or destroy the environmental assets on which it is based. If managed wisely, however, it offers potentially valuable opportunities for generating revenues, not only for development but also for conservation.

This study investigates the contribution that nature tourism can make to conservation and the economy. It studies the choices that determine the sustainability of nature tourism assets and the process by which these assets are exploited in developing countries.

Specifically, the study explores the following questions:

- Is it better to raise conservation funds through changes in destination pricing or through taxes on tourism trade?
- How should park entrance fees be structured? Should differential pricing be used (for example, for local and foreign visitors)?
- At what level should entrance fees be set to maximize the economic returns to both the site and the tourism sector?
- At what level should entrance fees be set to minimize environmental degradation and its associated costs and maximize revenues?
- What are the main managerial options for improving the resource base or minimizing degradation?
- What are the net local economic benefits from nature tourism? That is, what leakages and local multipliers are involved? How much do the poor living in communities adjacent to parks benefit? Are there ways to increase those benefits?

Little applied economic analysis has been done on supply and demand in nature tourism markets or the relations among markets. For this reason, this project adopts a multimarket model approach. Where possible and appropriate, the research will attempt to incorporate environmental damage functions into the analytical framework, the methodology, and the case studies. Eval-

uation of the links between nature tourism and the environment will attempt to highlight potential threshold effects and critical features of the relationship.

The project has developed a sectoral multimarket analytic framework that clarifies the principal direct and indirect links among the economic, environmental, social, and policy variables affecting nature tourism. The model attempts to respond to three key issues: the sustainability of resource use, the relative benefits from and interactions among multiple users, and the roles of the public and private sectors in nature tourism activities. The goal is to develop a framework that will allow policy analysts to assess these issues in different circumstances and regions.

The framework will be applied to the northern area of the KwaZulu-Natal Province in South Africa, in partnership with the KwaZulu-Natal Nature Conservation Service and the KwaZulu-Natal Tourism Organization. The intent is to illustrate the utility of the model, particularly in shedding light on the relative importance of different policy variables in a particular ecological and economic context. It is expected to demonstrate how parameters for the model relationships will be estimated and what data can reliably be found for this purpose.

Social accounting work has begun, and on-site, origin-country, ecological, and producer surveys are under way. Household, hunter, and game sales studies will be carried out in 2001.

Responsibility: Africa Region, Rural Development and Environment Department—Ernst Lutz (elutz@worldbank.org); and Environment Department—John Dixon. With Bruce Aylward; Geert Creemers, Pete Goodman, and Stuart Ferrer, KwaZulu-Natal Nature Conservation Service; Kreg Lindberg, Ecotourism Society; Barry James and Danielle James, Brousse-James & Associates; Dawie Mullins, Conningarth Consultants; Aki Stavrou, DRA-Development, Durban, South Africa; and other local consultants. The KwaZulu-Natal Conservation Service has made contributions in kind, the South Africa Tourism Authority is cofinancing the household survey, and the Belgian Trust Fund is funding Mr. Creemers's work in fiscal 2001.

Completion date: June 2001.

Institutional Means of Controlling Administration and Reducing Corruption in Transition Economies: A Comparative Study of Environmental Regulation in Bulgaria and Hungary

As many transition economies and developing countries seek to reform various regulatory regimes to make them more efficient, increasing attention is being paid to informal regulatory mechanisms, that is, those that do not rely on traditional command-and-control regulation. These informal mechanisms come in a variety of forms, from negotiations with the targets of regulation to the use of civil society organizations as government surrogates. A number of donors are encouraging use of these informal mechanisms because they are less costly and interventionist than command-and-control tools and may encourage broader compliance. Equally important, as a result of the weaknesses of governance structures in many countries, particularly the judiciary, many of these informal mechanisms can also serve to constrain arbitrary regulatory action, thereby strengthening regulatory accountability and credibility as well as effectiveness. But for many of these informal mechanisms to serve as accountability mechanisms, formal rules must be in place to structure their operation, help them be fairly applied, and ensure that there are means to enforce them.

This study develops a methodology for determining what kinds of formal rules (those requiring information disclosure, notice-and-comment on proposed regulations, negotiated rulemaking, open meetings, public hearings, and so on) may be most conducive to the effective use of informal accountability mechanisms and identifies the regulatory contexts within which they may be appropriate in the field of environmental regulation. It also assesses the consequences of using informal control mechanisms in the absence of certain formal rules, investigating whether the lack of such rules can retard the broader development of a rule-of-law consciousness. Based on interviews with legal, regulatory, and other experts in two transition economies, the study will create an inventory of potential informal accountability mechanisms and explore which mechanisms are currently being used and which might be considered for use, taking into account legal, political, social, economic, and cultural factors.

Responsibility: Poverty Reduction and Economic Management Network, Public Sector Management Division—Richard E. Messick (rmessick@worldbank.org). With Malcolm Russell-Einhorn, Abt Associates; Jeffrey Lubbers, American University; and Vedat Milor.
Completion date: August 2001.

Making Long-Term Growth and Development More Sustainable

Development strategies generally emphasize sustained growth as a means of raising average incomes. But failure to account for environmental degradation can erode the capital base for future development. This research aims to improve the understanding of the links between economic development and the environment and to identify policies that will help maintain long-term growth prospects.

The project, which focuses on case studies of Brazil, Chile, and Sri Lanka, adopts a variety of approaches. Each case study includes an action-impact matrix, a cost-effective approach that uses available data (primarily from in-country sources, the World Bank, and the International Monetary Fund) to show the key environmental impacts of development policies. Other approaches range from fairly simple models to quite complex (and thus costly) ones. The study compares their usefulness and cost-effectiveness in modeling the links between growth and the environment.

Initial work focused on organizing strong in-country teams of researchers who will be responsible for critical elements of the work, consistent with the project's emphasis on capacity building. It also included gathering data, prioritizing issues, and refining the analytical models. The current phase of research is examining the circumstances under which growth-inducing, economy-wide policies (such as liberalization) and the growth that ensues may exacerbate the environmental harm caused by policy distortions (such as subsidized prices for natural resources). The work will also identify conditions under which growth could worsen the adverse environmental effects of market failures.

Several in-country workshops that included senior decisionmakers have been held, and more are planned to review and disseminate the results of the study. A concluding conference will be organized at the Bank to communicate the study's main findings to research and operational staff, provided resources are available.
Responsibility: Environment Department, Office of the Director—Mohan Munasinghe (mmunasinghe @worldbank.org); Global Environment Coordination Unit—Noreen Beg; and World Bank Institute, Economic Policy and Poverty Reduction Division—Jorge Araujo. With Peter Meier, IDEA Inc., United Kingdom; Chitru Fernando, ESI Inc., Sri Lanka, and Tulane University; Ronaldo Seroa da Motta and Claudio Ferraz, Instituto de Pesquisa Econômica Aplicada (IPEA), Brazil; Carlos Young, Universidad Federal do Rio de Janeiro; Osvaldo Sunkel and Carlos de Miguel, Center for the Analysis of Public Policies, Chile; Shavi Fernando and D. C. Wijeratne, Ceylon Electricity Board; Nimal Siripala, Ministry of Finance, Sri Lanka; U. Sapukotane, Ministry of Environment, Sri Lanka; and D. Chandrasekere, Ceylon Petroleum Corporation.
Completion date: September 2001.

Report

Munasinghe, Mohan, Osvaldo Sunkel, and Carlos de Miguel. Forthcoming. *The Sustainability of Long-Term Growth: Socioeconomic and Ecological Perspectives*. London: Edward Elgar.

Guidelines for Pricing Irrigation Water Based on Efficiency, Implementation, and Equity Considerations

A growing trend in World Bank irrigation water projects stresses pricing as a primary means of regulation. Conditions for the disbursement of a loan for the construction of an irrigation project often require "appropriate" pricing of the irrigation water that will be generated. Yet it is not clear what "appropriate" water prices are or how they should be applied. Disagreements among competing groups of water users are common, particularly if they are in different economic sectors. Surprisingly, economists also disagree on how best to address this issue.

This project seeks to clarify the basic concept of water pricing and lay out a set of guidelines on how to price irrigation water under different circumstances. The primary measure of performance is efficiency, broadly defined to include implementation costs. Income dis-

tribution, available water institutions, and political constraints are considered in the context of case studies.

This research aims to develop guidelines for selecting and implementing water pricing methods by:

- Summarizing methods used to price irrigation water in various countries and conducting detailed studies of five countries—China, Mexico, Morocco, South Africa, and Turkey—with different physical, social, economic, and institutional conditions.
- Developing and applying a cost-benefit framework to evaluate the performance of different water pricing methods.
- Conducting an in-depth analysis, to include income distribution, water institutions, and political aspects, in one or two regions of Morocco.
- Repeating the analysis in regions in China, Mexico, South Africa, and Turkey for which data were collected.

Country reports and databases on Morocco, South Africa, and Turkey have been completed, and reports and databases for China and Mexico are being finalized. Analysis of the country cases is expected to be completed by October 2000. Mathematical programming models that capture the various aspects of water pricing reforms at the regional level have been completed for three regions: two irrigation perimeters in the Loukkos ORMVA (regional agricultural development office) scheme in Morocco and the Leksop irrigation scheme in South Africa. Data for representative perimeters from the Doukkala, Haouz, and Souss Massa ORMVA schemes in Morocco and reports on water projects in China, Mexico, and Turkey are being finalized.

Responsibility: Rural Development Department—Ariel Dinar (adinar@worldbank.org). With Yakov Tsur and Vladimir Lubinsky, Hebrew University, Rehovot, Israel; Terry Roe and Robert Johansson, University of Minnesota; Rachid Doukkali, Institute of Veterinary Science and Agriculture, Rabat, Morocco; Michael Schur, Ministry of Finance, South Africa; Enrique Aguilar; and Zhou Yaozhou and Wei Bingcai, Ministry of Water Resources, Beijing, China.
Completion date: October 2001.

Report

Johansson, Robert C. Forthcoming. "Pricing Irrigation Water: A Literature Survey." Policy Research Working Paper. World Bank, Rural Development Department, Washington, D.C.

Sending Farmers Back to School: An Econometric Evaluation of the Farmer Field School Extension Approach

Studies of the economic and other impacts of agricultural extension programs, particularly traditional training and visit programs, have yielded mixed results. The many problems associated with administering large, and often expanding, extension bureaucracies; the growing disenchantment with packaged technologies and with the top-down centralized approach to knowledge dissemination; and the general alienation of farmers from the creation and dissemination of knowledge have led many to question the cost-effectiveness of staff-intensive public extension systems and their efficiency in diffusing knowledge, particularly in the light of growing fiscal deficits in many countries.

In recent years a number of development agencies, including the World Bank, have promoted an alternative type of extension program, farmer field schools, as a more relevant, efficient, and cost-effective approach to extending science-based knowledge and practices to farmers. This project will evaluate the effects of farmer field schools in Indonesia, Peru, and the Philippines, at the farm and the program level. At the farm level farm profits will be used as a key indicator of success. Farm-level impacts will be measured econometrically, using both with-and-without and before-and-after comparisons with panel data. Careful selection of sample sites and respondents will allow isolation of the effects of contemporaneous activities that may also affect farm profits. The empirical strategy will also try to isolate secondary effects of farmer-to-farmer diffusion of knowledge from direct program effects on participants and measure the depth and breadth of this knowledge diffusion, through case studies and participant observation methods. At the program level the study will aggregate the effects of all households affected by farmer field schools in order to compare overall program benefits with overall costs.

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org), Jaime Quizon, and Rinku Murgai. With Tahlim Sudaryanto, Sjaiful Bahri, and Hania Rahma, Center for Agricultural and Socioeconomic Research, Indonesia; Agnes Rola, Insti-

tute of Strategic Planning and Policy Studies; Rebecca Nelson, Paul Winters, and Oscar Ortiz, International Potato Center, Peru; and Hermann Waibel, University of Hannover.
Completion date: December 2001.

Strategic Planning and Implementation of Public Involvement in Environmental Decisionmaking

This study examines three issues: whether strategic planning in the involvement of all relevant stakeholders improves public consultations in category A environmental assessments of World Bank–financed projects and leads to project effectiveness, whether training of Bank staff and clients on effectively involving the public in the environmental assessment process influences their attitudes and enables them to apply the lessons learned in their work, and the extent to which legislative and policy frameworks on public involvement influence the quality of public consultations. The project pilots lessons learned about strategic planning (from earlier Bank reviews and from ongoing work for the Third Environmental Assessment Review) for public involvement in potentially controversial projects.

The project will train Bank staff and clients in involving the public effectively. It will survey and interview a sample of Bank staff to assess the extent to which training affects their attitudes toward and practices for involving the public in the environmental assessment process. The study will also research legal and policy requirements in various countries, interviewing stakeholders, reviewing staff appraisal reports, and drawing on reports of the Bank's Quality Assurance Group to determine the link between the legal and policy frameworks and the quality of public consultations.

The study has yielded several interesting preliminary results:

- Projects that strategically plan for public consultations contribute more to project design and implementation than do those that involve the public on an ad hoc or add-on basis.
- Institutional audits of projects should involve a comprehensive analysis of institutional capacity to effectively involve the public in developmental decisionmaking.
- Analysis assists in targeting capacity building initiatives.
- Country ownership of process is fundamental to effectively involving stakeholders. The process should not be seen as nothing more than a Bank requirement.
- With shrinking budgets, promoting effective public involvement in developmental decisionmaking will not be attained by a single project. To allow aggregation of benefits, projects in a given country should have similar objectives in promoting public involvement (such as capacity building).

The Nigerian Federal Ministry of Agriculture has disseminated two reports based on the first phase of the project. The results were also disseminated at the Stakeholders Workshop for the Fadama II project, held in Abuja, Nigeria, in August 2000. Results of the project will be used in the design of the regional workshops to be held in October 2000. Lessons learned from the project were also incorporated in the World Bank Institute's safeguards policy training and in the public participation strategy and plan for the Fadama II project.
Responsibility: Legal Department, Environment and International Law Unit—David Freestone (dfreestone @worldbank.org), Nightingale Rukuba-Ngaiza, and Mohammed A. Bekhechi; Social Development Department—Parmesh Shah; and World Bank Institute, Environment and Natural Resources Division—Pietronella Van Den Oever. The Norwegian Trust Fund is contributing funding for the research.
Completion date: December 2001.

Understanding and Improving the Environmental Performance of China's Township-Village Industrial Enterprises

In less than a decade China's township-village industrial enterprises (TVIEs) have risen to near parity with China's traditional industrial sector. Recent estimates suggest that community-based enterprises now account for about 50 percent of China's industrial output and more than 30 percent of total rural income. Emissions from these enterprises remain only partially regulated, however, and are estimated to account for nearly half of all industrial pollution in China. China's State Environmental Protection Agency (SEPA) requested this collaborative

research project because of a perceived need for a more systematic and comprehensive approach to pollution control for TVIEs.

The project results will contribute to the discussion of regulatory reform in several ways. First, they should provide insights helpful for policymakers in decentralizing the national regulatory system. Reforms currently under discussion may involve changes in the administration of national regulatory standards, imposition of pollution levies (charges), and establishment of monitoring and enforcement procedures. The project will demonstrate methods for measuring the gap between actual and optimal emissions and suggest principles for appropriate adjustment of regulatory instruments to narrow the gap.

Second, the research will focus attention on pollution exposure risks for workers inside TVIE facilities. The welfare of workers in heavily polluting factories may be severely affected, even when air quality in the community is relatively good. The study will contribute to the understanding of the issue by sharpening the cost-benefit assessment by providing separate impact estimates for exposed workers and neighboring communities. In addition, the project's econometric analysis will seek to identify the primary determinants of within-plant pollution. Variables to be tested include sector, output, wages, plant vintage, human resources, environmental management strategies, quality of environmental information, and alternative employment opportunities.

Third, the project will provide insights into the impact of more general policy reforms on pollution from TVIEs. Research on other Asian countries suggests that policies that affect input prices, worker education, enterprise scale, and technology choice can have impacts on pollution that are similar in magnitude to those of direct regulation. Results from this research should promote a broader dialogue on the relation between environmental and economic policy reforms in China.

Fourth, the project will use local survey data to assess the impact of environmental information and the local capacity to use it effectively. The results should inform the Bank's lending and environmental policy dialogue in China. One contribution will be improved understanding of environmental information as a source of pressure on TVIEs to control pollution. An important role for this variable would imply greater allocation of regulatory resources to collection and dissemination of appropriate environmental information.

Fifth, the project will provide insight into the use of environmental information within TVIEs. Recent evidence from Mexico suggests that internal environmental management and training strategies have significant impacts on factory emissions, because they increase responsiveness to regulatory incentives for pollution control. The research will assess the importance of these variables in the case of TVIEs. Strong results would suggest the need for greater focus on pilot technical assistance and training programs for plant-level environmental management as complements to (but not substitutes for) more traditional regulatory development programs.

Interviews with community leaders, plant managers, workers, and household heads are almost complete, and pollution monitoring has begun. Data analyses will be completed in 2001, and major reports should be ready by the end of 2001.

Responsibility: Development Research Group, Infrastructure and Environment—David Wheeler (dwheeler @worldbank.org), Hua Wang, Benoît Laplante, Susmita Dasgupta, Jun Bi, Ping Yun, and Lei Liu. With Yi Liu and Fengzhong Cao, China's State Environmental Protection Agency; Zhifeng Yang, Beijing Normal University; and Genfa Lu, Nanjing University.

Completion date: December 2001.

Land Tenure in Rural China

This research, undertaken jointly by the World Bank's Development Research Group and China Country Unit, aims to quantify the benefits and costs of improving the definition of land use rights in China and to determine the distribution of gains and losses accruing to different types of farmers. It is based on a resurvey of a panel of about 1,000 farm households in three provinces for which comprehensive data are already available from four rounds of the State Statistical Bureau's annual household survey (1993–95).

The study tests the following hypotheses:

- Even where formal credit markets are absent, secure tenure is very important for increasing household investment and wealth.

• The higher levels of tenure security brought about by property rights reform increase the propensity to participate in factor markets (for land and, through outmigration and off-farm employment, for labor), thus generating gains in allocative efficiency that tend to increase household income (and improve rural well-being in general).

• If initial land endowments are distributed in an egalitarian fashion and education and off-farm employment are widely accessible, less costly means of insurance than periodic redistribution of land are likely to be available, implying that property rights reform will not adversely affect the poor.

• The net economic benefits from property rights reform are large, and failure to implement such reforms carries a high opportunity cost.

The study goes beyond the current literature in several ways. First, most studies on the subject have been limited to examining the impact of formal title rather than informal means of increasing tenure security. This, together with the fact that most of these studies find the main impact of title to come about through credit markets, implies that very little is known about the effects of tenure security in environments in which credit markets are underdeveloped and most poor people live. The study thus promises to shed light on rural poverty reduction more generally.

Second, several studies have found the impact of land tenure on short-term investments to be small, leading to the belief that even the long-term benefits from increased tenure security would be limited. This study will determine whether there is, in fact, empirical support for such a view.

Third, the fact that near universal access to land in China has been shown to perform an important safety net function helps focus the study on the distributional impact of land tenure reform. Because attitude surveys in China have found broad support for periodic land redistribution, many believe that tenure reform would be antipoor, an issue that can be directly addressed in the research.

Finally, the research explicitly considers the relationship between land tenure and the functioning of other factor markets. This is not only important because other markets will affect households' options for self-insurance. It is also important for the transferability of the findings to other countries in Asia where legal restrictions on the functioning of land rental markets continue to be widespread.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org); and East Asia and Pacific Region, China Country Unit—Juergen Voegele, and Rural Development and Natural Resources Sector Unit—Li Guo. With Yang Yao and Yaohui Zhao, Beijing University; and Michael Carter, University of Wisconsin.

Completion date: December 2002.

Measuring the Economic Value of Environmental Protection Projects: Methodology and Application to Armenia's Lake Sevan

Lake Sevan—a large, high-altitude lake in Armenia with much symbolic, cultural, and historical importance to Armenians—has been significantly depleted over the past 50 years. Withdrawals have lowered the water level and shrunk the surface area, destroying fisheries and reducing tourism. The Armenian government is considering actions to stop or partially reverse the damage. But the costs of these actions are estimated to be high, and the benefits have not been estimated.

This study will use contingent valuation to estimate the benefits associated with the lake's recreational and nonuse values. Through surveys, it will assess the willingness of foreign tourists and Armenians—both those living in Armenia and those in the diaspora—to pay to prevent further degradation of the lake. It will test different ways of eliciting value (open-ended, close-ended, and likelihood questions), different modes of survey (mailed questionnaires and in-person interviews), and different payment vehicles (utility bills, a trust fund, and tourist fees).

The survey has been written and is about to be pretested and conducted in Armenia, France, and the United States. Local collaborators have been identified and will participate in a training workshop designed to familiarize them with the methods and techniques of environmental valuation.

The findings from this research will benefit policymakers involved in making decisions about the restora-

tion of Lake Sevan. The methods tested will benefit those developing projects with large nonuse or nonmarket environmental benefits. The results will also benefit practitioners of environmental valuation, particularly in developing countries.

Responsibility: Development Research Group, Infrastructure and Environment—Benoît Laplante (blaplante @worldbank.org), Hua Wang, and Craig Meisner. With Vic Adamowicz and Dale Whittington.
Completion date: December 2002.

Infrastructure and Growth: A Multicountry Panel Study

The purpose of this study was to produce estimates of the effects of major kinds of physical infrastructure on GDP per capita growth and multifactor productivity. The study modeled five kinds of infrastructure separately, in a standard growth framework with total capital, human capital, and geographic variables as additional candidates for explaining growth. The estimates were produced in a full panel (152 countries) of annual data (1950–95) and with a new multicountry database of infrastructure stocks.

The study found that among the explanations of a country's infrastructure stocks, population size and per capita income are important, but so are area and degree of urbanization. These signal the degree of density, which affects the per capita cost of supplying roads, electricity, and telecommunications.

On the crucial question of causation—does infrastructure cause growth or vice versa?—the study concluded (on Granger tests and helped by cointegration in the series of infrastructure stocks and per capita income) that causality between income levels and infrastructure stocks runs in both directions, but that the long-run effect is from infrastructure to income.

Measuring the long-run productivity of infrastructure capital relative to capital in general across the entire sample, the study found electricity generating capacity to have productivity about equal to that of capital in general. It found the same for transport routes (paved roads and railway track) in lower-income countries. Assuming that no infrastructure will be laid down that is not as productive as capital in general, there is no evidence in these cases, on average, of externalities associated with these kinds of infrastructure. In higher-income countries, however, transport routes have a greater impact on GDP per worker than does capital in general. Telephones also have a large impact on output, but the effect is so large as to strain credibility, at least as a supply effect; it probably reflects the chronic excess demand for telephones in many developing countries and to that extent is demand determined.

Estimating a translog function, the study found that electricity capacity and paved roads are each subject to rapidly diminishing returns. Building much of such infrastructure on the chance of demand is therefore risky. It also found that electricity capacity and paved roads are complements to both physical and human capital. This signifies that the effectiveness of each increases with stocks of general capital and therefore (with everything measured in per worker terms) with capital deepening across the economy—that is, with industrialization.

To estimate the rates of return to infrastructure (relative to that to capital in general), the study combined estimates of the marginal product of infrastructure with data on the unit cost of construction. For both roads and electricity capacity, it found that productivity is highest in rapidly growing middle-income developing countries. In that same group the unit cost of installing electricity capacity or paved roads is lower than that in the low-income and high-income groups, and the social rate of return to capital in general is highest.

Across the entire sample, the study found much heterogeneity in the rates of return to paved roads and electricity capacity relative to that to capital in general. In a number of cases infrastructure has the lower rate. Disaggregating by per capita income, however, the study found that middle-income developing countries show rates of return to paved roads well above those to capital in general, indicating undersupply and, possibly, pronounced externalities to paved roads associated with middle income. For electricity capacity, however, the highest relative rates were found in the low-income group, while the return in the middle-income group is close to that to capital in general.

Responsibility: Development Research Group, Public Economics—Shantayanan Devarajan (sdevarajan @worldbank.org); and Transportation, Water, and Urban Development Department, Office of the Director—Christine Kessides.

Completion date: December 1999.

Reports

Canning, David. 1998. "A Database of World Stocks of Infrastructure, 1950–95." *World Bank Economic Review* 12(3): 529–47.

———. 1999. "Infrastructure's Contribution to Aggregate Output." Policy Research Working Paper 2246. World Bank, Development Research Group, Washington, D.C.

Canning, David, and Esra Bennathan. 2000. "The Social Rate of Return on Infrastructure Investments." Policy Research Working Paper 2390. World Bank, Development Research Group, Washington, D.C.

Competitive Cities: Urban Primacy and Growth

Urban analysts and social scientists have hypothesized that excessive urban primacy—a situation in which too many of a country's or region's resources are concentrated in an excessively large, costly metropolitan area—hinders national growth and quality of life. Moreover, the World Bank's recent focus on the urbanization strategies and entrepreneurship of medium-size cities indicates disenchantment with conditions in megacities. And the popular press has focused on the competitiveness of medium-size cities in the United States (compared with large metropolitan areas) for most economic activity.

All this suggests two related questions for research. First, does excessive primacy have significant effects on economic growth? Many studies have examined the determinants of urban primacy, most with the presumption that too much primacy is detrimental to a country. Yet this presumption appears not to have been tested. This study tested that presumption.

Second, what are the determinants of urban primacy? This research addressed this question in a more sophisticated way, with better data, than past studies had. While earlier studies relied on cross-sectional data and methods, this one used panel data and methods. It also used data on key determinants of primacy related to national infrastructure investments and decentralization of government, which are typically not used.

The study explored the issue of urban overconcentration econometrically, using data from a panel of 80–100 countries every five years from 1960 to 1995. It found the following:

- At any level of development there is indeed a best degree of national urban concentration. It increases sharply as income rises, up to a per capita income of about $5,000 (in purchasing power parity terms), before declining modestly. The best degree of concentration declines with country scale. Growth losses from significantly nonoptimal concentration are large. Those losses tend to rise with level of development, peaking at a very high level (about 1.5 percentage points of annual economic growth). Results are very robust.
- In a group of 72 countries in 1990 roughly 30 had satisfactory urban concentration, 24 had excessive concentration, and 5–16 had too little.
- The countries with highly excessive concentration include Argentina, Chile, Costa Rica, and Panama (in Latin America); the Republic of Korea and Thailand (in Asia); the Republic of Congo (in Africa); and Greece, Ireland, and Portugal (in Europe). Many of these countries have explicitly unitary governments or federal structures that have traditionally been severely constrained.
- The countries with too little urban concentration include Belgium (a small, split country) and such special cases as the former Czechoslovakia and the former Yugoslavia.
- Urban concentration declines with national scale. It initially rises with per capita income, peaking at about $3,000 before declining. If the largest city in a country is a port, increased trade leads to increased urban concentration. Otherwise, increased trade leads to deconcentration as markets in the hinterland open to trade. But trade effects are modest.
- Similarly, more political decentralization (or increased federalism) only modestly reduces urban concentration.
- However, interregional transport infrastructure—especially dense road networks—significantly reduces urban concentration, an effect that rises with income.

The findings were presented at the Regional Science Association meetings in Montreal in November 1999, with about 60 specialists in urban development attending.

Responsibility: Development Research Group, Infrastructure and Environment—Zmarak Shalizi (zshalizi @worldbank.org). With Vernon Henderson and James Davis, Brown University.

Completion date: April 2000.

Report

Henderson, Vernon. 2000. "How Urban Concentration Affects Economic Growth." Policy Research Working Paper 2326. World Bank, Development Research Group, Washington, D.C.

Financing of Private Hydropower Projects

This study reviewed the issues and challenges related to private financing of hydropower development in developing countries. From the limited pool of projects that have reached or are nearing financial closure, 10 projects were chosen for the study in five developing countries that have been among the most active in promoting private hydropower development—Brazil, the Lao People's Democratic Republic, Nepal, the Philippines, and Turkey. These projects represent a range of physical and market characteristics, regulatory and concession environments, public-private risk sharing arrangements, and financial structures. Collectively, they represent a reasonable cross-section of the types of private hydropower schemes seeking investment financing.

In developing countries the financing of greenfield private infrastructure projects on a limited recourse basis faces certain common issues regardless of the type of project. Hydropower development projects raise additional difficulties—stemming from their site-specific nature; their high construction risk and long construction periods; their capital-intensive nature and high share of local costs; the unpredictability of their output, which is subject to river flows and broader water management constraints; the complex concession process needed to achieve transparency in the award and pricing of output; and environmental sensitivities. The study examined how the 10 case projects solved these difficulties and reviewed the main public policy issues involved.

Private hydropower development is still evolving, and the process remains slow and expensive. There is a danger that interest in the larger hydropower projects will falter if prospective developers continue to face high up-front costs and long preparation periods with only limited prospects of success. The findings of the study suggest a need for longer-term financing to better suit the characteristics of hydropower; a regulatory framework and realistic public-private risk sharing responsive to the requirements of hydropower projects; and adequate preparation by the public sector of the technical and contractual details of projects before their private concessioning.

Responsibility: East Asia and Pacific Region, Energy and Mining Sector Unit—Barry Trembath (btrembath @worldbank.org); and Project Finance and Guarantees Department—Tomoko Matsukawa. With Knight Piesold Limited, United Kingdom.

Completion date: June 2000.

Report

Head, Chris. 2000. *Financing of Private Hydropower Projects.* World Bank Discussion Paper 420. Washington, D.C.

The Effects of Telecommunications Infrastructure on Investment: An Empirical Analysis

Telecommunications infrastructure is increasingly recognized as a causal factor in economic growth. This study, based on a literature review, econometric analysis, and a survey of examples from the academic literature and project reports, seeks to improve the understanding of the underlying causal mechanisms by examining the relation between telecommunications infrastructure and the quantity and quality of investment.

Three important findings emerge from the study:

- The relation between telecommunications rollout as traditionally measured and investment quality and quantity is weak. The relation between investment and the quality of telecommunications services, as proxied by privatization, is far stronger.
- Investment in information infrastructure has a significant impact on income-generating opportunities and the quality of service provision in microeconomic studies of developing countries, but the extent of that impact is highly dependent on a range of broader factors, such as market reform.
- Telecommunications rollout is correlated with a range of nonincome development indicators (including health and education), after allowing for income effects.

At least three reports and a data set will emerge from the study. The reports will include two econometric studies of the impact of telecommunications infrastructure on World Bank project performance and foreign direct investment flows, and a report aimed at policymakers that will include the results of the econometric

analysis, additional econometric analysis on the impact of telecommunications on nongrowth development goals and the impact of sector reform on the provision of services, and a literature review on the impact of information infrastructure on government services and the private sector. An online data set will include data on foreign direct investment, reviews by the World Bank Operations Evaluation Department, and information on telecommunications and reform status. The research has already been used in two reports expected to influence Bank policy and the broader community: a toolkit on poverty reduction strategy papers and a submission to the G-8 conference in Japan on the digital divide.

Responsibility: Telecommunications and Informatics, Policy Division—Charles Kenny (ckenny@worldbank.org) and Christine Qiang. With Jia Liu and Taylor Reynolds, American University; and Jeremy Grace, State University of New York.

Completion date: August 2000.

The Sustainable Financing of Investments in Municipal Infrastructure: Cost Recovery for Solid Waste Management in the Philippines

This study uses contingent valuation surveys to measure the willingness to pay for garbage collection and disposal. Results of a 1998 survey of 500 representative households, 300 representative commercial establishments, and 150 itinerant vendors in Iloilo, a medium-size city in the Philippines, reveal that on average households are willing to pay 24.45 pesos and commercial enterprises 89.15 pesos a month for solid waste collection. (The number of usable responses from the itinerant vendor sample was too low to obtain robust results.) In contrast, willingness to pay for solid waste disposal was close to zero for both households and commercial entities. Similar results were obtained in a second medium-size city, Naga.

Household income, the respondent's level of schooling, male gender, hiring help to dispose of garbage, and recycling waste in the household were all positively related to the willingness to pay for garbage collection. Age and burning garbage were negatively related to willingness to pay. These results clearly underline the importance of education and information dissemination campaigns in increasing awareness of the importance of solid waste management—and thus the willingness to pay for the service.

The team is now assessing the constraints and feasibility of the benefits transfer methodology, in which the results of contingent valuation studies for one location are used to predict willingness to pay in other locations. If benefits transfer turns out to be workable, project managers would be able to extrapolate the experience from one project to another, lowering the considerable cost of assessing willingness to pay.

Preliminary analytical results were presented in the Philippines (to mayors and city officials in Iloilo and Naga, the Department of Environment and Natural Resources, local nongovernmental organizations, and academics in Manila) in February and March 1999. Results were also presented to operational staff during the Study Tour on Waste Management in Scandinavia, June 7–11, 1999.

Responsibility: Latin America and the Caribbean Region, Finance, Private Sector, and Infrastructure Sector Unit—Sheoli Pargal (spargal@worldbank.org); and Development Research Group, Infrastructure and Environment—Maureen Cropper. With Nathalie Simon, U.S. Environmental Protection Agency; and the University of the Philippines. The Japanese government contributed funding for the research.

Completion date: September 2000.

Comparative Study of Water Institutions and Their Impact on Water Sector Performance in Selected Countries

In response to increasing water scarcity, water institutions around the world—formal and informal policy, legal, and administrative entities—are undergoing far-reaching changes. What has the cross-country experience with the evolution of water institutions been? Do the changes advance or impede the water sector's financial viability and the sustainability of water resources?

This project addresses these questions through a comparative study of water institutions and their impact on sector performance in selected industrial and developing countries. The interdisciplinary study compares a set of legal, policy, and administrative features affecting the economic and operational performance of water insti-

tutions in 35 countries. It then compares performance, based on qualitative and quantitative variables. By linking the comparative analysis of institutions with the analysis of sector performance, the study identifies both common and unique features of best-practice and worst-case institutions.

The analysis draws primarily on data derived from interviews with a sample of water sector experts and responses to a detailed questionnaire administered to this sample. The results provide the basis for deriving strategic options and action plans for strengthening institutions and improving their performance.

Despite variations in resources and political economy conditions, several common trends and patterns emerge. The key issues are no longer resource development and water quantity but resource allocation and water quality. The notion of water provision as a public good and welfare activity is being replaced by the concept of water as an economic good and as an input in economic activity. And the old development paradigm of centralized decisionmaking, administrative regulation, and bureaucratic allocation is giving way to a new paradigm rooted in decentralized allocation, economic instruments, and stakeholder participation.

The findings suggest that there is a critical need to concentrate efforts in countries, areas, and subsectors that already have a critical mass of institutional capacity, where the probability of success is higher than elsewhere because of lower transactions costs. The institutional changes occurring across countries suggest that the potential net gains of such changes are beginning to exceed the corresponding transactions costs in most contexts.

For water sector reform strategies, the multidimensional links among key sector problems suggest that an integrated approach will have the greatest impact. At the heart of such an approach lie institutional changes to strengthen and modernize the legal, policy, and administrative arrangements governing the water sector.

The second phase of the study develops an analytical framework for identifying various layers of institutional links and links between institutions and performance evident in the interaction of institutions and sector performance. (The third phase of the study will analyze the entire data set, which includes 116 observations from the 35 countries.) It then evaluates the layers of links using an evaluation methodology employing perception-based cross-country data. These analytical and empirical analyses are used to identify key inputs for a generic strategy of water institution reform.

The results show that water institution performance has a statistically significant positive effect on water sector performance, and they indicate the relative strength, direction, and significance of the effects of institutional features on performance. They suggest that the interaction of institutions and performance can be affected by the socioeconomic, political, and resource-related environment in which it occurs. And they strongly favor a sequential strategy for institutional reform.

The results of the study have been disseminated through seminars at the Water Resources Center of the University of Illinois at Urbana and at the World Bank, at a November 1999 seminar at the University of Indiana at Bloomington, and at the European Conference of Environmental and Resource Economists, Crete, June 29–July 3, 2000.

Responsibility: Rural Development Department—Ariel Dinar (adinar@worldbank.org). With R. Maria Saleth, Institute for Social and Economic Change, Bangalore, India.
Completion date: October 2000.

Reports

Saleth, R. Maria, and Ariel Dinar. 1999. *Evaluating Water Institutions and Water Sector Performance.* World Bank Technical Paper 447. Washington, D.C.

———. 1999. "Water Challenge and Institutional Response: A Cross-Country Perspective." Policy Research Working Paper 2045. World Bank, Rural Development Department, Washington, D.C.

———. Forthcoming. "Institutional Change in the Global Water Sector: Trends, Patterns, and Implications." *Water Resources Policy.*

The Impact of Regulatory Risk on the Cost of Private Debt for Infrastructure Projects in Emerging Markets

During the past decade capital markets became the main source of funding for infrastructure projects, once financed overwhelmingly by governments. In developing and transition economies infrastructure bonds were the most common method of financing oil, gas, transport,

electricity, and telecommunications projects in 1990–99. Since investments in infrastructure are particularly susceptible to the risks of government interference, countries raising private finance for infrastructure projects need to ensure that the political and regulatory frameworks allay investors' concerns about the risk of default.

Analyzing rich cross-sectional and time-series data on the universe of fixed rate infrastructure bonds issued and traded during the past decade, this research examines the effect of governance (political and regulatory frameworks) on investors' risk perceptions and thus on the cost of debt. The research considers such aspects of polity and governance as the tradition of law and order, the presence of corruption, the quality of the bureaucracy, the strength of the contract enforcement system, the extent of regulatory discretion and the political constraints on this, and the likelihood of expropriation and other political risks. It also identifies the political and regulatory risks that concern investors most. The research compares infrastructure bond markets of developed and emerging economies to see how the factors driving infrastructure finance in the two country groups differ and to draw policy conclusions from these differences.

The methodological approach used has several innovative aspects:

- It enhances the explanatory capacity of earlier credit risk models by combining firm-intrinsic and macroeconomic factors and adding the full spectrum of risks associated with the quality of governance and regulation in the country and sector of bond issuance.
- It applies hierarchical cluster analysis to understand an array of indicators of regulatory and political risk and to discern variables that drive the perception of governance risk in a given country.
- It complements the analysis based on cross-sectional data by constructing a database of time-series yield data on infrastructure bonds traded in the secondary market and examining factors that affect bond risk in actual market conditions.
- It investigates the effect of industry structure and regulation on infrastructure bonds in the power sector.
- It compiles and analyzes the rating history of an entire universe of bonds, using the history of upgrade and downgrade events to investigate the effects of governance over the lifetime of infrastructure bonds. The information about key governance risks is then analyzed to understand the policy implications.

The research uses principal components and cluster analysis, ordinary least squares and two-stage least squares with instrumental variables regression analysis, truncated and augmented regression analysis, and multinomial logit regression analysis.

The relationship between regulatory policy and the cost of private debt for infrastructure in developing countries has received almost no attention, yet has important implications for the policy advice the Bank gives to client countries on building and strengthening regulatory regimes to promote private sector development. This research should contribute to that advice as well as to the Bank's methodology for pricing risk insurance to facilitate private project finance in emerging economies. The research will also produce a database of regulatory risk indicators in industrial and developing countries.

Responsibility: Europe and Central Asia Region, Energy Sector Unit—Laszlo Lovei (llovei@worldbank.org). With Nina Bubnova and John Quigley, University of California at Berkeley; and Ilya Lipkovich, Virginia Polytechnic Institute and State University.

Completion date: October 2000.

Report

Bubnova, Nina B. 2000. *Governance Impact on Private Investment: Evidence from the International Patterns of Infrastructure Bond Risk Pricing.* World Bank Technical Paper 488. Washington, D.C.

Privatization and Basic Infrastructure Services for the Urban Poor

A third of Latin America's people live in poverty today, and a sixth live in extreme poverty. The very poor cannot meet their basic nutritional requirements, let alone the cost of basic infrastructure services. Because of capital market imperfections, they typically cannot borrow to pay connection costs, further limiting their access to infrastructure services.

This lack of access helps explain why the privatization plans proposed by some Latin American governments have raised concerns among advocates of the poor.

While privatization can be expected to improve efficiency in service delivery, it does not necessarily lead to greater equity. To improve equity, regulatory regimes must ensure that private operators have incentives to invest in activities they might otherwise have considered insufficiently profitable.

The goal of this study is to answer three questions: How much access do the poor have to basic infrastructure services in Latin America? What has been the impact of privatization on the poor in Latin America? And how can we make sure that privatization will be beneficial for the poor in that region?

The study reviews the transmission mechanisms through which infrastructure reform may affect the poor, focusing on microeconomic issues related to the poor's access to infrastructure services and the affordability of those services. Using household survey data from 12 countries, the study reviews the trends over time in access to infrastructure services, examining whether the poor are benefiting from increases in connections. It also describes the policy options available to promote better access and ensure service affordability and assesses how priorities should be set. Specifically, it looks at two questions: whether policymakers should emphasize subsidies for new connections or consumption subsidies for people already benefiting from connections and whether some sectors are more important than others in reducing poverty.

The study is limited to the urban poor and to the water, gas and electricity, and telecommunications sectors (some evidence on urban transport may be included). Country coverage is limited to countries, such as Argentina, Bolivia, and Chile, that have substantial experience privatizing urban infrastructure. Brazil or Mexico or both will also be included, because of their sheer size and because both face rising urban poverty problems. Additional countries will be added as the research design proceeds.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org), Vivien Foster, Mohamed Ajwad, and Corinne Siaens, and Finance, Private Sector, and Infrastructure Sector Unit—Anna Wellenstein; and World Bank Institute, Governance, Regulation, and Finance Division—Antonio Estache.

Completion date: October 2000.

Community Comanagement of Urban Environmental Quality: Water, Sanitation, and Water Pollution Control

The main goal of this research is to answer the following question: What is the best decisionmaking procedure for coordinating the actions and resources of the municipal government, the community, and the private sector in designing water and sanitation, solid waste management, and water pollution control systems that are sustainable, equitable, effective, and efficient?

The research is developing a planning methodology consisting of a set of decisionmaking procedures and a set of guidelines for selecting and applying the most appropriate procedure in a given situation. The decisionmaking procedures will be designed to help determine the best systems for serving a given urban community, the resources required for these systems, and the contributions to be provided by the municipality, the community, and the private sector. Once the procedures are developed, they will be applied in an urban setting in Latin America, and their utility evaluated.

Developing the planning methodology requires addressing three main sets of research questions:

- What are the best ways to inform providers and consumers of options for water and sanitation, solid waste management, and water pollution control systems? Both technical and relatively sensitive topics need to be treated, such as implications for health and hygiene practices and the requirements for construction, maintenance, and operation.
- How should priorities be set? What are the best methods for eliciting evaluation criteria and preferences from consumers, communities, and government entities? To what extent and under what conditions are existing methods—most of which have been developed in OECD countries—appropriate for developing countries? What kinds of processes would best facilitate negotiation among the parties?
- How should services be linked to the community's contributions and preferences? How should the level and timing of consumers' resource contributions be determined? How should burdens and responsibilities be matched to these resource contributions?

The project organized an international expert workshop on participatory multicriteria decisionmaking at

the University of Don Bosco in Soyapango, El Salvador, on December 14–18, 1998. The university, a private institution striving to improve the quality of life in Soyapango (a suburb of San Salvador), is collaborating in the research.

Given the project's ultimate goal of improving practice, it will make a special effort to disseminate findings and lessons learned to the potential practitioners of the procedures, especially in the areas where the procedures are being applied. And the participatory approach used in applying the procedures will ensure that all those involved gain experience in comanagement.

Responsibility: Latin America and the Caribbean Region, Environmentally and Socially Sustainable Development Sector Unit—Richard M. Huber (rhuber@worldbank.org) and Shelton Davis. With Mark Ridgley and Aimee Del Aguila, Terra Group; Maria Cristina de Barahona, Francisco Rivas, Nelly Castillo, and Saul Benitez, University of Don Bosco, Soyapango, El Salvador; and Arnold vd Klundert, Maria Muller, Jaap Rijnsburger, and Lex Hemelaar, WASTE, Gouda, the Netherlands. The Netherlands Partnership Trust Fund is contributing funding for the research.

Completion date: December 2000.

Enhanced Telecommunications and Road Freight Logistics: Competition and Innovation

A number of policy studies assert that enhanced telecommunications (expanded traditional services and new cellular, Internet, and data-related services) and logistics services will transform business practices and significantly increase business productivity. The premise is that enhanced telecommunications and road freight services can stimulate entry and competition in downstream user industries, allowing new firms to enter, incumbent users to offer new products in new markets, and rivalry to intensify. If regulatory reform and increased competition spur innovations and other improvements in such services, and these innovations in turn generate substantial downstream benefits, that would substantially strengthen the case for increased competition based on its economywide effects.

This project examines how regulatory changes, competition, and enhanced telecommunications and road freight logistics services have affected businesses that make intensive use of these services in the Czech Republic, Estonia (telecommunications only), Hungary, Poland, and Turkey (logistics only). These countries have pursued different policies in these sectors, but each has implemented a "regime shift" in the past decade.

The project's approach involves interviewing intensive user firms to quantify the impact of increased investment and innovation in telecommunications and road freight logistics services on performance-related variables. In addition, the project examines the links between regulatory reform and the provision of new services by telecommunications and road freight service providers. The empirical evidence is based on a major new survey of about 1,400 enterprises, including infrastructure service providers and intensive users of such services. Complementary data are drawn from separate surveys of competition and regulatory agencies and detailed case studies of selected enterprises. Such extensive data allow exploration of several hypotheses on the relevance of upstream innovations and of a procompetitive overall policy environment in driving the downstream intensity of competition.

The results of the study should help policymakers and operational staff better assess the case for active competition policies and for improved coordination between sector-specific and economywide regulation. They should also indicate whether easing any remaining barriers to competition in upstream business services should be a priority.

Responsibility: Development Research Group—Mark Dutz (mdutz@worldbank.org). With Maria Vagliasindi, European Bank for Reconstruction and Development; AC Nielsen, Cyprus; David Newbery, Cambridge University; Aydin Hayri, Deloitte & Touche; and Eda Karakullukcu, Metafor Construction and Trade, Istanbul. The European Bank for Reconstruction and Development is contributing funding for this research.

Completion date: December 2000.

Infrastructure Productivity: Direct and Indirect Effects

Studies conducted over the past decade have repeatedly reported rates of return to public capital that far exceed

those to private capital or those emerging from cost-benefit analysis or project evaluation for infrastructure investments. In part to investigate these still controversial returns and to find out whether the operation of indirect effects may help explain them, this study identifies and measures the growth and productivity effects of infrastructure in India, using time-series data from about 1960 to about 1990.

The study addresses three main questions. First, in addition to direct effects on output and growth, does physical infrastructure have significant indirect effects? Second, what are the economic rates of return to different kinds of infrastructure investment, and how do they compare with the social rates of return to other uses of capital? Third, is infrastructure a necessary condition for growth?

The study estimates growth effects for roads, rail, telephone lines, and electricity generation and transmission capacity. These effects are measured in terms of manufacturing and domestic product at the state and district level. The study also tries to determine at what level and through which channels the effects operate.

Responsibility: Development Research Group, Public Economics—Shantayanan Devarajan (sdevarajan @worldbank.org) and Sethaput Suthiwart-Narueput; and Transportation, Water, and Urban Development Department, Office of the Director—Christine Kessides. With Esra Bennathan, Subhashis Gangopadhyay, Sylaja Srinivasan, Charles Hulten, Paul Seabright, and Martin Robert Weale.

Completion date: December 2000.

Report

Hulten, Charles. 1999. "Indian Manufacturing Industry: Elephant or Tiger? New Evidence on the Asian Miracle."

Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply

Reforms promoting private sector participation in the provision of urban water supply are often cited as success stories, but these reforms have followed many different approaches, including leases, concessions, and service contracts. There has been no rigorous analysis that critically examines the reforms and the outcomes or that would enable development practitioners to choose the most efficient reform for their circumstances. Using a case study approach, this research systematically analyzes experience with attempts at private participation in the provision of water services in six cities: Buenos Aires, Argentina; Santiago, Chile; Abidjan, Côte d'Ivoire; Conakry, Guinea; Mexico City, Mexico; and Lima, Peru. The sample represents the main contracting options used in water supply, provides significant variation in the institutional setting, and allows comparison with countries that have not used private participation.

The study analyzes the effects of political and contracting institutions on the design and performance of contracts for reform of urban water supply, comparing different forms of private participation and reforms under public ownership. It examines the design and performance of reform (including the contractor selection process, contract design, and regulatory framework), looking at how the different types of reform addressed, or failed to address, possible problems of incentives, information asymmetries, and credibility. Finally, the research assesses the results of the reform, looking at different indicators of performance and measuring the welfare effects of reform compared with a counterfactual (using the methodology developed by Ahmed Galal and others, *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, New York: Oxford University Press, 1994).

The research has produced several important findings:

- The large health and environmental externalities associated with water provision make it fundamentally different from other infrastructure sectors.
- In institutionally weak environments it is difficult to provide institutionalized protection against expropriation of quasi rents and regulatory capture.
- Constraints such as the political importance of water, the cost and scarcity of water resources, and the extent of unmet demand profoundly affect the design and difficulty of reform.
- The political motivation for, feasibility of, and commitment to reform affect the choice of design for reform and its success.
- Even in difficult institutional environments and with serious failings in design or implementation, private sector participation produced gains over reasonable counterfactuals.

• Performance improved with private sector participation, and in some cases—most notably in Santiago, Chile—it improved without privatization.

The reason for the success in Santiago appears to have been improved regulation. Santiago's regulator was powerful, independent, politically insulated, and guided by detailed laws that left little room for discretion. Further, it paid salaries above civil service norms, and its staff was regarded as honest, professional, and competent. This suggests that the gains from having a politically independent regulator are significant.

The case studies will be used by the World Bank Institute for its training programs on the water sector and on regulation.

Responsibility: Development Research Group, Regulation and Competition Policy—Mary Shirley (mshirley @worldbank.org), Luke Haggarty, Colin Xu, and Ana Maria Zuluaga, and Public Economics—George R. G. Clarke; and Private Sector Development Department, Private Participation in Infrastructure—Penelope Brook. With Claude Ménard, Sorbonne University; Simon Cowan, Worcester College, Oxford; Manuel Abdala, Navigant Consulting and Universidad de San Andrés; Lorena Alcázar, University of the Pacific; Douglass North, Washington University at St. Louis; Scott Masten and Keith Crocker, University of Michigan; Roger Noll, Stanford University; Dale Whittington, Northeastern University; and Matthew McCubbins, University of California at San Diego.

Completion date: December 2000.

Reports

Alcázar, Lorena, Manuel A. Abdala, and Mary M. Shirley. 2000. "The Buenos Aires Water Concession." Policy Research Working Paper 2311. World Bank, Development Research Group, Washington, D.C.

Alcázar, Lorena, Colin Xu, and Ana Maria Zuluaga. 2000. "Reforming Urban Water Supply: The Case of Lima, Peru." World Bank, Development Research Group, Washington, D.C. Draft.

Clarke, George R.G., Claude Ménard, and Ana Maria Zuluaga. 2000. "The Welfare Effects of Private Sector Participation in Guinea's Urban Water Supply." Policy Research Working Paper 2361. World Bank, Development Research Group, Washington, D.C.

Haggarty, Luke, Penelope Brook Cowen, and Ana Maria Zuluaga. 1999. "Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply Systems—The Case of Mexico City Water Sector Service Contracts." World Bank, Development Research Group, Washington, D.C.

Ménard, Claude, and George R.G. Clarke. 1999. "Reforming Urban Water Supply: The Case of Abidjan, Côte d'Ivoire." Policy Research Working Paper 2377. World Bank, Development Research Group, Washington, D.C.

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Noll, Roger, Mary Shirley, and Simon Cowan. 1999. "Reforming Urban Water Systems: Theory and Evidence from Developing Countries." World Bank, Development Research Group, Washington, D.C. Draft.

Shirley, Mary, and Claude Ménard. 1999. "Cities Awash: Reforming Urban Water Systems in Developing Countries." World Bank, Development Research Group, Washington, D.C. Draft.

Shirley, Mary, L. Colin Xu, and Ana Maria Zuluaga. 2000. "Reforming Urban Water Supply: The Case of Santiago, Chile." Policy Research Working Paper 2294. World Bank, Development Research Group, Washington, D.C.

Yardstick Competition across Ports: An Illustrated Guide for Regulators

This research addresses two main questions: What is a reasonable quantitative methodology for measuring the relative efficiency of ports operating in competition with each other? And how can this methodology be used to provide a tool that regulators can use to introduce yardstick competition in the port sector and to ensure that the efficiency gains achieved through restructuring or private sector participation are maintained and passed on to port users under the most common regulatory regimes?

With the increase in potential competition in the sector, the need to improve performance monitoring is becoming a serious concern for port regulators. This study aims to specify a cost frontier useful to regulators wishing to compare the relative efficiency of ports. A cost frontier shows costs as a function of the level of outputs and the prices of inputs. It must be specified so as to allow regulators to assess the wedge between tariffs and minimum costs and relate it to some of the key regulatory decision variables.

In preparation for this estimation, the research will develop a database of performance and productivity indicators. The control variables included in the specification of the functional relations estimated will be selected so as to ensure that the operators of a port activity are effectively comparable. Once the frontier has been estimated, the efficiency of a specific operator can be assessed relative to the performance of the best operators in the industry when facing the same constraints as the operator being assessed. The methodology will be tested using data from Mexico in collaboration with the Mexican government. If possible, it will also be tested in two to three more case studies.

The project is working with a team of advisers and practitioners in Latin America (Argentina, Colombia, Costa Rica, and Peru) familiar with the type of data that port authorities can generate in order to ensure that its results are useful in a large set of countries.

Responsibility: World Bank Institute, Governance, Regulation, and Finance Division—Antonio Estache (aestache @worldbank.org). With Sabbas Lamarroy, Mexican Port Regulatory Authority; Lourdes Trujillo and Marianela Gonzalez, University of Las Palmas de Gran Canaria, Spain; and Tim Coelli, University of New England, Armidale, Australia.

Completion date: December 2000.

Efficient Network Access Pricing Rules for Developing and Transition Economies

This research project seeks to translate the principles and results of the theoretical and analytical work on pricing access to infrastructure networks into a set of tractable rules and procedures. The need for access pricing rules that are easy to implement is especially urgent in developing and transition economies because of severe measurement problems and lack of technical expertise. The project seeks to undertake an operationally useful approach to the definition and implementation of access and interconnection rules in network industries undergoing a transition toward competition. The results should provide practical guidance to policymakers in developing and transition economies on how to ensure access for competitors to essential (bottleneck) network facilities on terms that are consistent with efficient competition and afford the owners of such facilities a fair opportunity to recover their prudently incurred costs.

While the issue of pricing access to bottleneck facilities is common to all network utilities, this project focuses on telecommunications. While the access pricing rules for gas, water, railroads, and electricity have a similar analytical foundation, they differ in their detailed formulation because of differences in these industries' technical characteristics.

The study analyzes the basic methodological approaches to access pricing along two key dimensions: the institutional setting in which access rates are determined, and whether access rates are built up from costs or derived from end-user prices. It also identifies the pertinent cost concepts for setting access rates. Because of the difficulty of estimating such costs in developing and transition economies and because the embedded technology of the incumbent operators is unlikely to represent a proper measure of forward-looking costs, the study advocates the use of world cost benchmarks. Such benchmarks, appropriately modified to account for domestic conditions, should reflect forward-looking rather than historical costs. The proposed access rates are above the total long-run incremental cost and below the stand-alone cost of providing access.

The study derives appropriate pricing principles in the presence of economies of scale and scope in the provision of access and identifies several strategies that regulators can use. In the presence of scale economies nonlinear pricing schemes can reduce, but do not entirely eliminate, the inefficiencies caused by the divergence between price and incremental costs that is needed to ensure adequate revenues. Moreover, differential pricing schemes are likely to be in the public interest. In the presence of significant fixed costs that are joint and common to several services (that is, network costs), the study advocates a Ramsey pricing rule. This rule directs the regulator to set prices by taking into account the pertinent marginal costs, the elasticities of demand, and the "tightness" of the budget constraint facing the owner of the bottleneck facility.

The application of the Ramsey principles that are developed leads to the so-called global price caps rule. Under that rule the regulator is directed to set all rates, including access rates, at the Ramsey-efficient level and

then determine the appropriate permissible price increases for every basket of services. For global price caps regulation to implement efficient prices, however, it must assign proper weights to the services included in the cap—a rather difficult task in developing and transition economies with low penetration rates. The study proposes a nondiscretionary method for choosing such weights that mitigates the problem of potential regulatory capture. When the entrants seeking access offer services that are close substitutes to those offered by the incumbent owner of the bottleneck facility, the efficient components pricing rule, supplemented by active regulatory oversight to favor nondiscriminatory interconnection, can be used. Alternatively, the regulator may be directed to use global price caps supplemented by maximal access prices defined by the efficient components pricing rule.

Responsibility: Development Research Group—Ioannis N. Kessides (ikessides@worldbank.org).

Completion date: March 2001.

Report

Kessides, Ioannis N., Jean-Jacques Laffont, Janusz A. Ordover, and Robert D. Willig. 1999. "The Access Pricing Problem: Some Practical Rules in Telecommunications." World Bank, Development Research Group, Washington, D.C. Draft.

Energy Services and Programs for the Poor

There is increasing recognition of the importance of dealing with material hardship as well as income poverty in both industrial and developing countries. One type of material hardship is the inability of the poor to obtain access to energy services and, once they have access, to pay the costs of the services.

In low-income and lower-middle-income countries access remains a pressing issue, especially in rural areas for such network services as gas and electricity. In upper-middle-income countries, which include transition economies of Europe and Central Asia and a number of countries in East Asia and Latin America, expanding access may be a less important issue than ensuring affordability and avoiding disconnection. In both groups of countries traditional policies designed to reduce poverty may not be enough to shield the poor from the hardship of inadequate energy services.

This research project uses case studies of Latin American and OECD countries to analyze the effectiveness of a wide range of energy assistance programs that have been implemented to help expand access to services, ensure affordability, and prevent disconnection for the poor.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon @worldbank.org).

Completion date: March 2001.

Competition and Privatization in Urban Water Supply

Privatization in urban water supply has proceeded more slowly and been characterized by less private sector involvement than privatization in other infrastructure sectors. One plausible reason for this is that it is much harder to introduce product market competition in the water sector than in other infrastructure sectors. Consequently, competition must be introduced indirectly—through competition for the market (that is, competitive bidding), yardstick competition (benchmarking), and competition in the capital market.

Since full privatization prevents repeated competition for the market, lease and concession contracts might have a distinct advantage over that approach. This project assessed how well other methods of competition (yardstick and capital market competition) have substituted for competition for the market in the United Kingdom. Using data from company balance sheets and income statements, the research used a partial equilibrium cost-benefit analysis to assess the total welfare gains and to identify which groups gained from privatization and which groups lost (this analytical approach was developed by Ahmed Galal and others, *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, New York: Oxford University Press, 1994).

Preliminary results suggest that both consumers and the government lost as a result of privatization. The government lost because of an overly generous stock market flotation that sold the water and sewerage companies for far less than their actual value. Consumers lost because of large price increases that allowed the privatized utilities to make large profits. This occurred despite

the establishment of an independent, well-funded, and highly competent regulator and the attempts to introduce competition. Further, there is little evidence that productivity improved following privatization. In fact, measured productivity fell following privatization, although this outcome appears to be the result of tighter environmental regulation, not privatization.

These results suggest several important lessons for developing countries. First, they demonstrate the importance of having regulation well established before privatization. Second, they show the difficulty of privatizing during periods of uncertainty—in this case, uncertainty due to the newly imposed environmental regulations. In practice, the privatized utility managed to implement the environmental improvements more cheaply than expected—allowing shareholders to make large profits but resulting in large losses for consumers. Finally, the results show the importance of competition for the market. If such competition had been used to set prices at the time of privatization, the large price increases might have been avoided.

Responsibility: Development Research Group, Public Economics—George Clarke (gclarke@worldbank.org), and Competition and Regulation Policy—Ana Maria Zuluaga. With Simon Cowan, Oxford University.
Completion date: June 2001.

The Impact of Rural Roads

Rural roads can boost agricultural growth and investment, household food security, and investment in human capital. They can also improve access to markets for rural products and reduce transactions costs. But the returns to rural road investments are not known, in part because of methodological problems. Even if calculated using the internal rate of return approach, the estimates of the returns are generally so low that investments do not appear viable. Moreover, the impacts of rural roads are long term and cannot be captured through cross-sectional survey data.

This project involves a long-term impact study of a Bank-financed rural roads project in Bangladesh. It provides technical assistance to the Bangladesh Institute of Development Studies (BIDS) to carry out baseline and follow-up surveys. Based on the panel data on households and communities, the study will calculate the economic and social returns to rural roads. It will also provide support to BIDS in analyzing the descriptive data.

BIDS collected the baseline survey data and was to have conducted follow-up surveys in 1998 and 1999. Because of the devastating flood of 1998 and its aftermath, however, the follow-up surveys had to be delayed until November and December 2000.

Responsibility: World Bank Institute, Economic Policy and Poverty Reduction Division, and Development Research Group, Rural Development—Shahidur R. Khandker (skhandker@worldbank.org); Development Research Group, Rural Development—Hussain Samad; and South Asia Region, Infrastructure Sector Unit—Thampil Pankaj. With M. Abdul Latif, Bangladesh Institute of Development Studies.
Completion date: June 2001.

The Macroeconomics of Infrastructure in Latin America

The progress in stabilization and reform achieved in many Latin American countries over the past decade has been based largely on strong fiscal adjustment efforts. There is a widespread perception, however, that public infrastructure investment—and, in many instances, infrastructure maintenance as well—has been a casualty of this fiscal retrenchment. Across Latin America fiscal corrections have been associated with a slowdown in the expansion of physical infrastructure stocks (such as road networks and power generation capacity). There is a risk that infrastructure deficiencies could hamper private sector activity and growth over the medium term, eventually constraining the expansion of tax bases and making the fiscal effort self-defeating.

Partly as a response to this situation—but also as an integral aspect of the regionwide shift away from the state-led development model—most Latin American countries have taken significant steps to allow increased involvement of the private sector in infrastructure. Indeed, Latin America is the developing region that has made the most progress in the privatization and liberalization of basic infrastructure services.

This study examines how this redefinition of the private and public sector roles has affected the volume and

quality of infrastructure services and the economy's investment and growth prospects and at what fiscal costs or benefits. Specifically, it addresses the following policy issues:

• What are the short- and long-run fiscal costs and benefits of the new public-private partnership, characterized by reduced public sector involvement in infrastructure? How should they be reflected in the priority ranking of public expenditures at a time when fiscal restraint is a dominant concern?

• How have the opening of infrastructure sectors and the new forms of public-private partnership affected the volume and quality of infrastructure stocks and services? Where have crowding-in effects between public and private investment been reinforced, and where have they been hampered? (From a policy viewpoint, the answer to this question is needed to identify potential new bottlenecks in public investment and possible distortions in private investment or in resource allocation by multilateral organizations.)

• What kinds of opening up are more effective in attracting the private sector—privatizing existing firms, allowing entry of new firms, or allowing entry of foreign firms? What kind of regulatory framework for the liberalized infrastructure sectors has yielded the largest payoff in terms of attracting private initiative? Under what circumstances does the opening of infrastructure sectors generate additional private investment? That is, does private infrastructure investment come at the cost of reduced capital spending in other sectors?

To answer these questions, the research combines microeconomic and macroeconomic evidence from Latin America and elsewhere. An important byproduct of the project should be a comprehensive data set on infrastructure stocks and flows for the major economies of Latin America.

Responsibility: Latin America and the Caribbean Region, Chief Economist Unit—Luis Servén (lserven @worldbank.org), Private Sector Cluster—Sheoli Pargal, and Finance, Private Sector, and Infrastructure Sector Unit—Marianne Fay; and World Bank Institute, Governance, Regulation, and Finance Division—Antonio Estache. With César Calderón, University of Rochester.

Completion date: June 2001.

Rural Roads: Welfare Impact Evaluation

Rural roads are often seen as key to raising living standards in poor rural areas. Yet despite the consensus on their importance—and much anecdotal evidence—there is surprisingly little hard evidence on the size and nature of their benefits.

This study aims to assess the impact of rural roads on poverty and to provide inputs to policy discussions of how best to allocate scarce public resources. The empirical investigation is being conducted in Vietnam, where the Bank is financing and helping to implement a large-scale rural roads project for poverty alleviation. The study's overall focus is on how the determinants of living standards change over time in communes that have road projects compared with ones that do not.

A survey was used to collect baseline data for a random sample of 100 project communes and 100 nonproject communes in the spring of 1997. A second round of surveying was conducted in June 1999. Bad floods delayed the survey in a few provinces. The data are currently being entered and cleaned. Information from these data should allow initial impacts to be assessed.

Four other surveys were also conducted in 1997 and 1999. In each sampled commune a questionnaire was administered to 15 randomly sampled households. A short district-level survey was implemented to help put the commune-level data in context, and an extensive province-level database was created to help understand the selection of provinces for the project. Because the impact of road projects varies with the magnitude of the change resulting from the project and the method of project implementation, a project-level database for each of the project areas surveyed is also being constructed.

The baseline data will be used to model the selection of project sites, with a focus on the underlying economic, social, and political economy processes. Later rounds will be used to understand gains measurable at the commune level, conditional on selection. The general approach will be in the tradition of double differencing with matching methods. Matching methods can be used to select ideal controls from among the 100 sampled nonproject communes, and outcomes in project communes can be compared with those found in the control communes before and after the introduction of the road

projects. Outcome indicators to be examined include commune-level agricultural yields, income diversification, employment opportunities, availability of goods, land use and distribution, services and facilities, and asset wealth and distribution.

Responsibility: Development Research Group, Public Economics—Dominique van de Walle (dvandewalle @worldbank.org). With Vu Tuan Anh, Economics Institute, Hanoi; and Dorothy Jean Cratty, University of Maryland at College Park. The Canadian International Development Agency (CIDA) Trust Fund is contributing funding for this research.

Completion date: December 2001.

Reports

van de Walle, Dominique. 1999. "Assessing the Poverty Impact of Rural Road Projects." World Bank, Development Research Group, Washington, D.C.

———. 2000. "Choosing Propoor Rural Road Investments." World Bank, Development Research Group, Washington, D.C.

Motorization and the Pricing of Externalities

In the past 50 years the number of motor vehicles worldwide has grown from about 60 million to about 700 million. Developing countries are having to cope with a higher level of motor vehicle ownership than OECD countries had at similar per capita income levels—but with less developed public infrastructure and institutional capacity.

In addition, qualitative differences in developing countries (such as proportionately more two-stroke engine vehicles and mixed right of way) have created unprecedented negative externalities. The World Health Organization (WHO) predicts that by 2020 about 2.4 million people worldwide will die annually in road traffic accidents; 88 percent of these deaths will be in developing countries, making traffic accidents the second worst "epidemic" in these countries in terms of years of life lost. The adverse effects of vehicle-related pollution at the local level are also much worse in developing countries. While the ambient level of suspended particulates meets the WHO standard in most industrial country cities, it exceeds that standard in such developing country cities as Beijing, Delhi, Mexico City, and Xian by as much as five times. And accelerated motorization is clogging developing country cities with traffic congestion.

These negative externalities of motorization in developing countries pose a challenge for public policy and the allocation of public expenditures. This research uses theoretical, empirical, and comparative case study analyses to address concrete operational issues. It addresses such questions as these: How much emphasis should be given to policies and programs that may reduce the need for transport infrastructure investments? How effective are different policies in accommodating large populations and economic growth in urban areas with minimal negative externalities from motorization? What is the benefit in encouraging a more appropriate pace of motorization—one that better balances private decisions on small capital outlays with society's ability to mobilize resources and implement complementary capital investments? How should transport infrastructure investments be allocated? Should investments be made in the urban core or the urban periphery, in rail or roads, in ring roads or arterials or corridors, in motorized or nonmotorized networks, in networks favoring personal or collective modes of transport?

The research agenda focuses on three main themes:

- The welfare effects of different road pricing mechanisms. This research develops analytical and numerical general equilibrium models to evaluate the welfare and efficiency impacts of alternative instruments (congestion fees, parking fees, gasoline taxes, mass transit subsidies, dedicated bus lanes, high-occupancy vehicle lanes) to control for transport externalities. It also looks at the interactions between transport policy instruments and preexisting tax systems (both local and national).
- The role of land use and urban form and the availability of alternative modes of transport in determining the pace of motorization at different stages of development in Asia. The research differentiates among countries at the mature stage of motorization, those midway in the process, and those at the initial stage. It will later expand to developing countries in other regions.
- The productivity of road infrastructure. This research develops a general equilibrium model that includes firm productivity effects (from road investment) and congestion externalities and investigates optimal rules for road infrastructure investment.

This research program is a collaborative effort by the World Bank, national and city government agencies, universities, independent research groups, nongovernmental organizations, and other international development agencies.

Responsibility: Development Research Group, Infrastructure and Environment—Zmarak Shalizi (zshalizi @worldbank.org), Elysa Coles, Antonio Bento, Maureen Cropper, Kenneth Chomitz, and Mead Over.

Completion date: January 2002.

Privatization of Telecommunications in Sub-Saharan Africa

Much of the policy advice on privatization and regulation of telecommunications is based on the experience of high- and middle-income countries. But a growing number of Sub-Saharan African countries have privatized their telecommunications firms or allowed private cellular operators to enter their domestic market. A better understanding of this experience would help donors develop policy advice tailored to the institutional environments and market conditions of countries in Sub-Saharan Africa, avoiding "one-size-fits-all" approaches to reform.

This research is analyzing Sub-Saharan African countries' experience with telecommunications reform in depth and will track changes over the period 1999–2002. It explores three key questions faced by policymakers in the region:

- How can greater competition be encouraged by facilitating efficient entry?
- How can the incumbent telecommunications provider be motivated to use its existing assets better and to invest in additional capacity?
- How can telecommunications reform be structured so that it gains the support of key stakeholders and fits well with the country's institutional capacity?

The research is analyzing these questions through a broad data set and through case studies of countries that have tried a mix of reform approaches, including no reform—Côte d'Ivoire, Ghana, Malawi, Senegal, Tanzania, and Uganda. The project will produce a comprehensive database on telecommunications in Sub-Saharan Africa, a set of detailed case studies, and a series of analytical papers, which will be presented at two major conferences in Africa.

The rigorous empirical analysis will not only assist donors but also help the proponents of reform make their case. The project will also strengthen policy and regulatory skills in the region by joining African research institutes with senior researchers from academia and the World Bank in close partnership, all using a single methodological and conceptual framework. In the course of the project the participating African research institutes—the Center for Economic and Social Research (CIRES) in Côte d'Ivoire and the Economic and Social Research Foundation (ESRF) in Tanzania—will take on more and more lead responsibility for the research, with the goal of creating an institutionalized regional capacity to advise on telecommunications reform and on infrastructure regulation more broadly.

The work began in 1999 with a pilot case study (Ghana), followed by team meetings to ensure consistency in the conceptual framework and the quality of the work. By June 2000 initial drafts of four cases had been completed. All six case studies and a synthesis report will be discussed with the project advisers in 2000, revised, and finalized. It is expected that they will be disseminated through a regionwide conference in Africa in 2001. Additional developments will be tracked and analyzed over the next two years, resulting in updated case studies and papers for a conference in late 2002.

Responsibility: Development Research Group, Regulation and Competition Policy—Mary M. Shirley (mshirley @worldbank.org), Luke Haggarty, George Clarke, and Frew Gebreab. With David Sappington and Mark Jamison, University of Florida; Jean-Jacques Laffont and Jean-Paul Azam, University of Toulouse; Tchetche N'Guessan, Gulbert Marie N'Gbo, and Mathieu Meleu, CIRES, Côte d'Ivoire; and Samuel Wangwe, Haji Semboja, and David Christian, ESRF, Tanzania. The U.S. Agency for International Development is contributing funding for the research.

Completion date: June 2002.

Economic and Engineering Evaluation of Alternative Strategies for Managing Sedimentation in Storage Reservoirs

The traditionally accepted practice in designing and operating reservoirs is to allow them to fill slowly with sediment, leaving the consequences of the sedimentation and abandonment of reservoirs for future generations.

That stage has already arrived for many reservoirs, and suitable sites for new reservoirs are limited. What is needed is sustainable management of reservoirs.

The goal of this research is to develop a mathematical optimization model that can be used to determine the economic feasibility of sustainable management of storage reservoirs, taking into account economic, social, environmental, and engineering factors. Not all reservoirs can be managed sustainably, and economic guidelines need to be developed to identify the projects that can be. The model will be designed to provide policymakers with a general framework for assessing whether a particular site can support a sustainable reservoir and whether that mode of operation makes economic sense. The results of this research may influence the way policymakers and engineers approach the design of dams.

The study was launched by a workshop held on December 8–9, 1999, at the World Bank, attended by people from both developing and industrial countries (Austria, Brazil, Italy, Japan, Malaysia, the Philippines, South Africa, Turkey, the United Kingdom, and the United States) as well as by Bank staff. The workshop was intended to help outline the first phase of the research—formulation of policy. Among those attending, there was a general consensus on the need to extend reservoir life whenever feasible—and to assess feasibility both for existing dams and in planning and designing new dams. The concept of the life cycle of dams emerged as a key aspect of the research.

Data for the research are available in existing case studies. In addition, several countries have shown keen interest in participating in the research: Brazil, Chile, Jordan, Malaysia, Mexico, Morocco, Namibia, Pakistan, the Philippines, Sri Lanka, Sudan, Turkey, and Uzbekistan.

The research has been discussed at several events in addition to the launching workshop: the International Water Resources Association Workshop on Dams, Development, and the Environment on February 14–16, 2000, in São Paulo, Brazil; the conference on Reservoir Sedimentation on June 20, 2000, in Wallingford, United Kingdom; and the annual meeting of the U.S. Commission on Large Dams on July 10–13, 2000, in Seattle, Washington.

The research is expected to initiate a new generation of operations in the Bank, focusing not only on dam safety but also on reservoir conservation.

Responsibility: Rural Development Department—Alessandro Palmieri (apalmieri@worldbank.org) and Ariel Dinar. With Farhed Shah, University of Connecticut; and George Annandale, Golder Associates, Denver, Colorado.
Completion date: October 2002.

Emergence from Subsistence: Infrastructure, Location, and Development in Nepal

Intuitively, the success of projects such as roads, irrigation projects, small business assistance schemes, or fertilizer distribution programs would seem to depend critically on where they are located. But research has shed little light on the effect of location on economic outcomes.

The purpose of this research is to begin filling this gap by studying the relations among infrastructure, geographic location, and economic development in Nepal. Nepal is a particularly suitable place to study spatial specialization because of the extreme diversity of the country in terms of accessibility and proximity to urban centers.

To study how proximity to towns and cities affects households' participation in labor and output markets and their allocation of land, the research uses the von Thunen model of specialization. It modifies the simple von Thunen model to account for the facts that the size of the market (measured by city population) affects the width of the circle; in the presence of a network of cities, villagers can trade different goods in different markets; and workers in villages surrounding cities commute to urban centers, while workers farther away migrate permanently. In the econometric estimation, the research takes a nonparametric approach that allows for a flexible relation between household decisions and proximity to cities of different sizes.

The research is proceeding in two stages. In the first stage household data from the 1995–96 Nepal Living Standards Survey (NLSS) were combined with geographic information system data on travel time to major cities. Data on urban populations were taken from the 1991 population census. Estimation based on a cross-section of 3,300 households reveals a strong spatial division of labor. Nonfarm employment is heavily concentrated in and around cities (up to four hours of travel time), while agricultural wage employment dominates villages located farther away (three to eight hours). Isolated villages

(more than eight hours from the nearest city) are essentially self-subsistent in both farm and nonfarm products. Vegetable and cereal production for sale takes place near urban centers, while oilseed and other commercial crops are more important at intermediate distances.

These findings are consistent with the von Thunen model of concentric specialization, and they also show the importance of city size. The research also finds border effects with India to be significant, in the sense that proximity to Indian towns does not have the same effect on local specialization as proximity to Nepalese towns. The study intends to identify factors other than proximity to cities that enable individual households to take advantage of new market opportunities opened by roads and other development projects and determine which households tend to be excluded from the benefits of such projects.

Although the results are promising, they are based on cross-section analysis, in which the geographic location of households is partly endogenous. If, for instance, a village is good for vegetable production, it may attract people who are good at producing vegetables. Over the years roads are likely to have been built to serve more promising or productive areas. To account for individual-specific fixed effects and the endogeneity of road placement, the second stage of this project will resurvey the NLSS households in 2001–02, after the population census is completed. The new survey will provide data on how urbanization and the construction and upgrading of roads since 1995 have affected market participation and geographic patterns of specialization. The research will also investigate how trade liberalization with India has affected border trade and the division of labor across space within Nepal. The project will also yield an updated representative data set that can be used for further poverty assessment in Nepal. Research results should help better identify suitable placement strategies for infrastructure and development projects.

Responsibility: Development Research Group, Rural Development—Forhad Shilpi (fshilpi@worldbank.org). With Marcel Fafchamps, Oxford University. The Swedish and Japanese Consultant Trust Funds have contributed funding for this research.

Completion date: February 2003.

Report

Fafchamps, Marcel, and Forhad Shilpi. 2000. "The Spatial Division of Labor in Nepal." World Bank, Development Research Group, Washington, D.C.

Database on Infrastructure Privatization

Lack of data about infrastructure privatization has severely constrained the World Bank's ability to carry out a systematic analysis of the relationship between the policy alternatives in privatizing infrastructure and the institutional environment in which these alternatives exist. This project, in line with the recommendations of the Bank's *World Development Report 1994: Infrastructure for Development* (New York: Oxford University Press, 1994), is developing a database of variables crucial to the understanding of experience in infrastructure privatization. The aim is to enable policymakers and Bank staff to learn from the successes and failures of infrastructure reform. The acceleration in infrastructure privatization and the rapid disappearance from the Bank's shelves and institutional memory of much of the information on utilities' performance as these entities are privatized make the need for this effort especially pressing. Early efforts to collect information from Bank sources identified substantial gaps that must be filled through country visits.

The database covers sales in electricity and telecommunications in 24 countries and includes financial information and performance indicators before and after sale, the terms and conditions of the privatization transaction, and details on the regulatory framework. The database will fill important gaps in the Bank's institutional memory and allow staff preparing and supervising infrastructure projects to quickly compare performance measures and regulatory frameworks with those for successful and unsuccessful privatized firms. Subsequent analysis using the data will develop detailed guidelines based on what worked and what failed in privatizing infrastructure.

Responsibility: Development Research Group, Regulation and Competition Policy—Mary Shirley (mshirley @worldbank.org) and Luke Haggarty. With Roger Noll, Stanford University.

Completion date: Ongoing.

Macroeconomics

The Role of Agriculture in República Bolivariana de Venezuela's Economic Rise and Decline

In growing economies labor productivity often increases more rapidly in agriculture than in other sectors. And there has been a long-standing view that rising labor productivity in primarily agricultural economies and an out-migration of agricultural labor to other sectors have been an essential dynamic mechanism that brings equilibrium to differences in average sector incomes.

In República Bolivariana de Venezuela differences in productivity between agriculture and the rest of the economy were large. In the 1960s output per worker in nonagricultural sectors was more than seven times that in agriculture. Such large differences are unusual, especially for a high-income country, as Venezuela was classified at the time.

This study modeled agricultural and nonagricultural productivity in Venezuela using an approach that recognizes the role of technology and policy states in the underlying factor choices and thus makes it possible to capture the effects of policy on productivity. The study also modeled intersectoral migration.

Estimation results indicate that labor responded to the large disparity in average incomes. Thus out-migration from agriculture seems to be responsive to market forces, particularly to the sectoral income gap—a result consistent with those obtained for other Latin American countries as well as from cross-country analysis. The implication is that as the gap in sectoral income narrows, migration slows. But modernization or development, measured by roads and human capital, reduces the cost of migration and improves the quality of the labor force, thereby strengthening the tendency to migrate.

Past investments by the Venezuelan government therefore provided positive incentives for productive reallocation of labor. In contrast, price and exchange rate interventions, especially prevalent in the 1980s, created artificial incentives for migration through their effects on income differentials.

The oil sector played a role in this process through its effect on the market and the policy variables. To the extent that oil income contributed to infrastructure and to employment opportunities in nonagricultural sectors, it also contributed to out-migration from agriculture. And it may have contributed to the decline in the real price of agricultural goods, which added to the out-migration. But it might also have contributed to the recession in the 1980s, thereby reducing migration in that period.

Responsibility: Development Research Group, Rural Development—Donald Larson (dlarson@worldbank.org); and Africa Technical Families, Rural Development 1—David Nielson. With Yair Mundlak and Rita Butzer, University of Chicago; and John Devereaux, University of Miami. The Israeli and Irish Trust Funds contributed funding for the research.

Completion date: December 1999.

Reports

Butzer, Rita, Donald Larson, and Yair Mundlak. "Intersectoral Migration in Venezuela."

Devereaux, John, and David Nielson. "Growth Miracles and Disasters: The Case of Venezuela." Draft.

Monetary Policy and Monetary Indicators during Banking Crises

Banking crises have plagued countries from Argentina to Zambia over the past two decades. In recent years several studies have identified banking crises and studied their causes. But the importance of a sound banking sector for monetary policy implementation has received little attention in academic and policy circles. This research project was aimed at helping to fill this gap through an empirical analysis of the monetary effects of banking crises.

The research focused on two issues. First, it evaluated the claim that the stability of demand for money is threatened by the occurrence of banking crises. Second, it analyzed the relationship between monetary indicators

and prices; in particular, it tested whether crises cause a structural break in this relationship. (For purposes of the study, *monetary indicators* refers to variables that help explain the behavior of prices and are monitored by policymakers to guide them in the conduct of monetary policy.)

The study focused on the following countries and crisis episodes: Chile (1981–87), Colombia (1982–88), Denmark (1987–92), Japan (1992–present), Kenya (1985–89 and 1992–95), Malaysia (1985–88), and Uruguay (1981–85). These were chosen to obtain a geographically representative sample of countries that had experienced banking problems over the past two decades. (Though the research began with 17 countries, data limitations reduced the sample to these 7.) Industrial countries were included in the sample to allow contrast and comparison with developing countries.

For the empirical estimations, cointegration analysis and error correction modeling were used to find appropriate dynamic specifications for money and prices in each of the countries. Parameter constancy tests on the estimated money demand equations helped in evaluating the hypothesis that demand for money becomes unstable during crisis periods. The analysis focused on broad money because the demand for narrow money is more likely to be affected by such factors as financial innovation and deregulation, events that can themselves lead to instability. In addition to determining which variables are significant indicators of the behavior of prices, parameter constancy tests were also performed to investigate whether crises bring about a structural break in the relationship between prices and monetary indicators.

Overall, the study found no systematic evidence that banking crises cause instability in the demand for money. It found that money, exchange rates, foreign prices, and domestic interest rates are significant indicators of price behavior. Finally, the results do not support the notion that the relationship between monetary indicators and prices undergoes a structural break during crisis episodes. But in three of the seven countries the study found evidence of variance instability in the price equations as a result of banking crises.

Preliminary findings were presented at the Annual Latin American and Caribbean Economic Association Meetings in Santiago, Chile, in October 1999. Findings will also be presented in the Development Research Group's Macroeconomics and Growth seminar series.

Responsibility: Development Research Group, Finance—Maria Soledad Martinez Peria (mmartinezperia @worldbank.org) and Cristina Neagu; and Financial Sector Strategy and Policy Department—Ivanna Vladkova. With Neil Ericsson, Federal Reserve Board.

Completion date: January 2000.

Report

Peria, Maria Soledad Martinez. 2000. "The Impact of Banking Crises on Money Demand and Price Stability." Policy Research Working Paper 2305. World Bank, Development Research Group, Washington, D.C.

The Quality of Growth

The last decade of the 20th century witnessed striking progress in the developing world—but also stagnation and setbacks, even in countries that had previously experienced fast economic growth. These large differences and sharp reversals have taught us much about what contributes to development. Economic growth remains central—not just its pace, but crucially also its quality.

Reviewing the experience of the past decade, this study drew lessons for development at the turn of the century. These lessons support a broadening of the policy framework to achieve sustainable development. Four areas of action are key:

- Improving the distribution of opportunities. Addressing the large inequalities in opportunities—especially in education—would offer the greatest potential welfare gains to society.
- Sustaining natural capital. Dealing with the environmental damage resulting from current growth patterns would both achieve a better natural environment and reduce the number of poor people.
- Dealing with global financial risks. Globalization presents risks to the poor, but if these risks are addressed, it could provide the technological wherewithal for reducing poverty.
- Improving governance and controlling corruption. Lack of civil liberties and voice, lack of transparency in the interactions between the elite and the state, and misgovernance and corruption threaten the gains from

any action—while courageous measures to increase transparency, create checks and balances, and improve governance hold great promise for significant payoffs.

This broader focus complements liberalization efforts with interventions in education and health to enhance the ability of poor people to benefit from reform efforts and to participate in development. It shifts attention from an exclusive reliance on government as the agent of change to a policy that engages all segments of society. This in turn calls for much greater attention to participatory processes and effective capacity building across the board.

The project's major output, a forthcoming book titled *The Quality of Growth*, will be published in at least six languages (Chinese, English, French, Russian, Spanish, and Thai). Early versions have been presented to the Asian Development Forum, the 1999 annual meetings of the World Bank and International Monetary Fund, and World Bank Institute seminars and conferences. The book will be widely used in core World Bank Institute training courses and seminars.

Responsibility: World Bank Institute—Vinod Thomas (vthomas@worldbank.org) and Ashok Dhareshwar, Economic Policy and Poverty Reduction Division—Yan Wang, Governance, Regulation, and Finance Division—Mansoor Dailami and Daniel Kaufmann, and Environment and Natural Resources Division—Nalin Kishor. With Ramon E. Lopez, University of Maryland; and Xibo Fan, Johns Hopkins University.

Completion date: February 2000.

Report

World Bank. Forthcoming. *The Quality of Growth*. New York: Oxford University Press.

Can Africa Claim the 21st Century?

What are the determinants of Africa's economic performance, and how are these determinants linked to poverty reduction? How can we build social capital in Africa, and how can it enhance the effectiveness of the state? How can productive sectors in Africa be strengthened to enable the region to participate in the global economy? What are the issues relating to development partnership (aid and external debt)? What development strategy can Africa adopt in the 21st century?

This research—a collaborative effort developed by several African institutions and the World Bank—combined economic and econometric analytical approaches, political economy, and institutional analysis to address these issues. It concluded that, with determined leadership, Africa can claim the 21st century and surmount the poor development record of the 20th century. Doing so will involve going beyond macroeconomic reforms to address four development areas: the interaction of political and economic governance, including conflict management; investing in people (including reversing the HIV/AIDS pandemic); strengthening productive sectors and diversifying trade and economic activity; and reducing aid dependence and indebtedness and strengthening partnerships. Addressing these problems will require a rebalancing of power and responsibility—between African people and governments, building on recent trends toward greater political participation, and between African states and their development partners.

Working papers and draft chapters of the main report were discussed at workshops and conferences in Abidjan in July 1999, in Nairobi in December 1999, in Addis Ababa in March 2000, and at the African Council of Ministers in June 2000. The report, issued in May 2000, has been extensively reported in the media and discussed at conferences and meetings in Africa, Europe, and the United States.

Responsibility: Africa Region Technical Families, Regional Economics and Social Policy—Alan Gelb (agelb @worldbank.org), Gene Tidrick, and John Randa, Regional Rural Development and Environment—Hans Binswanger, Capacity Building Unit—Brian Levy, Global Coalition for Africa—Tesfaye Dinka, Human Development 2—Nicholas Burnett, Institutional and Social Policy—Lionel Demery, and Rural Development 1—Robert Townsend; and Development Research Group—Ibrahim Elbadawi, Paul Collier, and Taye Mengistae. With Charles Soludo, University of Nssuka, Nigeria; Lual Deng; Njuguna Ndungu, University of Nairobi; Jean-Paul Azam, University of Toulouse; Michael Chege, University of Florida; Ernest Aryeetey, University of Ghana; Lemma Senbet, University of Maryland; Tshikala Tshibaka, Food and Agriculture Organization; T. Ademola Oyejide, University of Ibadan, Nigeria; and Carol Lancaster, Georgetown University. The Netherlands and

Swiss governments and the Canadian International Development Agency provided funding for this research.
Completion date: June 2000.

Report

World Bank. 2000. *Can Africa Claim the 21st Century?* With the collaboration of the African Development Bank, African Economic Research Consortium, Global Coalition for Africa, and United Nations Economic Commission for Africa. Washington, D.C.

Economic Growth, Social Capability, and Preindustrial Development

Recent studies have conjectured that the preindustrial development experiences of countries in Africa, Asia, and Latin America left them in different positions for achieving modern economic growth following World War II. Preindustrial development can be conceptualized as running along a spectrum from primitive, foraging, band-type societies to extensive agricultural and pastoral small-village societies and to intensive state-level agrarian societies resembling those of Europe and Japan on the eve of industrialization. Proxied by population density, farmers per hectare, the irrigated share of farmland, or the first principal component of the three, preindustrial development has been shown to be a good predictor of per capita income growth in developing countries in 1960–75, 1975–90, and 1960–90.

In further explorations using the Barro-Lee primary and higher education data and the Adelman-Morris social development index, the preindustrial development measures usually show a robust, statistically significant relationship with the rate of economic growth, in the direction predicted—countries more densely populated and intensively cultivated at the beginning of the period achieved faster per capita income growth during postwar periods when conventional explanatory factors are controlled for.

This research project is further investigating the relationship between premodern development and recent growth to see whether the original hypotheses can be verified using larger samples, longer time series, earlier data for premodern development levels, and more sophisticated methods. It also explores the connections between premodern development, growth, and the demographic changes of recent decades. And it seeks to improve the understanding of the relationship between premodern development, as proxied by population density and similar variables, and "social capability," as measured by the Adelman-Morris social development index.
Responsibility: Africa Region Technical Families, Macroeconomics 2—Miria Pigato (mpigato@worldbank.org). With Louis Putterman and Areendam Chanda, Brown University.
Completion date: October 2000.

Fiscal Decentralization in Developing Countries

This project analyzes government decentralization in developing countries from a positive and normative perspective. The normative analysis recognizes macroeconomic management and stability, microeconomic efficiency, and redistribution as objectives of decentralization. The positive analysis recognizes that decentralization cannot be supported on the basis of these objectives unless government behavior is modeled in ways that acknowledge weaknesses in central government. Such weaknesses may lend support to decentralized systems under some circumstances, such as when the market analogy of competition between jurisdictions applies or local participation is important. They may argue against decentralization when, for example, competition erodes the tax base and leads to a race to the bottom (assuming that government is not so dysfunctional that such a low-tax equilibrium is the preferred outcome).

The project combines conceptual analysis and empirical research. The empirical work indicates that, in a wide range of circumstances and in varying forms, fiscal decentralization has either no association or a negative association with economic growth. Some forms of decentralization can lead to efficiency gains in social sectors such as education, but these are typically not fiscal decentralization. Autonomy and community participation can improve school performance, but they need not be associated with fiscal decentralization.

Theory warns that fiscal decentralization can reduce equity unless the center retains strong tax and redistributive powers—as it typically does in developing countries. This project tries to identify the contexts in which redistribution improves (or reduces) efficiency by examining the channels through which decentraliza-

tion works and studying the political economy of decentralization. It shows that decentralization often increases deficits. Political economy analysis looks at the extent to which the effects of decentralization and the speed with which it is achieved depend on the political context. The study also examines the links between decentralization and governance.

Responsibility: Development Research Group, Public Economics—Shantayanan Devarajan (sdevarajan @worldbank.org), Gunnar Eskeland, Heng-fu Zou, Vinaya Swaroop, and Stuti Khemani, Regulation and Competition Policy—George Clarke, and Poverty and Human Resources—Elizabeth King; Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit—Steven B. Webb; Europe and Central Asia Region, Poverty Reduction and Economic Management Sector Unit—Deborah Wetzel; South Africa Resident Mission—Junaid Ahmad; and Poverty Reduction and Economic Management Network, Public Sector Management Division—Jennie Litvack. With David Wildasin, David Pines, Canice Prendergast, Oliver Hart, and Jan Brueckner.

Completion date: December 2000.

Reports

Davoodi, Hamid, and Heng-fu Zou. 1998. "Fiscal Decentralization and Economic Growth: A Cross-Country Study." *Journal of Urban Economics* 43: 244–57.

Fornasari, Francesca, Steven B. Webb, and Heng-fu Zou. 1999. "The Macroeconomic Impact of Decentralized Spending Deficits: International Evidence." World Bank, Washington, D.C.

Xie, Danyang, Heng-fu Zou, and Hamid Davoodi. 1999. "Fiscal Decentralization and Economic Growth in the United States." *Journal of Urban Economics* 45: 228–39.

Zhang, Tao, and Heng-fu Zou. 1998. "Fiscal Decentralization, Public Spending, and Economic Growth in China." *Journal of Public Economics* 76: 221–40.

The Impact of Public Spending in Uganda

This research is using data from a series of household surveys (spanning 1992–99) in Uganda to investigate questions about social and economic development in the country's rural areas. The key questions being examined are as follows:

- What were the most important determinants of community-level growth and improvement of the living conditions of the poor? Have asset-poor households or regions with below-average access to infrastructure or high levels of violence systematically lagged in the growth process? How effectively were households in different wealth classes able to cope with aggregate and idiosyncratic shocks, and what factors helped them in doing so?
- How effectively have the country's agricultural potential and inputs (purchased and nonpurchased) been used? What factors have furthered agricultural diversification, and how much has the performance of input and output markets improved since adjustment was initiated?
- What factors (policies) have promoted productive investment and new enterprise start-ups at the household level? To what degree has the absence of a minimum set of endowments at the community level led to economically motivated out-migration among the better educated? How do the incomes of these migrants compare with the average in their region of origin and with the incomes of their peers in the regions to which they migrate?
- Has the increase in school fees observed over the period reduced enrollment among the poor or led to higher dropout rates? Or was the fee increase more than compensated for by improvements in school quality? What are the implications for policies aimed at cost recovery?
- What was the economic benefit (in reduced number of days lost to disease) from providing public health services in rural and urban areas? How did curative and preventive interventions (including improving individuals' knowledge about the causes and treatment of diseases) interact in preventing adult or childhood diseases, and what does this imply for public health policies?

The study's main findings to date are in two areas. First, while education, road distance, and access to extension have a significant positive impact on agricultural production, rural producers overuse nontraded inputs (homegrown seed) and underuse purchased inputs (fertilizer). Credit constraints significantly affect demand for inputs. Lack of access to financial services (as measured by distance to the closest bank) negatively affects the

start-up of nonagricultural enterprises and integration into markets for agricultural produce, supporting the government's emphasis in its rural development strategy on improving access to financial services.

Second, knowledge about the causes and treatment of diseases, in addition to access to health services and their quality, has a significant impact in reducing individuals' propensity to fall sick. Even under conservative assumptions, the monetary benefits (derived by valuing the number of days lost at the local wage rates) can be very high.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org). With John Okidi, Makerere University, Uganda.
Completion date: December 2000.

Reports

Deininger, Klaus. 2000. "Does Cost of Schooling Affect Enrollment by the Poor? Universal Primary Education in Uganda." World Bank, Development Research Group, Washington, D.C.

Deininger, Klaus, and Donald Larson. Forthcoming. "Crop Markets and Household Participation in Uganda." In Paul Collier and Ritva Reinikka, eds., *Uganda's Recovery: The Role of Farms, Firms, and Government.* New York: Oxford University Press.

Deininger, Klaus, and John Okidi. Forthcoming. "Market Participation, Agricultural Productivity, and Nonfarm Activities." In Paul Collier and Ritva Reinikka, eds., *Uganda's Recovery: The Role of Farms, Firms, and Government.* New York: Oxford University Press.

Subnational Data Initiative

Agglomeration and urbanization economies increasingly affect the spatial pattern and dynamics of global production and distribution. This, coupled with the recent trend of democratization and decentralization of decisionmaking, has meant a growing role for subnational governments in setting and implementing the development agenda (in many countries, for example, their share of government spending is now in the range of 30–50 percent).

The increasing prominence of subnational levels of government has been reflected in the World Bank's lending portfolio and policy dialogue. This has generated much interest in evaluating the performance of subnational government. Efforts to establish performance benchmarks and to identify and analyze policy options (and possibly even to assess local project impacts) would benefit from high-quality subnational data in a common, user-friendly platform or framework.

Such a framework is unavailable, however. A number of countries maintain economic, demographic, and fiscal data for the first tier of subnational government (state or provincial) and sometimes for the second tier (administrative units at the county or district level). But many of these countries do not process or disseminate much of the data.

The World Bank is in a unique position to compile such data and thereby provide an international public good of great benefit to national and subnational policymakers and planners, decisionmakers in firms and nongovernmental organizations, and international and domestic researchers. Through a collaborative effort among Bank units, international statistical organizations, and research institutes over the past 12 months, subnational data at the first and second tier of subnational governments have been collected for several large countries, including Argentina, Brazil, China, India, Indonesia, and Mexico. For most of these countries data have been collected on demographic, social, economic, and fiscal indicators. Subject to the availability of additional resources, the initiative may be expanded to another 20 countries.

A multistage process has been adopted for developing the database: inventorying all subnational data sources in the Bank's Development Economics Senior Vice Presidency; inventorying all such sources at Bank headquarters and in regional offices; surveying all Internet sources for publicly available data; contacting universities, researchers, and public bodies (including statistical offices) for data that may not be in the public domain yet; evaluating the quality of the data; and putting the data into a common database with appropriate notations on quality.

Responsibility: Development Research Group, Infrastructure and Environment—Zmarak Shalizi (zshalizi @worldbank.org) and Somik Lall.
Completion date: May 2001.

Fiscal Decentralization in Latin America

This project investigates the effects of fiscal decentralization on macroeconomic management and equity and on the efficiency of resource allocation in the education

sector. It includes case studies of Argentina, Brazil, Colombia, and Mexico and an econometric investigation of a wider sample of industrial and developing countries. The country analyses are not stand-alone case studies but integrated comparisons.

The study systematically investigates the outcomes of decentralization, examining in particular whether it has led to unsustainable fiscal deficits. The case studies investigate this question in depth; the multinational econometric analysis uses panel data to test several hypotheses.

The case studies reveal that Argentina had greater success with decentralization than Brazil, because it imposed a harder budget constraint on the public sector at the national level and because the national executive, through the party system, had stronger influence on congress and on subnational governments. Establishing the right incentives for subnational governments and their creditors, as Argentina did, proved more effective for restraining local and state borrowing than establishing rules for prior approvals of credit by the central government, as Brazil did.

In Colombia the study finds that although increased subnational autonomy, spending, and deficits coincided with deterioration in the overall fiscal balance and in macroeconomic stability, most of the decline was due to slippage at the national, not the subnational, level. Central government efforts to restrain subnational deficits, while handicapped by political fragmentation, were successful in Colombia when they combined ex ante constraints on subnational borrowers with imposition of stricter banking regulations to motivate banks to hold back lending.

The project is currently comparing the institutions of fiscal federalism in Argentina, Brazil, and Mexico. It is studying how politics have affected the institutional arrangements of fiscal federalism, how those effects shape fiscal outcomes, and how politics affects the division of power, both vertically between levels of government and horizontally across states. This effort is being complemented by an econometric analysis of the fiscal behavior of states in Brazil and Mexico and the treatment they receive from the federal government. (Other researchers have already done extensive research on these issues for Argentina.) The study tests whether and how electoral cycles and partisan alignment affect resource allocation, controlling for economic factors.

The project includes a multinational econometric analysis with a panel of 32 industrial and developing countries for 1980–94. The results imply that subnational spending and deficits lead to central government deficits primarily in the context of transitions. Most countries in the sample decreased the central government deficit during the period, but countries had more difficulty doing so if the subnational deficits were rising. With cross-section averages, reflecting a longer-run situation, the regressions suggest that central government spending falls proportionally when subnational spending is financed by subnational taxes—a result that is consistent with true devolution of spending responsibilities and no overall change in the size of the public sector. When subnational spending rises without correspondingly higher subnational taxes—implying that the financing is being done mostly by transfers—the central government's own spending does not decline with the expansion of subnational spending, implying a larger overall public sector. The regressions with first differences in a panel (time-series and cross-section) find that increases of subnational spending and deficits lead to higher spending and deficits at the national level. The relationships are strong economically as well as statistically significant.

The results of the research have been presented at World Bank seminars; the 1999 World Bank Economists Forum; the annual American Political Sciences Association meetings in 1998; the Fourth International Seminar on Fiscal Federalism at La Plata University, Argentina; the Institutional Development Seminar at University of San Andres in Buenos Aires; the Yale University Colloquium on Decentralization and Development; and the 1999 Annual Bank Conference on Development in Latin America and the Caribbean, Valvidia, Chile.

The results of this project have contributed to the Bank's policy dialogue in Argentina, Brazil, and especially Mexico, with the Decentralization Adjustment Loan. The project also laid some of the groundwork for a worldwide research project on hard budget constraints and was the basis for its case studies of Argentina and Brazil.

Responsibility: Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector

Unit—Steven B. Webb (swebb@worldbank.org) and William Dillinger; and Development Research Group, Public Economics—Heng-fu Zou and Gunnar Eskeland. With Stephan Haggard, University of California at San Diego; Ricardo Paes de Barros and Fernando Blanco, Instituto de Pesquisa Econômica Aplicada (IPEA); Francesca Fornasari, Cecilia Bresceno, and Christian Gonzalez, Georgetown University; Alberto Diaz Cayeros, Stanford University and University of California at Los Angeles; and Barry Weingast, Stanford University.
Completion date: June 2001.

Reports

Dillinger, William, and Steven B. Webb. 1999. "Decentralization and Fiscal Management in Colombia." Policy Research Working Paper 2122. World Bank, Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit, Washington, D.C.

———. 1999. "Fiscal Management in Federal Democracies: Argentina and Brazil." Policy Research Working Paper 2121. World Bank, Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit, Washington, D.C.

Geography, Growth, and Comparative Advantage in Sub-Saharan Africa

Sub-Saharan Africa has experienced a sustained economic slowdown for the past 20 years or more and, despite some notable success stories, the trend is likely to continue for the region as a whole well into the 21st century. Reversing this economic decline is the most serious challenge faced by the development community. Efforts to identify the root causes of the deep, persistent decline have pointed to disadvantages in geography and, more recently, in health and population. To the extent that these factors are found to be critical for Africa's growth and international competitiveness, what implications would this finding have for development policy in the region?

This project aims to contribute to the understanding of these issues by analyzing Africa's growth performance as well as its potential comparative advantage in labor-intensive manufactured exports. The research will draw on global panel data sets on geographic, demographic, and other institutional and policy variables for the period 1965–97. The growth analysis will be based on a dynamic endogenous growth model, and the comparative advantage analysis on an extended Heckscher-Ohlin framework. Both analyses will emphasize rigorous econometric modeling to ensure that the estimated models permit policy simulations.

If the results should show that Sub-Saharan Africa's geography is not destiny, yet does influence the region's growth and international competitiveness, they would suggest a balanced approach to development that would also require strategic measures in technology and infrastructure. In particular, there would be a need to emphasize the development of technology (especially in agriculture) to deal with the unique features of geography and climate in Africa as well as regional cooperation in developing infrastructure and communication to reduce economic isolation and expand markets.

This research effort will contribute to a larger, collaborative research project, Explaining Economic Growth Performance in Sub-Saharan Africa, which involves many researchers and policymakers from Sub-Saharan Africa. An interagency initiative, this collaborative project is led by the African Economic Research Consortium and includes the United Nations Economic Commission for Africa, the World Bank's Development Research Group, Oxford University, and Harvard University as collaborating institutions.

The findings will be disseminated in 2001 through a session organized as part of the collaborative project and a seminar at the World Bank. And the papers produced by the project will be posted on the Web at www.worldbank.org/research/growth/.
Responsibility: Development Research Group, Public Economics—Ibrahim A. Elbadawi (ielbadawi@worldbank.org) and Development Research Group—Paul Collier. With Anke Hoeffler, Oxford University; and Siham Mohamedahmed, University of Arizona, Tucson.
Completion date: June 2001.

Joint Development Research Group–Africa Region Work Program on African Development

Achieving accelerated economic growth and poverty reduction in Sub-Saharan Africa may be the biggest chal-

lenge for the development economics profession and for the World Bank as well. The Bank's Development Research Group 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 several issues: debt, finance, country selectivity, public resource management, equitable rural development, and trade and industrial policy.

The work program consists of a set of research projects on these topics carried out in 10 sample countries so that the interaction among the topics can be assessed. The work involves collaboration with African researchers and outside institutions.

Current research projects focus on early childhood education in Kenya, regional integration in Africa, bank insolvency in Zambia and Zimbabwe, the impact of debt on investment in Africa, the political economy of aid and reform in the region, and the privatization of telecommunications in Côte d'Ivoire, Ghana, and Tanzania.

Responsibility: Development Research Group, Public Economics—Shantayanan Devarajan (sdevarajan @worldbank.org) and Howard Pack, Regulation and Competition Policy—Mary Shirley, Finance—Gerard Caprio Jr., Poverty and Human Resources—Paul Glewwe, and Macroeconomics and Growth—David Dollar; and Africa Regional Office, Office of the Vice President—Alan Gelb. With Ndjuguna Ndungu, Tunji Osobudi, Samuel Wangwe, Tchetche Nguessan, Mathieu Meleu, Jean-Paul Azam, Jean-Jacques Laffont, and Torgny Holmgren.

Completion date: June 2001.

Report

Devarajan, Shantayanan, David Dollar, and Torgny Holmgren. 1999. "Aid and Reform in Africa: Lessons from Ten Case Studies." World Bank, Development Research Group, Washington, D.C. Draft. [www.worldbank.org/research/aid/].

Structural Adjustment Participatory Review Initiative

This is a joint project with seven governments and an international network of nongovernmental and civil society organizations. The objective is to examine the impact of structural adjustment through a broad-based consultative process involving both public forums and field investigations. The project aims to improve understanding not only of the effects of adjustment policies but also of how broad participation of local civil society can improve policymaking. The initiative will attempt to identify practical changes in economic policies for both governments and the World Bank.

In each of the countries participating in the project—Bangladesh, Ecuador, Ghana, Hungary, Mali, and Uganda—nongovernmental and civil society organizations have set up local networks and representative committees to work with representatives from the Bank and from different parts of the government in designing the work. The tripartite steering committee in each country is responsible for planning an opening public forum, a field investigation into the impact of selected policies, and a closing forum, at which the results of the analysis will be presented. The project was officially launched at a global forum in Washington, D.C., in July 1997, attended by all the country participants. The project will end with a global forum once all the country studies have been completed.

The fieldwork forms the core of the project's research. Consistent with the consultative, participatory nature of the project, the research uses several methods of analysis, including qualitative, quantitative, and participatory methods.

Most of the countries are in the research phase of the project. Hungary held its closing forum June 26–27, 2000. Its results make clear that growth is a necessary but not sufficient condition for well-balanced development with social cohesion and participation of all citizens in a society. Hungary's experience will be used as an important input into the Bank's work in the preparation of the country assistance strategy.

The remaining countries will hold their closing forums by December 2000. An international workshop is being scheduled for February 2001 in Kampala to discuss the results and policy findings.

Responsibility: Office of the Senior Vice President, Development Economics—Jozef M. Ritzen (jritzen @worldbank.org) and Justus Hartkamp; Bangladesh Resident Mission—Fred Temple, Syed Nizammuddin, and Zaidi Sattar; Ecuador Resident Mission—Paul Beckerman and Marcelo Romero; Ghana Resident Mission—

Peter Harrold and Kofi Marrah; Hungary Resident Mission—Roger Grawe and Mihaly Kopanyi; Mali Resident Mission—Grace Yabrudy and Youssouf Thiam; and Uganda Resident Mission—James Adams, Robert Blake, and Mary Bitekerezo. The Belgian, Netherlands, Norwegian, and Swedish Trust Funds have contributed funding for this research.

Completion date: June 2001.

Implementation of Uruguay Round Commitments: The Development Challenge

At the Uruguay Round developing countries took on unprecedented obligations not only to reduce trade barriers, but to implement significant reforms in trade procedures (such as import licensing procedures and customs valuation) and in many areas of regulation that establish the basic business environment in the domestic economy (such as intellectual property law and technical, sanitary, and phytosanitary standards).

Drawing on World Bank project experience, this research project investigated what is involved and how much it will cost for developing countries to implement these obligations in customs valuation, intellectual property rights, and sanitary and phytosanitary methods. It found that implementing such reforms will require purchasing equipment, training people, establishing systems of checks and balances, and so on. This will cost money, and the amounts involved are substantial. In many of the least developed countries an entire year's development budget is at stake.

In the least developed countries the institutions in these areas are weak and would benefit from strengthening and reform. But the analysis shows that the World Trade Organization (WTO) obligations reflect little awareness of development problems and little appreciation of the capacities of least developed countries to carry out the functions addressed by regulations in such areas as customs valuation, intellectual property, and sanitary and phytosanitary standards. The content of these obligations can be characterized as the advanced countries saying to the others, Do it my way!

Moreover, because of the least developed countries' limited capacity to participate in the Uruguay Round negotiations, the WTO process has generated no sense of "ownership" of the reforms to which WTO membership obligates them. From their perspective, the implementation exercise has been imposed in an imperial way, with little concern for what it will cost, how it will be done, or whether it will support their development efforts.

Findings have been presented at the Wilton Park Conference on Multilateral Trade Negotiations: The Way Forward, in West Sussex, United Kingdom, and at the World Trade Organization Seminar on Implementation of the WTO Agreements, organized under the auspices of the WTO Committee on Trade and Development, in Geneva on July 26, 2000.

Responsibility: Development Research Group, Trade—J. Michael Finger (jfinger@worldbank.org). With Philip Schuler, University of Maryland. The research was supported by the Global and Regional Trust Fund Component of the World Bank–Netherlands Partnership Program.

Completion date: October 1999.

Reports

Finger, J. Michael, and Philip Schuler. 2000. "Implementation of Uruguay Round Commitments: The Development Challenge." *World Economy* 23(4): 511–25. (Also issued as Policy Research Working Paper 2215, World Bank, Development Research Group, Washington, D.C., 1999.)

———. Forthcoming. "Developing Countries and the Millennium Round." In Klaus Günter Deutsch and Bernard Speyer, eds., *Freer Trade in the Next Decade: The Millennium Round in the World Trade Organization.* Frankfurt: Deutsche Bank Research.

Market Access Advances and Retreats: The Uruguay Round and Beyond

This research project addressed three questions: What were the market access commitments made at the Uruguay Round? Have they been implemented? And how extensive has been the use of World Trade Organization (WTO) provisions that allow for backsliding (that is, for new import restrictions)? To answer these questions, it examined the Uruguay Round agreements, reports submitted to the WTO, and complaints submitted to the WTO about nonimplementation.

The conclusion: the Uruguay Round market access negotiations were a success. The tariff cuts were broader (covered a larger share of world trade) than those of the Kennedy or Tokyo Round. They will save importers some $50 billion a year. Trade-distorting agricultural policies were taken up substantively for the first time in any round of international trade negotiations, voluntary export restraints outside the Multifibre Arrangement (MFA) were eliminated, and a legally binding agreement was reached to eliminate MFA-sanctioned restraints on exports of textiles and clothing. Industrial countries agreed to tariff cuts on textiles and clothing that are deeper than those on other industrial products.

Developing countries stepped forward as equal partners with industrial countries. Their tariff cuts covered as large a share of imports as those of industrial countries and were deeper—because developing countries' tariffs are higher, their tariff cuts will save more for importers (per dollar of imports covered) than will the cuts of industrial countries. In most developing countries tariff bindings—though often above applied rates—were extended to 90 percent or more of imports.

In services, though, few countries—industrial or developing—agreed to give foreigners unlimited market access or full national treatment in more than a few activities. Industrial countries agreed to some liberalization of cross-border provision in about 70 percent of services activities, developing countries in about 25 percent.

Less positive, although trade restrictions on agricultural products were converted to tariffs, border protection was reduced less on agricultural than on industrial products, and not much was agreed on in the reduction of trade-affecting subsidies. The textiles and clothing agreement, although binding industrial countries to eliminate all MFA-sanctioned restrictions, will allow them to put off most of this elimination until 2005. The concessions that developing countries gave at the Round are due now, and the reciprocal concessions of particular interest are either to be delivered in the future (elimination of the MFA) or still to be negotiated (liberalization of agricultural trade).

Also disquieting, since the Uruguay Round developing countries have undertaken antidumping cases at a rate per dollar of imports three times that of the United States. Like the antidumping cases of industrial countries, these cases are most frequently against other developing countries.

Responsibility: Development Research Group, Trade—J. Michael Finger (jfinger@worldbank.org). With Ludger Schuknecht, World Trade Organization. The research was supported by the Global and Regional Trust Fund Component of the World Bank–Netherlands Partnership Program.

Completion date: November 1999.

Reports

Finger, J. Michael, and Ludger Schuknecht. 1999. "Market Access Advances and Retreats since the Uruguay Round Agreement." Policy Research Working Paper 2232. World Bank, Development Research Group, Washington, D.C. (Also presented at the Annual World Bank Conference on Development Economics, Washington, D.C., April 29–30, 1999); and at the Trade Policies and Industrial Development Workshop, Bogotá, June 23–24, 1999.)

———. Forthcoming. "Avances y retrocesos: La Ronda Uruguay y su implementación." In Marcelo Olarreaga and Ricardo Rocha, eds., *La nueva agenda del comercio y la OMC*. Bogotá: Tercer Mundo.

Global Development Network: Researching the Researchers

This project surveyed research institutes in developing countries to determine their priority needs. The purpose was to inform the choice of activities to be pursued by the Global Development Network, a program established to strengthen economic research capacity in the developing world.

Of the 512 institutes surveyed, 202 responded. The response rate (39.5 percent) was fairly even across regions. About half the respondents were nongovernmental, nonprofit research institutes (52.3 percent); about a quarter were university departments (27.7 percent). Most reported that economics is their principal discipline (81.1 percent), with political science taking second place (18.4 percent). The vast majority of the institutes (74.3 percent) seek to influence policy. An important finding is that more than half are electronically connected: 54 percent report that most of their staff have personal email

access. That finding has led the Global Development Network to rely heavily on electronic means to further its objectives, primarily its Web site, GDNet (www.gdnet.org/).

Asked to identify their top three priorities from a list of possible capacity building and networking activities, respondents most preferred an annual global development meeting (60 percent of respondents), staff exchanges and fellowships (58 percent), and information about funding (54 percent). On the basis of these results, the Global Development Network has organized the Global Development Meeting to be held in Tokyo in December 2000. It has also been encouraging staff exchange programs through the International Monetary Fund and the University of Maryland. That information about funding rated so highly indicates a strong need for additional financing. For this reason the Global Development Network organized a donors meeting in Brussels in June 1999, at which 30 donor agencies were represented.

Other activities were ranked as follows: training (39.6 percent), data directory (22.3 percent), journal (20.3 percent), research abstracts (19.3 percent), directory of researchers (13.4 percent), electronic bulletin board (11.4 percent), directory of think tanks (11.4 percent), online discussions (7.4 percent), calendar of training activities (5.9 percent), and data guidelines (5.0 percent).

The survey results have been widely disseminated. The main results are available on the network's Web site, GDNet. Results also were presented at the launch of the Global Development Network in Bonn in December 1999, to the Board of the World Bank, to the Asian Development Bank, at a public meeting in Tokyo, and at the donors meeting in Brussels in June 1999. More important, the results have fed into the selection of activities to be supported by the Global Development Network, which will be reviewed by network members and the donor community at the Tokyo conference in December 2000.

Responsibility: Global Development Network—Lyn Squire (lsquire@worldbank.org); and Office of the Senior Vice President, Development Economics—Lawrence Macdonald. With Ambar Naryan; and John Daniel, Howard University.

Completion date: December 1999.

Report

GDN Secretariat. 1999. "Researching the Researchers: Establishing the Priorities." World Bank, Washington, D.C.

The Influence of World Bank Research on Policy in the Developing World

This project conducted a survey of 271 high-level policymakers in 36 developing and transition economies to find out the extent to which World Bank research is considered in the policy dialogue in the Bank's client countries. The survey investigated the policymaking process itself, the sources of information used in decisionmaking, government officials' access to Bank research findings, the relevance of Bank research to the policy problems they face, policymakers' perceptions of the quality of analysis in Bank research, and the effectiveness of its dissemination. It also solicited suggestions for improvement.

The survey, administered by a consulting firm, was conducted in six languages. The majority of respondents were high-level policymakers who report to ministers or secretaries. Slightly more than half were from Asia and Sub-Saharan Africa, and the rest were distributed approximately equally across the other developing regions.

The policymakers broadly commended Bank research for its quality and usefulness. They rely on the Bank for data and analysis, citing the Bank as their most important information source among 17 domestic and international organizations. Eighty-four percent say that they use Bank analytical reports, and of those users, the vast majority (71 percent) find the reports very useful. The majority believe that Bank research is technically sound, relevant, and objective. More than 80 percent of the respondents are familiar with the Bank's *World Development Report*, and more than 50 percent with the *World Bank Economic Review*.

While offering strong support overall, the policymakers believe that the Bank should devote more effort to capacity building. When asked which improvements in research activities were most desirable, policymakers most often identified more involvement of country nationals in the conduct of research as a priority. They also would like better access to information, data, and

research findings. In conducting their own research, either in-house or contracted out, the policymakers use national sources of data (government agencies and local universities) more often than information from any international organization.

The survey results suggest that although Bank research is going in the right direction, challenges remain. As the Bank's funds for research remain constrained and its purview grows, researchers will need to develop partnerships with agencies and foundations in client countries and involve more developing and transition economy nationals and institutions in the conduct of research. And reports of research findings should be disseminated in the style, language, and medium that make them most relevant for and accessible to policymakers.

Responsibility: Research Advisory Staff—Clara Else (celse@worldbank.org), Anupa Bhaumik, and Kazim Saeed. With Abt Associates, United States.

Completion date: December 1999.

Pricing of Bonds and Bank Loans in the Market for Developing Country Debt

Private financial flows to developing countries have increased dramatically since 1990, with most resulting from bond issues or private bank loans. But recent events in emerging markets have heightened long-standing concerns about the efficiency and stability of the market for developing country debt. This project used data on international bonds and bank loans to emerging markets in the 1990s to examine the pricing of this debt and the workings of the debt market in three different studies.

Syndicated bank lending. The first study investigated the pricing of syndicated bank loans to emerging markets in the 1990s. It focused on loans priced off the London interbank offer rate (LIBOR)—loans on which the interest paid by the borrower is LIBOR plus a spread that reflects the risk premium. In 1991–97 just over 5,000 LIBOR-based loans were made to emerging markets. The study analyzed the determinants of spreads on about 4,500 loans, the subset for which complete data on loan and country characteristics are available.

The findings highlight the role of international banks in providing credit to smaller borrowers about which information is least complete. Domestic lending booms and low reserves in relation to short-term debt have been priced in the expected manner by international banks. The high level of short-term debt in East Asia was supported by high growth rates but characterized by a knife-edge quality.

The results suggest that banks react to macroeconomic and financial information in much the same way as the bond market. But the relationship between macroeconomic and financial variables and pricing behavior is noticeably more stable over time for bank loan commitments than for bonds. This may reflect the the greater maturity of bank lending.

The large number of small bank loans issued in the 1990s, in comparison with the smaller number of larger bond issues, suggests that international banks play an important role in meeting the external financing needs of borrowers, in ways that the bond market cannot duplicate. Evidence suggests that this reflects banks' superior ability to overcome information asymmetries. Results are also consistent with the notion that the ability to recontract is another comparative advantage of international bank lending. Whether bank intermediation is also encouraged by the moral hazard associated with explicit and implicit guarantees is more difficult to say. For East Asia spreads change over time with the level of short-term debt, a pattern that may reflect moral hazard.

Collective action clauses in bond contracts. The second study undertook the first systematic analysis of the impact on borrowing costs of collective action clauses, which are meant to facilitate the orderly restructuring of debt for emerging market borrowers. It did so through comparisons of American- and British-style bonds. The analysis was complicated by the fact that borrowers are able to choose which type of security to issue. It was further complicated by the fact that borrowers can decide whether to borrow, and lenders whether to lend. The model attempted to take these complications into account.

The results show that collective action provisions tend to reduce the cost of borrowing for more creditworthy issuers, but to increase it for less creditworthy issuers. This finding suggests that for less creditworthy borrowers the advantages of provisions facilitating orderly restructuring are offset by the moral hazard and additional default risk associated with these provisions because of the perception that they are friendly to renegotiation. Still, the

results do not support the dire consequences of collective action clauses predicted by some market participants. Moreover, the differential effects suggest that collective action clauses should become more attractive as economic and financial development proceeds and emerging markets improve their creditworthiness.

Contagion. The third study developed evidence on how the Mexican, Asian, and Russian crises in the 1990s affected the price, volume, and maturity of loans extended through the bond market. It estimated an integrated model of the borrowing and lending, pricing, and maturity decisions, which made it possible to distinguish different margins along which emerging markets were affected.

Not surprising, both fundamentals and market sentiment played a role following each of the crises. But the dominant effect of changes in market sentiment was limited to the region in which the crisis originated. There is evidence of persistent unfavorable market sentiment in the behavior of primary market spreads in Latin America but not East Asia after the end of 1994, and in East Asia but not Latin America after the first half of 1997. The same is true for issue volumes: while the volume of new issues by East Asian borrowers was depressed by unfavorable market sentiment in 1995, and that by Latin American borrowers in the second half of 1997, interregional spillovers operating through this channel appear to have died out quickly; in contrast, the within-region impact persisted.

In addition, compared with other regions, in Latin America changes in market sentiment appear to have been felt more through their impact on prices and less through their impact on quantities. One interpretation is that when market sentiment deteriorates and spreads begin to widen, East Asian countries delay borrowing, which they are able to do because of relatively high real-side flexibility and pliable current accounts. Latin American countries, with less current account flexibility, continue to approach the market despite the less attractive terms. Finally, while changes in market sentiment affect the price and quantity of new issues, there is much less evidence that they affect maturity.

Responsibility: Development Prospects Group—Ashoka Mody (amody@worldbank.org). With Barry Eichengreen, University of California at Berkeley.

Completion date: December 1999.

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Commodity Risk Management

This research examined the impact of commodity price instability on economic growth. It tested the effects of ex post shocks and ex ante commodity price uncertainty on economic growth using the Burnside-Dollar data set (this contains data on average annual per capita growth in four-year periods from 1970 to 1993 for almost 60 developing countries, along with various explanatory variables). Shock and uncertainty variables were constructed using a new data set of aggregate commodity price indexes for 113 developing countries over the period 1957–97. Each index is a unique, country-specific, geometrically weighted index of 57 commodity prices.

The analysis showed that per capita growth rates are significantly reduced by large, discrete, negative commodity price shocks. The effect of negative shocks on growth is substantial and appears to work independent of investment, suggesting that adjustment is achieved through severe reductions in capacity utilization. The effect of negative shocks remains after controlling for government economic policy and institutional quality, indicating that the result cannot be attributed exclusively to inappropriate policy responses on the part of governments.

The analysis also showed that positive shocks have no lasting impact on growth. This is consistent with findings of some recent studies but overturns an earlier result, which suggests that the long-run effects of posi-

tive temporary shocks are negative. The analysis found little evidence that ex ante uncertainty affects growth. This result holds for various definitions of uncertainty. The results are robust to changes in sample composition, changes in the time-series dimensions of the data, instrumentation for endogenous regressors, and different estimation methods.

Responsibility: Development Research Group, Rural Development—Panos Varangis (pvarangis@worldbank.org) and Donald Larson. With Jan Dehn, Oxford University. The Danish Trust Fund contributed funding for the research.

Completion date: June 2000.

Report

Dehn, Jan. 2000. "Commodity Price Uncertainty and Shocks: Implications for Economic Growth." World Bank, Development Research Group, Washington, D.C.

Current Account Sustainability

The Mexican and East Asian financial crises of the 1990s and the current turmoil in world financial markets brought to the fore the role of current account imbalances in external payments crises. This research aimed to identify and understand the factors determining the sustainability of current account deficits, in order to provide macroeconomic policy recommendations on the management of the external balance.

Departing from the standard savings-investment approach to the current account, this research took a stock equilibrium approach, in which the current account balance is viewed primarily as the result of investors' achievement of their desired portfolio allocation between domestic and foreign assets. According to this approach, an external situation is sustainable if it is consistent with international and domestic investors' achieving their desired portfolio allocation across countries. As implied from standard portfolio theory, investors' desired levels of gross foreign assets and liabilities depend on factors affecting domestic mean returns relative to those abroad—factors such as technological improvement, economic reforms, and taxation—as well as factors affecting the perceived risk profiles of domestic investment projects relative to foreign ones and to domestic consumption patterns. These factors include market structure and competition; the quality of domestic financial institutions; local characteristics of production (such as the types of available natural resources, which determine the shocks to which the economy is subject); home bias effects (related to, for example, the importance of nontradable consumption); foreign exchange risk; and government expropriation risk.

The research combined simulation of models derived from first principles with econometric estimation of simple portfolio allocation models. A preliminary step in this strategy was construction of a cross-country time-series database on international investment positions detailing the gross holdings of domestic and foreign assets by resident and nonresident investors. This database will be made available to other researchers.

The main findings include the following:

- A country's foreign asset position is generally small relative to its overall wealth. A small amount of capital flows from rich countries to poor countries. Countries' foreign asset positions are remarkably persistent. In both industrial and developing countries the foreign asset position takes the form largely of foreign loans rather than foreign equity.
- Foreign asset positions can be explained fairly well by risk-return considerations and overall wealth, especially in the case of middle- and high-income countries. The risk-return framework thus permits the sustainability of net foreign asset positions and hence their change over time (that is, the current account) to be assessed.
- Changes in the terms of trade generate income effects and cause changes in the expected return to capital. Empirical evidence from episodes of large shocks to the terms of trade indicate that adjustment costs to investment are an important feature of current account adjustment over time.

Results have been disseminated at professional conferences, including a special session at the Latin American meetings of the Econometric Society (August 1999), a session at the Latin American Economic Association meeting (October 1999), and workshops at the University of Chicago (March 2000), the Massachusetts Institute of Technology (April 2000), and the National Bureau of Economic Research (June 2000). Within the Bank, the

results were presented at a macroeconomics seminar (May 2000) and a Latin America and the Caribbean economic policy seminar (April 2000). Results have also been reflected in numerous policy-oriented presentations by the chief economist of the Latin America and the Caribbean Region and in the 2000 flagship report of the Latin America and the Caribbean Region (*Securing Our Future in a Global Economy,* Washington, D.C.: World Bank, 2000).

Responsibility: Latin America and the Caribbean Region, Chief Economist Unit—Luis Servén (lserven @worldbank.org); and Development Research Group, Macroeconomics and Growth—Norman Loayza, Alberto Chong, and Aart Kraay. With César Calderón, University of Rochester; Jaume Ventura, Massachusetts Institute of Technology; Rashmi Shankar, University of California at Santa Cruz; and George Monokroussos.

Completion date: June 2000.

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Kraay, Aart, and Jaume Ventura. 2000. "Current Account Adjustment." World Bank, Development Research Group, Washington, D.C.

Kraay, Aart, Norman Loayza, Luis Servén, and Jaume Ventura. "Country Portfolios." World Bank, Development Research Group, Washington, D.C.

The Political Economy of Trade Policy

Despite trade economists' centuries-long advocacy of free trade, trade barriers exist in all World Trade Organization (WTO) members except Hong Kong (China) and Macao (China). Why has such a gap between policymakers' practices and trade economists' recommendations persisted?

This research investigated the forces behind the existence of tariffs and the structure of tariff schedules. It also explored different rules through which negotiations in the WTO may help achieve more efficient outcomes.

Two studies explored two different aspects of tariff determination using different data sets. The first study investigated the effects of foreign direct investment on Mexico's tariff structure. It examined how foreign firms lobby and whether they are more successful in the political game than domestic firms.

The second study explored the importance of terms-of-trade effects on the tariff structure within Mercosur. Do sectors with large world market shares tend to have higher levels of protection? If so, how important is this effect? This is an important question for trade economists, since many models explain the existence of tariffs based on terms-of-trade effects. The study also explored whether terms-of-trade externalities have been internalized within Mercosur and what main forces drove formation of the customs union.

The analytical approach was based on the Grossman-Helpman model of trade policy formation. Tariff data were drawn from national sources, trade data from the United Nations Statistics Division's Commodity Trade Statistics Database (Comtrade), and industrial data from national censuses reported at the firm level for Mexico and the industry level for Mercosur.

Foreign firms in Mexico have an important effect on the tariff structure. The presence of foreign direct investment tends to lead to lower levels of protection overall, a result that is consistent with the theoretical literature. But the trade orientation of the foreign direct investment (import competing or export oriented) is crucial in determining the effect that lobbying by foreign firms has on the tariff structure. In import-competing sectors industries with a large share of foreign direct investment have higher levels of protection than industries with no foreign direct investment. The explanation may be better lobbying techniques by foreign firms or noneconomic rationales for the presence of foreign direct investment in sensitive sectors. Within Mercosur the study found that terms-of-trade effects can explain 6–28 percent of the variation in the common external tariff and that terms-of-trade effects have been internalized within the common tariff.

Two other studies explored how WTO rules can be modified to achieve more balanced multilateral trade

negotiations that fully incorporate developing countries' interests. The first study suggests the introduction of an ex ante rule to give credit for unilateral trade liberalization undertaken outside multilateral negotiations. This rule would not only enhance liberalization in some countries between negotiating rounds (by reducing the gains from retaining protection as negotiating currency), it would also lead to deeper levels of multilateral liberalization within rounds. Most important, it would not rely on altruism to be generally acceptable.

The second study developed a negotiating formula for trade in services that fully exploits the scope for the exchange of market access concessions across different modes of supply (cross-border delivery and movement of capital and persons). Adoption of this formula as a basis for negotiations could help increase commitments to liberalization for all modes, producing substantial gains in global welfare and more balanced outcomes for developing countries.

The research findings provide a better understanding of how policies are formed and how reforms should be undertaken. In particular, an understanding of the political economy forces behind trade protection can help in developing politically sustainable reforms. The findings also provide suggestions for a new set of WTO rules that may bring developing countries back to the negotiating table.

Findings have been presented at World Bank trade seminars and at World Bank Institute seminars in Bogotá and Medellín, Colombia, and in Mexico. They have also been presented at seminars at the Universities of Geneva, Neuchatel, and Sussex and at the Latin American Economic Society Meeting in Santiago, Chile (October 1999).

Responsibility: Development Research Group, Trade—Marcelo Olarreaga (molarreaga@worldbank.org), Isidro Soloaga, and Aaditya Mattoo. With Jean-Marie Grether, University of Neuchatel, Switzerland; Jaime de Melo, University of Geneva; and L. Alan Winters, University of Sussex.

Completion date: June 2000.

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Olarreaga, Marcelo. 1999. "Foreign-Owned Capital and Endogenous Tariffs." *Journal of Economic Integration* 14(4): 606–24.

Olarreaga, Marcelo, Isidro Soloaga, and L. Alan Winters. 1999. "What's Behind Mercosur's CET?" Policy Research Working Paper 2231. World Bank, Development Research Group, Washington, D.C.

Innovative Mechanisms for Raising Development Finance

During a liquidity crisis developing countries need innovative ways to raise external finance. This research focuses on one such mechanism, asset-backed securitization of future flow receivables, which provides a means of securing credit agency ratings for new issues that are higher than the sovereign ratings and thereby reduce the cost of funding.

The research examines recent securitized transactions undertaken by issuers in Latin America that have used the technique widely in recent years. Led by Argentina, Brazil, Mexico, and República Bolivariana de Venezuela, they have collectively raised more than $16 billion in international capital markets since 1994. Through extensive cataloging of rated future flow receivable–backed transactions and detailed discussions with Wall Street investment bankers, legal experts, and rating agency professionals, the study has derived a number of conclusions about the potential size of this asset class and the constraints on its growth. It has also taken up several additional issues for analysis, including the legal and institutional setup necessary to promote securitization and the behavior of spreads on such credit-enhanced (asset-backed) securities.

The main finding is that securitization of future flow and existing receivables can provide a way of raising development finance for many low-income and, even more so, middle-income countries, especially during liq-

uidity crises. But as a result of various constraints, countries outside Latin America have not used this instrument and even issuance from Latin America falls short of the potential. The constraints on issuance arise from the high costs associated with such transactions, the long lead times involved in arranging them, the absence of high-quality corporate issuers in many developing countries, and the lack of legal clarity on bankruptcy procedures. And in some cases policymakers are simply unfamiliar with this mechanism.

Transactions costs could be reduced by increasing the scale of these deals—by planning a series of deals by the same issuer (the so-called master trust arrangement) or by combining several issuers' receivables into one securitization deal. Clarifying bankruptcy laws would be helpful for all financial deals, including securitization. Educating policymakers and potential issuers would also help promote this asset class.

A workshop was held in late July 2000 to discuss the draft report of the research results. Participants included representatives from credit rating agencies, investment banks, the investor community, legal firms specializing in securitization, and staff from the World Bank and International Finance Corporation.

Responsibility: Development Prospects Group—Dilip Ratha (dratha@worldbank.org). With Suhas Ketkar, IRSA LLC.
Completion date: August 2000.

Regional Trade Integration: The Andean Group—Evolution, Performance, and the Remaining Agenda

The Andean Group is one of the longest existing regional trade arrangements in Latin America, where massive trade liberalization has taken place in the past decade. This study analyzes the options facing the Andean Group in the remaining trade reform agenda, both as a group and for individual countries.

The study updates work on trade policy in the Andean Group done by the World Bank several years ago. It analyzes trade performance in the group—looking at bilateral trade flows both between pairs of countries and with the rest of the world—describing the changing structure of trade and the main reasons for those changes. The methodology follows the Viner-Meade delineation of potential gains and losses from a preferential trade agreement (the customs union theory).

The preliminary findings suggest that, contrary to expectations based on member countries' trade structure in the 1980s, the regional trade agreement resulted in a strong expansion of intragroup trade. While intragroup trade amounted to just over 5 percent of the five member countries' aggregate trade in the late 1980s, the equivalent share in the trade expansion over the 1990s was about 18 percent. The typical intensity ratio of each member country in another's trade increased from 6–7 percent to around 20 percent over that period.

A strong presumption exists that the agreement's impact on intraregional trade was related mostly to the reduction of nontariff barriers. Given the Andean countries' current low tariffs, future expansion of trade among them could be achieved by eliminating nontariff barriers rather than reducing tariffs. Since these barriers relate mostly to agricultural products, the increase in trade flows would be trade creating rather than trade diverting. In addition, trade agreements between the Andean Group and NAFTA, the European Union, or Mercosur would be, in that order of priority, welfare improving.

The findings of the study will be discussed with authorities in the Andean countries, and a final report will be circulated within and outside the Bank.

Responsibility: Latin America and the Caribbean Region, Colombia, Ecuador, and República Bolivariana de Venezuela Country Management Unit—David Yuravlivker (dyuravlivker@worldbank.org) and Mario Cuevas. With Michael Michaeli, Hebrew University; Sarath Rajapatirana, American Enterprise Institute for Public Policy Research; and Ravindra Yatawara, Columbia University.
Completion date: October 2000.

Regionalism and the Terms of Trade

A standard approach in analyzing the effects of regional integration arrangements (trade blocs) has been to assume homogeneous goods. Under this assumption it can be shown that if small open economies form a trade bloc and continue to trade with outside countries, only trade diversion will result—with no trade creation—and member countries' welfare will decline. If goods are differ-

entiated by country of origin, however, the welfare effects may differ because giving preferential access to member countries may force outside countries to lower their export price to the bloc, resulting in an improvement in the bloc's terms of trade.

This study is examining the effects of regional integration on import prices in two countries—Mexico (North American Free Trade Agreement) and Tunisia (free trade agreement with the European Union). The analysis is based on detailed trade data at the commodity level.
Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org).
Completion date: December 2000.

Aid and Reform in Africa

Recent cross-country studies have found that foreign aid has a strong, positive effect on a country's economic performance if the country has undertaken certain policy and structural reforms. But the evidence also shows that less aid goes to countries that have undertaken these reforms than to those that have not. Moreover, there is evidence that "aid cannot buy reform."

This study aims to go beyond the cross-country regressions and arrive at a better understanding of the causes of reforms and of the link between foreign aid and reform. Its focus is on the real causes of reform and whether and how aid has encouraged, generated, influenced, supported, or retarded reforms. Accordingly, it analyzes the reform processes rather than the results of the reforms.

Case studies of 10 African countries are examining the nature of external assistance, investigating the causes and paths of policy reforms, and attempting to trace the relationship, if any, between aid and reform. The studies are based largely on interviews and on reviews of available data, literature, and documentation. The data come from International Monetary Fund, Organisation for Economic Co-operation and Development, and World Bank sources.

Preliminary findings indicate that reforms are generated largely by causes not directly related to aid—such as crises, political leadership, committed local technocrats, country role models, and consensus among social groups. But in certain circumstances and phases, foreign assistance can help trigger and sustain reforms through policy dialogue, advisory services, and financial aid. Conditionality can help reform-minded technocrats lock in reforms, but probably cannot generate sustainable reforms. These findings could influence how aid is used—and what types and amounts are used—during different phases of a reform program and how donors allocate their resources among countries and sectors.

Preliminary case study findings and potential conclusions on cross-cutting issues were discussed at a June 1999 conference, jointly sponsored by the World Bank and the German Agency for Technical Cooperation, in Frankfurt, Germany. Participants included the case study authors, host country officials, and representatives of the Bank, European donors, research institutions, and international organizations. Preliminary findings were also disseminated at a conference jointly sponsored by the Bank and the Overseas Development Council on September 27, 1999, at the annual meetings of the Bank and International Monetary Fund in Washington, D.C. A final conference will be held in Africa for African policymakers as well as the project team and bilateral and multilateral donors.

General project information and draft case study reports are available on the Web at www.worldbank.org/research/aid.
Responsibility: Development Research Group, Macroeconomics and Growth—David Dollar (ddollar@worldbank.org) and Torgny Holmgren, Public Economics—Shantayanan Devarajan, Office of the Director—Paul Collier, and Poverty and Human Resources—Martín Rama, Deon Filmer, and Waly Wane. With Elliot Berg, Université d'Auvergne; Patrick Guillaumont and Sylviane Guillaumont, University of Clermont; Jacques Pegatienan; Jerome Chevallier; Gilbert Kiakwama; Berhanu Abegaz, College of William and Mary; Yvonne Tsikata; Kwesi Botchwey, Harvard University; Stephen O'Brien; Cheikh Sidibé, Ministry of Finance, Mali; Jeffrey Herbst, Princeton University; Charles Soludo, University of Nigeria; Arne Bigsten, University of Göteborg, Sweden; Louis Kasekende, Bank of Uganda; Lise Rakner, Christian Michelsen Institute; and Dominic Mulaisho, Shonga Steel Limited. The Norwegian Ministry of Foreign Affairs, Swedish International Development Coop-

eration Agency, Swedish Consultant Trust Fund, German Agency for Technical Cooperation, and Netherlands Consultant Trust Fund have contributed funding for the research.

Completion date: June 2001.

The Dynamic Impact of Trade Liberalization in Developing Countries

International trade economists and World Bank policy advice have typically argued that an open trade regime is very important for economic growth and development. This view has been based in part on neoclassical trade theory, which generally finds that trade liberalization improves a country's welfare; in part on casual empirical observation that countries that remain highly protected for long periods appear to suffer significantly and perhaps cumulatively; and in part on empirical work that also finds trade liberalization beneficial to welfare and growth.

Yet numerical estimates of the impact of trade liberalization have generally shown that it increases the welfare of a country by only about 1 percent of GDP. These estimates have been based on comparative static models, however, and researchers typically claim that the estimates would be much larger if they incorporated the dynamic gains from trade liberalization. These gains have not yet been quantified.

The development of endogenous growth theory has provided a clear theoretical link from trade liberalization to economic growth. Because of the complexity of the models, the theoretical literature has necessarily been based on rather aggregate models, and it has focused on the steady-state growth path, making it difficult to gain insight into the dynamic growth path of the key variables. Moreover, since the theoretical literature does not evaluate the adjustment costs, it cannot clearly indicate that welfare is significantly increased even if the long-run growth rate increases.

This study quantifies the dynamic gains from trade liberalization in a small developing country in an applied general equilibrium model, taking into account the adjustment costs associated with forgone consumption. It assesses the claim that the dynamic welfare gains from trade liberalization are considerably larger than the comparative static estimates. It also uses computable general equilibrium models to investigate the importance of having a variety of imported inputs available in domestic production and of opening service sectors to foreign competition. The analysis draws on the Global Trade Analysis Project database, the Trade Unit's database on tariffs, and input-output tables as appropriate.

The project has produced three papers. The first extends a comparative static analysis of Chile's trade policy options to a Ramsey-type dynamic model of Chile with constant returns to scale and perfect competition. It shows that simply adding a dynamic element to the analysis does not increase the welfare gains from trade liberalization much.

The second paper develops a stylized, somewhat aggregate computable general equilibrium model of a small open economy with endogenous growth entering through a productivity multiplier of the Ethier-Dixit-Stiglitz variety. Trade liberalization in this model dramatically increases welfare because it results in a significant increase in the number of varieties (technologies) available in the economy. The paper shows that when the impact of trade liberalization on technology diffusion is taken into account, the estimated welfare gains are very large and consistent with the large econometrically estimated effects on growth.

The third paper examines the impact of liberalizing foreign direct investment in service sectors. It shows that not only does liberalizing foreign investment have a large welfare impact, but opening business services to foreign competitors is likely to significantly benefit domestic skilled labor. Even the pattern of what the country exports and imports can change.

The study's results support the strong version of the link between trade liberalization and economic growth, as well as the importance of opening service sectors to foreign direct investment. They should buttress the intellectual case in the development community for the importance of openness for growth.

Liberalizing services is particularly important in countries acceding to the World Trade Organization, and the project's innovation in allowing a practical assessment of the impact of service liberalization should prove extremely useful in the policy dialogue with such coun-

tries. The results have been incorporated in the World Bank Institute's course on trade policy.

Responsibility: Development Research Group, Trade—David Tarr (dtarr@worldbank.org). With Thomas Rutherford and James Markusen, University of Colorado.

Completion date: June 2001.

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Financial Development and Contagion

This project consists of several studies aimed at improving the understanding of the functioning of financial markets, the benefits of financial integration, and the effects of financial and banking crises.

First, the project examined the interaction between deposit insurance and market discipline in the banking sector, and the impact of banking crises on market discipline. This study used bank-level data for Argentina, Chile, and Mexico, all of which had experienced banking crises during the sample period (1980s and 1990s). The results show that in these countries depositors—large or small, with local or foreign currency deposits—do exert market discipline, punishing banks for risky behavior by withdrawing their deposits and by requiring higher interest rates.

Deposit insurance need not decrease market discipline. In Chile uninsured depositors seem to respond more aggressively than insured depositors to bank risks, while in Argentina no significant differences were observed in the responses of the two groups. The results suggest that depositors might exercise market discipline, even if covered by deposit insurance, when there is uncertainty about the future availability of their deposits—for example, if the government has reneged on its promises in the past, if the deposit insurance scheme is undercapitalized, or if depositors are concerned about the cost of repayment (typically in the form of delays) through the deposit insurance fund.

Crises seem to be wake-up calls for depositors. Withdrawals become more frequent immediately after banking crises, but this kind of market discipline is much more limited before and during crises. Interest rates were responsive to bank risk taking throughout the sample period. These results suggest that depositors become more aware of the risk of losing deposits, and start to shift them, after they observe bank failures.

Second, the project studied the effects of financial integration on firms' financing choices, using data on a large panel of nonfinancial companies in East Asia and Latin America. This study focused on seven emerging economies that have experienced financial liberalization and crises—Argentina, Brazil, Indonesia, the Republic of Korea, Malaysia, Mexico, and Thailand. The data cover the 1980s and 1990s, allowing comparison of pre- and post-liberalization periods.

The main results show that integration of financial markets does affect firms' financing choices and that the effects seem to be uneven. Firms that participate in international markets obtain better financing opportunities—gaining the ability to extend their debt maturity structure, for example. Debt maturity tends to shorten, however, when countries undertake financial liberalization. This implies that firms that do not participate in international markets are probably increasing their short-term liabilities.

Some authors have argued that the maturity structure of debt played a crucial role in recent crises. The shift in the maturity structure toward the short term after financial liberalization suggests, therefore, that it could be important to accompany liberalization with prudential regulation to prevent a mismatch between the maturity of assets and liabilities.

Third, the project examined stock market cycles in 28 countries—in the G-7, Europe, East Asia, and Latin America—characterizing the amplitude and duration of cycles over time and across regions. It also examined the claim that financial cycles are more protracted after domestic and external financial liberalization.

The findings show that financial liberalization does not necessarily lead to financial excesses. Financial cycles become more severe only in the aftermath of the opening of the economy to international capital flows. Over time, liberalized capital markets become more stable. Why? Markets with fewer capital controls are more exposed to shocks from abroad and thus more prone to contagion. But elimination of capital account restrictions favors the development of capital markets. As financial markets deepen and investors become more diversified, markets become less prone to wild gyrations.

To continue this research, the project is creating a data set on financial liberalization for the same 28 countries, from the early 1970s through the 1990s, with information on restrictions on the domestic financial sector and international capital flows. This data set will be valuable for measuring financial integration.

Fourth, the project examined whether resident firm managers have an informational advantage in predicting currency fluctuations and crises. This study was based on a data set from the Global Competitiveness Survey, conducted for the *Global Competitiveness Report* of the World Economic Forum of Davos and the Harvard Institute for International Development. In countries around the world, the survey gathers managers' perspectives on the economic, political, and institutional situation of their country. The data used in this research are from surveys at the end of 1995, 1996, and 1997, and thus precede the crises in Asia, the Russian Federation, and Brazil.

The results suggest that local managers were able to predict the crises in the Republic of Korea and Thailand, but not those in Indonesia or Malaysia. The evidence also suggests that there were information asymmetries: local residents were shifting funds out of the country before foreign investors were. Foreign market participants (such as international mutual funds) and market analysts largely did not expect the Asian crisis.

The results also show that local managers' private information can help predict exchange rate fluctuations. Their information seems superior to that revealed by macroeconomic and financial data and by markets.

Findings have been presented at the Central Bank of Chile, Federal Reserve Board, Federal Reserve Bank of New York, American Economic Association meetings (Boston and New York), European Econometric Society meetings, Latin American and Caribbean Economic Association meetings, and World Bank conferences (on deposit insurance and on financial stucture).

Responsibility: Development Research Group, Macroeconomics and Growth—Sergio Schmukler (sschmukler @worldbank.org) and Maria Soledad Martinez Peria; and World Bank Institute, Governance, Regulation, and Finance Division—Daniel Kaufmann. With Jon Tong; Sergio Kurlat; Graciela Kaminsky and Akiko Terada, George Washington University; Gil Mehrez, Georgetown University; Arun Sharma, Federico Guerrero, Francisco Vazquez, Jose Pineda, and Kevin Wang, University of Maryland; Carlos Arteta, University of California at Berkeley; Cecilia Harun, Columbia University; Marco Sorge, Stanford University; Matias Zvetelman, University of Buenos Aires; Matteo Ciccarelli, University of Pompeu Fabra; and Miana Plesca, McGill University.

Completion date: June 2001.

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International Capital Flows

This project compiles new measures of financial liberalization and capital controls, gathering data on 28 industrial countries (in the G-7 and Europe) and emerging markets (in East Asia and Latin America) since 1973. The project collects information on regulations in the domestic financial sector, including controls on interest rates (lending and deposit), on quantities (credit controls and reserve requirements), and on other aspects (foreign currency deposits). It also collects data on restrictions on capital flows, both inflows (borrowing abroad by banks and corporations and acquisitions by foreign investors) and outflows (repatriation of capital and income). This data set will be extremely useful for studying the effects of financial integration.

The project also looks at the effectiveness of capital controls. The recent turmoil in currency markets has reignited the debate on whether restrictions on international capital mobility can help reduce the perhaps "excessive" euphoria of investors, attenuate the severity of crises, or contain contagion. The debate has not been just theoretical. Malaysia introduced restrictions on capital outflows in August 1997, in the midst of the East Asian crisis, and Chile and Colombia introduced restrictions on capital inflows in the early 1990s.

But do capital controls in fact prevent international financial spillovers and help central banks regain monetary independence? Although the debate has fueled an immense empirical literature on the effectiveness of capital controls, the answer is far from clear. Some studies suggest that controls do insulate domestic financial markets; others conclude that they are ineffective in stopping the international transmission of shocks.

The study examines the effect of capital controls at different frequencies, to gain information about the dynamic aspects of the comovement of domestic and foreign returns in episodes of financial liberalization and repression. It uses the band-pass filter, which makes it possible to assess whether capital controls sever the transmission of volatility in world financial markets and, if so, at what frequencies. It applies this technique not only to stock prices but also to overnight interest rates, to determine whether central banks gain monetary independence with the use of capital controls.

Finally, the project explores the sensitivity of local interest rates to international interest rates and how it is affected by countries' choice of exchange rate regime. It uses a reduced form empirical approach to compute both panel and single-country estimates of interest rate sensitivity for a large sample of developing and industrial economies in 1970–99. The full-sample estimates appear to support the conventional wisdom: more rigid exchange rate regimes tend to exhibit higher transmission than more flexible regimes, and countries with rigid regimes typically have lower interest rates than those with flexible regimes. But a closer analysis of the 1990s using both panel and country-specific estimates shows that in most cases full transmission cannot be rejected, even for countries with floating regimes. Only large industrial countries can benefit from independent monetary policy. During the 1990s interest rates in European countries were fully sensitive to German interest rates, but insensitive to U.S. interest rates.

A related study looks at mutual fund flows to developing countries (see the abstract in this volume for Mutual Funds in Emerging Markets).

Responsibility: Development Research Group, Macroeconomics and Growth—David Dollar (ddollar@worldbank.org), Sergio Schmukler, and Hairong Yu; and Latin America and the Caribbean Region, Chief Economist Unit—Luis Servén. With Jeffrey Frankel, Harvard University; Graciela Kaminsky, George Washington University; Richard Lyons and Changqing Sun, University of California at Berkeley; Andrea Bubula, Columbia University; Eduardo Fajnzylber, University of California at Los Angeles; Federico Guerrero, Francisco Vazquez, and Jose Pineda, University of Maryland; Jon Tong; Nong Thaicharoen, Massachusetts Institute of Technology; and Sergio Kurlat. The National Science Foundation, United States, has contributed funding for the research.
Completion date: June 2001.

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Micro Foundations of International Technology Diffusion

Developing country governments often seek to spur adoption of foreign technologies through policy interventions designed to encourage domestic firms to enter into joint ventures with foreign partners, import sophisticated capital goods, license technology, and export to industrial country markets. The correct policy intervention, if any, depends crucially on which of these activities are causally associated with improvements in firm performance, how large the effects are, and whether the effects are internal or external to the firm.

Much of the research on these questions for developing countries relies on cross-sectional data, which make it difficult to identify the direction of causation between activities and performance; aggregate time-series data, which are difficult to interpret; or case studies, which are difficult to generalize. The premise of this research project is that analysis of firm-level panel data is most likely to shed light on the issues.

The objective of the project is to document cross-country and sectoral patterns in the incidence of the activities associated with technology transfer and, where possible, to relate the patterns to country policies. This research uses firm-level panel data sets for 10 developing and transition economies: Bulgaria, Colombia, the Czech Republic, Ghana, Indonesia, the Republic of Korea, Morocco, Poland, Romania, and Taiwan (China). Econometric techniques are used to investigate the causal relationship between firm activities and firm performance and the size of the effects.

Results to date suggest that in high- and medium-technology sectors foreign investors that are technology or marketing leaders in their industries are more likely to engage in wholly owned projects than to share ownership (Poland), total factor productivity growth tends to be higher in wholly owned firms than in firms with joint ventures and firms without foreign partnerships (the Czech Republic, Indonesia), and that as foreign owners relinquish their equity stake, productivity falls (Indonesia).

Responsibility: Development Research Group, Trade—Bernard Hoekman (bhoekman@worldbank.org) and Isidro Soloaga, Macroeconomics and Growth—Aart Kraay, and Finance—Simon Evenette. With Gary Anderson, University of Maryland; Bee-Yan Aw, Mark Roberts, and James Tybout, Pennsylvania State University; Marc Bacchetta and Felix Eschenbach, World Trade Organization; Howard Pack, University of Pennsylvania; Kamal Saggi, Southern Methodist University; and Francis Teal, Oxford University.

Completion date: June 2001.

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Mutual Funds in Emerging Markets

The currency crises that plagued the last decade of the 20th century were not confined within national borders, nor within regions. The Thai crisis engulfed—within days—Indonesia, Malaysia, and the Philippines, while the Russian crisis spread as fast to countries as far apart as Brazil and Pakistan. Not even industrial countries have been spared, with the Russian default and devaluation reverberating in financial markets in Germany, the United Kingdom, and the United States.

A growing literature examines the possible role of financial links in the transmission of crises. There is evidence that banks, for example, were important in spreading the East Asian crisis. The transmission channel was lending: countries were exposed to the same banks. Portfolio investors have also been scrutinized, particularly such institutions as hedge funds, pension funds, and mutual funds. A common conclusion is that institutions sometimes panic, spreading crisis even to countries with strong fundamentals. Individuals can contribute to this panic by fleeing from funds—particularly mutual funds—forcing fund managers to sell when fundamentals do not warrant selling.

This research project is aimed at contributing to that literature by examining the behavior of mutual funds. Though there is some evidence that mutual funds help crisis to spread, that evidence is indirect and highly aggregative. The project is reviewing the importance of mutual funds in the context of capital flows to developing countries and comparing the investments of different kinds of mutual funds. It is studying the behavior of managers of Latin America mutual funds and of investors in these funds, following the tradition in the finance literature. And, taking a more traditional macroeconomic approach, it is studying the links between the behavior of mutual funds and the macroeconomic fundamentals.

The examination of the behavior of mutual fund managers and investors departs from the more aggregate analysis by conducting analysis at the portfolio level. The project has developed a novel data set that includes individual portfolios, making it possible to examine trading strategies at much higher resolution. The data, from Morningstar and the U.S. Securities and Exchange Commission, include the quarterly holdings of 13 dedicated Latin America mutual funds from April 1993 to January 1999. (At the end of 1998 there were 25 Latin America funds; the 13 account for 88 percent of the value of these funds.)

The data are used to address two main questions: Do funds engage in momentum trading—systematically buying winning stocks and selling losing stocks? And do funds engage in contagion trading—systematically selling stocks from one country when stock prices are falling in another? In addressing the second question, the study establishes a first direct empirical link between contagion and trading strategies. The study's methodological contribution is its approach to attributing actions to fund managers rather than underlying investors.

The results show that emerging market funds do indeed engage in momentum trading, and that this is due to momentum trading at the level of both fund managers and investors. The study distinguishes between contemporaneous momentum trading (buying current winners and selling current losers) and lagged momentum trading (buying past winners and selling past losers). It finds that contemporaneous momentum trading is stronger during crises and stronger for fund investors than for fund managers. Lagged momentum trading is stronger during noncrisis periods and stronger for managers. It also finds that funds engage in contagion trading, and that this trading is due primarily to underlying investors, not managers.

The study's analysis of the role of mutual funds in spreading crises focuses on whether mutual fund flows are linked to the degree of fragility of the emerging economies, the openness and liquidity of their capital markets, or the risk associated with each country. It also examines the behavior of U.S.-based Latin America mutual funds, with special attention to the effects of redemptions on mutual funds' choices relating to their liquid positions. In contrast to studies that emphasize herding behavior unrelated to market fundamentals, the study finds that mutual fund managers take account of the characteristics of countries' economies and financial markets when deciding whether to adjust their exposure to those countries. Interestingly, economic fragility is not the only factor triggering withdrawals from emerging economies—the decision to withdraw depends crucially on liquidity. Thus the countries most affected by

financial market turmoil had either vulnerable economies or highly liquid financial markets.

Results have been disseminated through seminars and conferences, including the World Bank–Universidad Torcuato Di Tella conference on contagion in Buenos Aires, Argentina, in June 1999; a special session at the Latin American and Caribbean Economic Association meetings in August 1999; a session at the American Economic Association meetings in January 2000; a World Bank–International Monetary Fund (IMF) conference on contagion in January 2000; a joint World Bank–IMF research seminar in March 2000; a seminar at the Federal Reserve Bank of Philadelphia in May 2000; and a conference on liquidity risk sponsored by the University of Frankfurt and the Center for Financial Studies in Frankfurt, Germany, in June 2000.

Responsibility: Development Research Group, Macroeconomics and Growth—Sergio Schmukler (sschmukler @worldbank.org). With Jon Tong; Sergio Kurlat; Graciela Kaminsky, George Washington University; Richard Lyons and Allen Cheung, University of California at Berkeley; Cecilia Harun, Columbia University; and Jose Pineda, University of Maryland. The National Science Foundation, United States, has contributed funding for the research.

Completion date: June 2001.

Reports

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Preparing for the WTO 2000 Negotiations

This project aims to help developing countries identify and assess negotiating options in the next round of World Trade Organization (WTO) talks through an integrated program of research, capacity building, and knowledge dissemination. Among the major policy questions it addresses are the following: What issues should be included in a multilateral negotiation with a view to promoting economic growth and development? How might such issues be addressed in the WTO? And how can the WTO framework help to establish domestic incentive regimes that are conducive to international trade and investment?

The research is being undertaken in large part by developing country analysts, drawing on a series of thematic studies by international specialists. Studies focus on issues related to the liberalization of services and agriculture, the participation of developing countries in the WTO system, and "new" agenda issues such as investment and competition policy. Results have been discussed in regional workshops (nine such events have been held so far) and in a major international conference hosted by the WTO Secretariat in September 1999. The conference was intended to publicize major recommendations relating to the interests of developing countries in the coming WTO negotiations.

The capacity building efforts focus on research on the new trade agenda and on policy formulation. To support the research in developing countries, the project emphasizes collaboration between international experts and developing country researchers and research institutions. This is complemented by training and dissemination activities supported in part by the trade program of the World Bank Institute's Economic Policy and Poverty Reduction Division. Once the WTO negotiations begin, the project will sponsor a series of meetings and workshops for policy advisers and senior policymakers, complemented by outreach activities for the press, chambers of commerce, and nongovernmental organizations. These sessions will center on a handbook for trade negotiators, which will be completed by the end of 2000. The World Bank Institute will play a major role in these activities.

Research findings emerging from the project suggest that developing countries have a great interest in using the WTO as a forum for undertaking reform in major service sectors (such as transport, finance, and communications), where current policies may impose a significant implicit tax on the economy. Analysis also supports a

broadening of the negotiating agenda to include industrial tariffs, which remain a major barrier to export growth for many developing countries. It is also clear, however, that some WTO obligations involve significant implementation costs and thus raise concerns for some developing countries.

A large number of papers have been prepared under this project (a selection is listed below). Most are available on the Web at www.worldbank.org/trade. Papers can also be obtained on the joint WTO–World Bank site (www.itd.org). Five of the best papers presented at the regional workshops and the World Services Congress (held in Atlanta on September 20, 1999) will be published by the University of Michigan in a book on trade in services edited by Robert Stern. And a selection of the papers are being translated into Spanish for publication by the Universidad del Rosario, in Colombia, and the World Bank Institute under the title *La nueva agenda del comercio y la OMC.*

Project results have been disseminated through World Bank Institute courses in Argentina, India, Mexico, the Russian Federation, and South Africa and through a videoconference series, Beyond the WTO Seattle Ministerial, targeted to Africa and Ukraine.

Responsibility: Development Research Group, Trade—Bernard Hoekman (bhoekman@worldbank.org), Will Martin, J. Michael Finger, Aaditya Mattoo, Francis Ng, and David Tarr; and World Bank Institute, Economic Policy and Poverty Reduction Division—Philip English. With Florian Alburo and Joy Arbrenica, University of the Philippines; Kym Anderson and Christopher Findlay, University of Adelaide; Drusilla Brown, Tufts University; Rim Chatti and Mohamed Lahouel, University of Tunis; Lin Sien Chia, University of Singapore; Inbom Choi, Korea International Institute for Economic Policy; Peter Cowhey, University of California; Alan Deardorff, Alan Fox, and Robert Stern, University of Michigan; Hanaa Kheir El Din, University of Cairo; Nabil Chaherli and El-Said Moataz, International Food Policy Research Institute; Riad El Khouri, MEBA Consulting; Erwidodo, Bogor University; Tubagus Feridhanusetyawan and Mari Pangestu, Center for Strategic and International Studies, Manila; Joseph François, Erasmus University, Rotterdam; Thomas Hertel, Purdue University; Lorenza Jachia, UNCTAD; Gerrishon Ikiara and Francis Mwega, University of Nairobi; Augustin Karanga; William Lyakurwa and Dominique Njinkeu, African Economic Research Consortium; R. Koenigsberg, James Markusen, and Keith Maskus, University of Colorado; Peter Lloyd, University of Melbourne; Petros Mavroidis, University of Neuchatel; Patrick Messerlin, Sciences Politiques; Ademola Oyejide, University of Ibadan; Wisam Pupphavesa, National Institute of Development Administration, Bangkok; Raed Safadi, Organisation for Economic Co-operation and Development; Tohamy Sahar, Egyptian Center for Economic Studies; Dean Spinanger, Kiel University; Souleymane Soulama, Centre d'Etudes de Documentation de Recherche Economique et Sociale, Université de Ouagadougou; Nattapong Thongpakde, Thailand Development Research Institute; Subidey Togan, Bilkent University; Weeraworawit Weerawit, Thai Department of Intellectual Property; Obie Whichard, U.S. Bureau of Economic Analysis; L. Alan Winters, University of Sussex; Jamel Zarrouk, Arab Monetary Fund; and Benson Zwizwai, University of Zimbabwe. Major partner institutions include the World Trade Organization; Latin American Trade Network, Facultad Latinoamericana de Ciencias Sociales, Buenos Aires; Economic Research Forum for the Arab Countries, Turkey, and Iran; the African Economic Research Consortium; Coordinated African Program of Assistance on Services, UNCTAD; Trade Policy Forum, PECC, Philippines; National Council for Applied Economic Research, New Delhi; and Centre for Economic Policy Research, London. The U.K. Department for International Development, the governments of Italy and the Netherlands, and Société Generale de Surveillance, Geneva, contributed funding for the research.

Completion date: June 2001.

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Database on Measures Affecting Trade in Services

This project aims to generate and disseminate information on measures affecting trade in services and, where possible, estimate their trade-restrictive effect. Its purpose is to help design programs for policy reform, to facilitate the next round of trade negotiations on services, to advance empirical research on trade in services, and to provide the private sector with more information on conditions of access to foreign markets. The output of the project will include a set of conceptual and empirical papers analyzing trade and regulatory policy in services; a database containing information on measures affecting trade in services and statistics on trade flows, market structure, and patterns of ownership; and outreach activities, including creation of a Web site and organization of and participation in workshops and conferences.

A preliminary database on maritime transport services has been created. This database draws together information from Asia Pacific Economic Cooperation, the World Trade Organization, the Organisation for Economic Co-operation and Development (OECD), and other sources to identify impediments to trade in maritime transport services. It covers 58 countries, 37 of which are developing economies. A comprehensive data set for the telecommunications sector, drawing on information from the International Telecommunication Union, the OECD, the World Bank, and other sources, is being constructed.

Among other issues, the study examines the determinants of maritime transport costs, which have a significant influence on international trade. Two explanations have been suggested for their high levels in some countries: restrictive trade policies, particularly in the form of cargo reservation schemes, and private anticompetitive practices associated with maritime conferences. Results suggest that both matter but that private anticompetitive practices associated with maritime conferences have a greater influence on costs. These findings suggest a need not only for further liberalization of government policy in developing countries, but also for strengthened international discipline on restrictive business practices.

A Web site devoted to the basic structure of trade in services has been established (www.worldbank.org/trade/

services.html) and will serve as the prime vehicle for disseminating research on trade in services conducted within and outside the Bank. The Web site currently includes a description of and links to information on trade in services, including measures, trade flows, and other economic variables. Over the next few months more information will be added to the site, which, it is hoped, will soon become the first stop for anyone seeking information on trade in services.

In the process of providing policy advice and technical assistance, the study is building partnerships with other institutions and regional networks. Results have been presented to the Coalition of Services Industries (Atlanta, October 1999); the National Council of Applied Economic Research (New Delhi, December 1999); the Coordinated African Programme of Assistance for Services (Abidjan, December 1999; Nairobi, March 2000); the Andean Community Secretariat (Lima, February 2000); the Caribbean Community (the Bahamas, March 2000; Barbados, May 2000); the Institute for International Affairs (Rome); and the Economic Research Forum (Cairo).

Responsibility: Development Research Group, Trade—Aaditya Mattoo (amattoo@worldbank.org) and Carsten Fink. With Randeep Rathindran and Cristina Neagu. The U.K. Department for International Development is contributing funding for the research.

Completion date: October 2002.

Trade, Standards, and Regulatory Reform

This project aims to expand the understanding of the effects on trade of product standards and government regulations. It also seeks to produce recommendations on priorities relating to product standards and on actions to strengthen the capacity of developing countries to address technical and regulatory barriers to trade. It will attempt to identify what roles governments and the private sector can play to reduce transactions costs and how useful international cooperation is in facilitating trade.

The project has launched efforts, through a workshop and a series of papers, to design new approaches to quantifying the trade effect of product standards. The project also is developing a new database on standards, regulations, and trade using a survey instrument. This database will be complemented by trade data sources at the World Bank and other multilateral and regional organizations, such as UNCTAD.

Case studies in Central America indicate that developing countries face major challenges in gaining access to information on international standards and that many countries have difficulties in implementing World Trade Organization (WTO) obligations in the area of product standards. Research findings suggest that there is a role for development agencies to assist in areas of clear public good. Findings also suggest that such policy tools as mutual recognition agreements, aimed at reducing technical barriers, may not provide the expected benefits.

The project has organized two seminars on standards, one in Panama City with participants from seven Central American governments (June 27–29, 2000) and one in Geneva for 21 developing country WTO missions (February 24, 2000). A workshop was also held in Washington, D.C., for academics, trade experts, WTO representatives, and others (April 27, 2000). A conference will be held in Singapore in September 2000 to launch work with researchers in the Asia Pacific region.

Results of the research will be incorporated in the World Bank Institute core course on global trade and the new agenda. Information on project activities and findings is available on the Web at www.worldbank.org/trade.

Responsibility: Development Research Group, Trade—John S. Wilson (jswilson@worldbank.org). With Tsunehiro Otsuki; Mirvat Sewadeh; and Keith Maskus, University of Colorado. The U.K. Department for International Development Trust Fund has contributed funding for the research.

Completion date: November 2002.

Agriculture and the New Trade Agenda in the WTO 2000 Negotiations: Economic Analyses of Interests and Options for Developing and Transition Economies

This integrated program of research, policy analysis, and capacity building aims to strengthen the participation of developing countries in the next round of World Trade Organization (WTO) negotiations. The program involves quantitative research and policy analyses of the interests of developing countries in the new trade agenda and

"second-generation" trade issues in agriculture. The initial analytical work is designed to influence the agenda for the next negotiations in agriculture and to provide analytical capacity for deeper trade and agricultural liberalization in developing countries. The analyses will also provide new estimates of protection, taking into account trade and domestic policy measures implemented since the Uruguay Round. The outputs will provide a basis for further analytical work and country-specific support designed to strengthen developing countries' analytical capacity and participation in the negotiations and facilitate trade and domestic policy reforms in the next round of negotiations.

The first phase of the project involves robust and focused analyses of the interests of developing countries in each area of the built-in agenda—market access, domestic support, and export competition—as well as issues on the new trade agenda—including standards, state trading, intellectual property, technical barriers to trade, and sanitary and phytosanitary measures. This phase also includes preparatory research and analyses on selected regions, subregions, and countries to assist developing countries in analyzing policy options and objectives. The research and analytical work will be done by a team of local and regional experts from developing countries and international experts. The outputs from this phase will be used to directly assist policymakers in developing countries in evaluating their interests and the effects of different negotiating strategies.

Research will also be conducted to identify new Bank instruments for strengthening the capacity of developing countries to capture the benefits of integration into global markets in agriculture, food products, and related industries.

The analytical results will be presented in a series of regional workshops and training seminars for senior policymakers from developing countries. Country-specific support will be provided during the negotiations. In addition, an edited volume on agricultural trade issues and a handbook with analytical tools and databases on agricultural protection will be prepared.

Responsibility: Rural Development Department—Merlinda D. Ingco (mingco@worldbank.org); Development Research Group, Trade—Will Martin and Francis Ng; and World Bank Institute, Economic Policy and Poverty Reduction Division. With Alexander McCalla; Alberto Valdés; Kym Anderson, University of Adelaide; Tim Josling, Stanford University; L. Alan Winters, University of Sussex; Spencer Henson, University of Reading; Brent Borrell, Center for International Studies; John Whalley, University of Western Ontario; Joseph François, Erasmus University, Amsterdam; Thomas Hertel and Aziz Elbehri, Purdue University; Ammar Siamwalla, Thailand Development Research Institute; Ademola Oyejide; Olawale Ogonkula, University of Ibadan, Nigeria; Gavin Maasdorf, Imani-Capricorn Economic Consultants; Ashok Gulati; and Prema-Chandra Athukorala, Australian National University. The World Bank–Netherlands Partnership Program and the U.K. Department for International Development are contributing funding for the research.

Completion date: December 2002.

Domestic Finance and Capital Markets

Benchmarking Financial Systems

World Bank staff often try to compare a country's financial system with those of benchmark countries. Part of this comparison relates to the size and mix of financial intermediaries and markets across countries. The other part relates to the activity and efficiency of institutions and markets of countries at similar or higher levels of economic development. For example, Mexico's insurance industry is small relative to that in the United States, but does it differ importantly from Argentina's or the Republic of Korea's?

Taken in isolation, such cross-country comparisons do not yield a clear financial sector development strategy: finding that a country's insurance industry is small relative to those in countries with similar GDP per capita does not necessarily imply a problem. But informed cross-country comparisons can help identify irregularities needing more rigorous analysis, such as an inactive stock exchange. Unfortunately, the Bank has lacked a database for simple cross-country comparisons of financial systems.

To allow comparison of financial systems at different benchmark dates, this initiative contributed to the compilation of a data set on financial institutions for a large sample of industrial and developing countries over time. Data were collected on the size, activity, and efficiency of different types of financial intermediaries and markets (banks, nonbank financial institutions, insurance companies, pension funds, development banks, and stock and bond markets). This database will simplify cross-country comparisons for country officials and World Bank staff and support additional research.

The database is available on the Web at www.worldbank.org/research/projects/finstructure/, along with a paper detailing the data sources and defining the variables.

Responsibility: Development Research Group, Finance—Aslı Demirgüç-Kunt (ademirguckunt@worldbank.org). With Ross Levine, University of Minnesota.

Completion date: September 1999.

Report

Beck, Thorsten, Aslı Demirgüç-Kunt, and Ross Levine. 1999. "A New Database on Financial Development and Structure." Policy Research Working Paper 2146. World Bank, Development Research Group, Washington, D.C.

Financial Structure and Economic Development

What legal, regulatory, and policy changes can governments implement to produce financial systems that encourage economic development? To shed light on this issue, this research project studied the determinants of financial structure—defined as the mix of banks, securities markets, and nonbanks in an economy—and the importance of financial structure for economic development. The research was based on firm-level, country-level, and cross-country analyses.

The project constructed measures of financial structure and documented the changes that occur in financial structure as countries develop. In measuring financial structure, it emphasized the classic distinction between bank-based and market-based financial systems. In addition, the project examined some of the legal, regulatory, and policy determinants of stock market development, banking development, and the overall structure of financial systems. Finally, it evaluated the implications of different financial structures for economic development. Although past research suggests that well-functioning banks and stock markets spur growth in firms and the overall economy, there had been little analysis of the links between financial structure and economic performance in developing countries.

The study found that economies do not grow faster, industries dependent on external financing do not expand faster, new firms are not created more easily, firms' access to external finance is not greater, and firms do not grow faster in either market- or bank-based financial systems. But there is overwhelming evidence that the overall level of financial development and the legal environment in which financial intermediaries and markets operate critically influence economic development.

The papers produced by this research project (listed below) were presented at a World Bank conference on Financial Structure and Economic Development, held in Washington, D.C., on February 10–11, 2000. All the papers, as well as the database produced by the project, are available on the Web at www.worldbank.org/research/projects/finstructure/.

Responsibility: Development Research Group, Finance—Aslı Demirgüç-Kunt (ademirguckunt@worldbank.org). With Ross Levine, René Stulz, Vojislav Maksimovic, Sheridan Titman, and Mustafa Gültekin.

Completion date: June 2000.

Reports

Beck, Thorsten, and Ross Levine. 2000. "External Dependence and Industry Growth: Does Financial Structure Matter?"

Chang, Chun. 2000. "The Informational Requirement on Financial Systems at Different Stages of Economic Development: The Case of South Korea."

Chui, Andy, Sheridan Titman, and K.C. John Wei. 2000. "Corporate Groups, Financial Liberalization, and Growth: The Case of Indonesia."

Copelman, Martina. 2000. "Financial Structure and Economic Activity in Mexico."

Demirgüç-Kunt, Aslı, and Harry Huizinga. 2000. "Financial Structure and Bank Profitability." World Bank, Development Research Group, Washington, D.C.

Demirgüç-Kunt, Aslı, and Ross Levine. 2000. "Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons." World Bank, Development Research Group, Washington, D.C.

Demirgüç-Kunt, Aslı, and Vojislav Maksimovic. 2000. "Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm-Level Data." World Bank, Development Research Group, Washington, D.C.

Denizer, Cevdet A., Mustafa N. Gültekin, and Nihat Bülent Gültekin. 2000. "Distorted Incentives and Financial Development in Turkey."

Domowitz, Ian, Jack Glen, and Ananth Madhavan. 2000. "International Evidence on Aggregate Corporate Financing Decisions."

Gallego, Francisco, and Norman Loayza. 2000. "Financial Structure in Chile: Macroeconomic Developments and Microeconomic Effects."

Levine, Ross. 2000. "Bank-Based or Market-Based Financial Systems: Which Is Better?"

Schmukler, Sergio. 2000. "Financial Structure in Emerging Economies' Firms: The Effects of International Financial Integration." World Bank, Development Research Group, Washington, D.C.

Stulz, René M. 2000. "Does Financial Structure Matter for Economic Growth? A Corporate Finance Perspective."

Operating Costs and Investment Returns of Pension Funds

Two major issues have arisen relating to the feasibility and desirability of social security reforms that involve funding and private management: administrative costs and annuities markets. Critics of Chilean-style pension systems claim that they are extremely expensive to administer and will eventually lead to low net returns and pensions. Moreover, it is argued that annuities markets are poorly developed in most countries, so it will be difficult to convert retirement savings into annuities through the private market. This project used data from many countries to analyze the size and determinants of administrative costs as well as the operations of annuities markets.

Chile uses the retail market for investing the funds in the second (mandatory, privately managed) pillar. The study found that costs in Chile have been greatly overstated, but that nevertheless a second pillar could be run much more cheaply through the use of the institutional market. It reached this conclusion after analyzing data from mandatory pension funds in Chile and other Latin American countries and from voluntary mutual funds in the United States. For the institutional market it used data from individual account systems in Bolivia and Sweden and from large pension plans and the federal Thrift Savings Plan in the United States. These institutional approaches aggregate numerous small accounts into large blocks of money and negotiate fees on a centralized basis, often through competitive bidding. Choice by workers remains, among a limited number of funds. But fees and costs are kept low by reducing incentives for marketing, avoiding excess capacity at the start of the new system, and limiting choice to investment portfolios that are inexpensive to manage. The tradeoff is the increased probability of corruption, collusion, and regulatory capture; decreased performance incentives; rebidding prob-

lems; and inflexibility in the face of unforeseen contingencies. In countries where these problems can be surmounted, the institutional approach is worth serious consideration, especially for systems with small asset bases and at the start-up of a new multipillar system.

For the analysis of annuities markets, the study commissioned separate papers on Australia, Canada, Chile, Israel, Singapore, Switzerland, and the United Kingdom. In each case it obtained information on the structure of the market and on the "money's worth ratio" (the ratio of the present value of expected benefits to initial capital cost) for consumers. Comparing these numbers with previous work for the United Kingdom and the United States, it found a surprisingly high ratio for nominal annuities in most countries, but a substantial reduction for real annuities. If governments wish to use the private annuities market, they may have to play a role by issuing some of their public debt in the form of indexed bonds, in which insurance companies can invest. And the private market, in turn, will need to develop mechanisms for sharing investment and inflation risk with consumers.

The papers on annuities markets in various countries will be assembled, with comparative analysis, in a book.

Responsibility: Development Research Group, Poverty and Human Resources—Estelle James (ejames3 @worldbank.org), and Finance—Dimitri Vittas. With James Smalhout, Hudson Institute; Gary Ferrier, University of Arkansas; Jeffrey Brown, Harvard University; Ajay Shah, Indira Gandhi Institute, India; Michael Orszag, Birkbeck College, University of London; Peter Orszag, University of California at Berkeley and Sebago Associates; David Knox, Price Waterhouse, Australia; Hyun Tae Kim and Keith P. Sharp, University of Waterloo, Canada; Peter Zweifel and Michael Breuer, University of Zurich; Jonathan Callund, Callund Associates, Chile; Avia Spivak, Beer Sheva University, Israel; Chiu-Cheng Chang, Chang Gung University, Taiwan (China); and Xue Song, Johns Hopkins University.

Completion date: June 2000.

Reports

James, Estelle, and Dimitri Vittas. 1999. "Annuities Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?" Paper presented at World Bank Pension Research Conference, Washington, D.C.; and Organisation for Economic Co-operation and Development meeting, Paris.

———. 1999. "The Decumulation (Payout) Phase of Defined Contribution Pillars." Paper presented at Pension Forum, Asia Pacific Economic Cooperation, Chile.

James, Estelle, James Smalhout, and Dimitri Vittas. 1999. "Administrative Costs and the Organization of Individual Account Systems: A Comparative Perspective." Paper presented at World Bank Pension Research Conference, Washington, D.C.; and Organisation for Economic Co-operation and Development meeting, Paris. (Also presented at Organisation for Economic Co-operation and Development meeting in Prague, 2000; at Asia Pacific Economic Cooperation meeting, Bangkok, 2000; and at meeting of Association of Public Policy Analysts and Managers, 2000.)

James, Estelle, Gary Ferrier, James Smalhout, and Dimitri Vittas. 1999. "Mutual Funds and Institutional Investments: What Is the Most Efficient Way to Set Up Individual Accounts in a Social Security System?" NBER Working Paper 7049. National Bureau of Economic Research, Cambridge, Mass. (Also issued as Policy Research Working Paper 2099, World Bank, Development Research Group, Washington, D.C., 1999; and forthcoming in John Shoven, ed., *Administrative Costs and Social Security Privatization*, Chicago: University of Chicago Press.)

Shah, Ajay. 1999. "The Uses and Limits of Passive Investing in Mandatory Social Security Systems." Paper presented at World Bank Pension Research Conference, Washington, D.C.

The Political Economy of Pension Reform

During the past two decades 20 countries—including Argentina, Australia, Colombia, Denmark, Hungary, Italy, Latvia, Peru, Poland, Sweden, and Uruguay—have undertaken significant but differing structural reforms in their social security systems. One of the most important differences relates to the relative roles of the public and private sectors in the reformed systems. Other countries face serious problems in their current systems and are considering reforms, but are encountering intense opposition, especially from unions and pensioner organizations. This study analyzed why countries have reformed in different ways and how policymakers can overcome political obstacles to reform.

The study used two approaches. The first involved econometric analysis to examine what factors influence

the probability of structural reforms and what variables determine the public and private shares in the new system. The most important finding of this analysis is that a large implicit pension debt—the present value of the accumulated rights that workers have earned in the old system—increases the probability of getting pension reform on the agenda but reduces the relative size of the privately managed funded pillar that ultimately emerges. The reason is that a large implicit pension debt increases the transition costs of shifting to a fully funded privately managed system and thus leads to a less complete shift.

A second important finding is that preexisting voluntary pension plans leads to a larger role for the mandatory private pillar in the new system. These are examples of path dependency in policy formulation: prior systems influence but do not completely determine the shape of new systems.

The second approach was the use of carefully structured case studies to analyze how governments have overcome obstacles to reform, such as potential opposition from key groups (unions, older workers, pensioner organizations, social security bureaucracies), and to explain why they ended up with quite different structural reforms. Governments' strategies have included compensating potential losers through monetary payoffs, political positions, and tradeoffs in other policy arenas. The case studies included three transition economies (Hungary, Kazakhstan, and Poland) and three Latin American countries (Argentina, Mexico, and Uruguay).

The findings of the study will give policymakers some idea of the range of outcomes that may be feasible in their own countries and provide them with a range of tools that they can use as they attempt to implement pension reform.

Responsibility: Development Research Group, Poverty and Human Resources—Estelle James (ejames3@worldbank.org). With Sarah Brooks, University of San Diego; and Mitchell Orenstein, University of Syracuse.
Completion date: June 2000.

Reports

Brooks, Sarah, and Estelle James. 1999. "The Political Economy of Structural Pension Reform." Paper presented at World Bank Pension Research Conference, Washington, D.C.

Orenstein, Mitchell. 2000. "A Political-Institutional Analysis of Pension Reform in the Postcommunist Countries." Development Research Group Discussion Paper. World Bank, Washington, D.C.

Primary Financial Markets: Macroeconomic Conditions and Market Development

The broad goal of this project was to improve the understanding of how and why primary debt and equity markets develop and the role they play in providing finance to local companies. Primary markets are where firms raise capital by issuing financial securities, while secondary markets are where financial securities trade after issuance.

The study analyzed primary market activity—domestic and foreign, fixed income and equity—in 30 countries (including 19 emerging markets) over the period 1980–97. It documented the rise of equity markets in these countries as well as the relative paucity of domestic corporate bond markets in most emerging markets. In a bivariate framework it examined the implications of a variety of institutional and macroeconomic variables for primary market behavior. Those variables include inflation, GDP growth, accounting standards, investor protection, and openness to foreign investors. The study found that all the variables can be linked to primary market behavior.

More important, the development of domestic corporate bond markets—much more so than that of domestic equity markets—appears to be dependent on a stable, market-oriented economy. The study's multivariate framework largely supports the bivariate analysis and suggests that macroeconomic instability hinders the development of bond markets and induces issuers to source capital abroad.

The results were presented at a World Bank seminar in November 1999 and at a Bank conference in February 2000. They have been used by Bank and International Finance Corporation staff to guide work related to capital market development, including policy advice to client governments.

Responsibility: International Finance Corporation, Corporate Portfolio Management Group—Jack Glen (jglen@ifc.org). With Ian Domowitz, Pennsylvania State University; and Ananth Madhavan, University of Southern California.
Completion date: July 2000.

Report

Glen, Jack, Ian Domowitz, and Ananth Madhavan. 2000. "International Evidence on Aggregate Corporate Financing Decisions." Paper presented at the conference Financial Structure and Economic Development, World Bank, Washington, D.C., February 10–11.

The Costs and Benefits of Business Group Formation

In many countries, particularly in Asia and Latin America, individuals, families, or coalitions of families often own a number of related firms. In this type of organization, known as a business group, management and ownership are usually tied.

Business groups can be associated with three effects: expropriation of minority shareholders, development of internal financial markets, and a reduction in the role of external markets in monitoring firm behavior. The importance of these individual effects and their interaction have not been rigorously tested.

To shed light on the importance of business groups, this project uses data on publicly listed companies in Chile and nine Asian economies—Hong Kong (China), Indonesia, Japan, the Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan (China), and Thailand—for the years 1994–97. The study finds that on average group-affiliated firms have lower values than independent firms. Group-affiliated firms in which the ultimate owners have voting rights that exceed cash flow rights sold at a discount. Group-affiliated firms in which there is no divergence between voting and cash flow rights sold at a small premium over independent firms. The results of the study are robust to different valuation measures, time periods, and estimation techniques. The evidence is consistent with the view that the anticipation of expropriation associated with group affiliation more than offsets any possible benefits of group membership.

The study also finds that in times of financial distress, group-affiliated firms are less likely than other firms to seek formal bankruptcy protection, relying instead on other group affiliates for loans. This "insurance" against the likelihood of bankruptcy during bad times may come at the expense of minority shareholders. The study documents some evidence that group structures are used to diversify risks internally, as firms' market risk is influenced not only by own characteristics—such as size and the ratio of price to book value—but also by group characteristics, especially in Chile. There are costs to groups, however. In East Asia, for example, controlling owners use group structures to expropriate other shareholders. On balance, it appears that business groups are not beneficial to shareholders in either Chile or East Asia.

The Asian Development Bank (ADB) and the Asian Development Bank Institute (ADBI) in Tokyo have disseminated the findings through capacity building workshops on corporate governance in Manila (October 1999), Tokyo (May 2000), and Bombay (October 2000). The ADB and ADBI invited senior delegates from the monitoring authorities in each Asian economy to attend the workshops. Results from the project were also presented at the European Financial Management Conference in Paris (July 1999), the European Finance Association meetings in Finland (July 1999), the Korea Development Institute (July 1999), the National Bureau of Economic Research conference in Boston (August 1999), Vanderbilt University (September 1999), the University of Illinois (November 1999), the American Economic Association meeting in Boston (January 2000), Ohio State University (February 2000), the International Monetary Fund Institute (February 2000), and the University of Michigan Business School (May 2000). Several presentations were also made to audiences at the World Bank. This research also served as background to World Bank publications *East Asia: The Road to Recovery* (Washington, D.C., 1998) and *East Asia: Recovery and Beyond* (Washington, D.C., 2000).

Responsibility: Financial Sector Strategy and Policy Department—Stijn Claessens (cclaessens@worldbank.org) and Simeon Djankov; and Development Research Group, Finance—Leora Klapper. With Larry H. P. Lang, Chinese University of Hong Kong; and Tatiana Nenova, Harvard University.

Completion date: September 2000.

Reports

Claessens, Stijn, Simeon Djankov, and Leora Klapper. 1999. "Resolution of Corporate Distress: Evidence from East Asia's Financial Crisis." Policy Research Working Paper 2133. World Bank, Financial Sector Strategy and Policy Department, Washington, D.C.

———. Forthcoming. "The Role and Functioning of Business Groups in East Asia and Chile." *ABANTE*.

Claessens, Stijn, Simeon Djankov, and Larry H.P. Lang. Forthcoming. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics*.

Claessens, Stijn, Simeon Djankov, Joseph P.H. Fan, and Larry H.P. Lang. 1999. "The Expropriation of Minority Shareholders: Evidence from Asia's Financial Crisis." Policy Research Working Paper 2088. World Bank, Financial Sector Strategy and Policy Department, Washington, D.C.

Deposit Insurance: Issues of Principle, Design, and Implementation

Most countries have some form of protection for bank deposits, but the arrangements vary considerably in design. While there are formal systems that explicitly guarantee deposits, implicit systems—in which participants simply take it for granted that the government will step in if there is a crisis—are also widespread. Explicit systems vary in coverage, in whether membership is voluntary or mandatory, in funding and premium structures, and in management. Some deposit insurance institutions are also responsible for supervising the insured institutions. 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 that end up exacerbating the very crises they were meant to prevent.

Policymakers often ask the World Bank for advice on the design of deposit insurance. In responding to such inquiries, Bank staff are hampered by the lack of professional consensus on the main issues and the unavailability of a cross-country data set on design characteristics of deposit insurance and safety nets. This project is aimed at improving Bank advice on the design of deposit insurance.

The project consists of three main tasks. The first is to survey theory and policy experience to articulate whether and how deposit insurance can be fitted into an efficient and incentive-compatible system for regulating financial institutions. The second is to catalog variations in deposit insurance systems around the world so as to convert information on different design features into a cross-country data set. The third is to use this data set to test hypotheses about how variations in the design of deposit insurance affect the banking system, the frequency and cost of banking crises, and overall financial system development.

The ultimate purpose of the research is to turn the considerable theoretical work on financial regulation in industrial countries into a tested body of theory that can support reliable policy recommendations on how to tailor deposit insurance to the circumstances of developing countries. World Bank policy advice must be sensitive to variations in institutional starting points and transition costs. Thus the research will produce design lessons for many different initial conditions.

Papers produced for this project (listed below) were presented at a World Bank conference on Deposit Insurance in Washington, D.C., on June 8–9, 2000. All these papers are available on the Web at www.worldbank.org/research/interest/confs/upcoming/deposit_insurance/home.htm, along with the data set and a video of the conference.

Responsibility: Development Research Group, Finance—Aslı Demirgüç-Kunt (ademirguckunt@worldbank.org) and Robert Cull. With Edward Kane, Boston College.
Completion date: September 2000.

Reports

Beck, Thorsten. 2000. "Deposit Insurance as Private Club: The Case of Germany."

Boyd, John, and Bruce Smith. 2000. "Deposit Insurance Design and Bailout Costs."

Calomiris, Charles W., and Andrew Powell. 2000. "Can Emerging Market Bank Regulators Establish Credible Discipline? The Case of Argentina, 1992–99."

Cull, Robert, Lemma W. Senbet, and Marco Sorge. 2000. "Deposit Insurance and Financial Development."

Demirgüç-Kunt, Aslı, and Enrica Detragiache. 2000. "Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation."

Demirgüç-Kunt, Aslı, and Harry Huizinga. 2000. "Market Discipline and Financial Safety Net Design."

Honohan, Patrick, and Daniela Klingebiel. 2000. "Controlling Fiscal Costs of Banking Crises."

Kane, Edward J. 2000. "Designing Financial Safety Nets to Fit Country Circumstances."

Kane, Edward J., and Berry Wilson. 2000. "Evidence of Safety-Net Support for Banks during Economic Development in Canada, the U.K., and the U.S.: A Progress Report."

Peria, Maria Soledad Martinez, and Sergio Schmukler. 2000. "Do Depositors Punish Banks for 'Bad' Behavior? Market Discipline, Deposit Insurance, and Banking Crises." World Bank, Development Research Group, Washington, D.C.

Policy for Small Financial Systems

Two-thirds of the World Bank's members have small financial systems. Do these countries require different policy advice on the design of financial sector regulatory institutions and practices and competition and entry policies? This research investigates the ways in which small and very small financial systems are likely to underperform other systems, gauges the importance of each dimension, and identifies policy options that could alleviate the problem.

The study finds that small banking systems have higher intermediation costs than large ones, suggesting that they are less competitive. The effects may represent a significant share of GDP. The research also finds clear quantitative evidence of economies of scale in actual official regulatory costs, though the magnitudes are not large. Potential hidden costs of small size, including reduced regulatory autonomy, remain hard to confirm.

Results were presented at a World Bank Finance Forum. The lessons will be incorporated in the Bank's Policy Research Report on finance, scheduled for completion in 2001. They could have immediate and significant impact on the Bank's policy approach, including the approach used in the Financial Sector Assessment Program.

Responsibility: Development Research Group, Finance—Patrick Honohan (phonohan@worldbank.org) and Anqing Shi; and Financial Sector Strategy and Policy Department—Biagio Bossone. With Millard Long.
Completion date: September 2000.

Financial Liberalization

Many countries have encountered difficulties moving to market-based interest rates, experiencing heightened asset market volatility, distributional shifts, and a net deterioration in the incentives for sound risk management and corporate governance of financial intermediaries. This study assesses the degree to which complementary policies need to be in place to improve the performance of the financial sector in the liberalized environment. The methodology includes case studies chosen to reflect contrasting conditions in countries with chronically high inflation, transition economies, industrial economies, low-income countries, countries that have relied heavily on directed credit, and economies with severe fiscal problems. The study also tracks the role of poorly phased and implemented liberalization in contributing to the 1997 crisis in the Republic of Korea. The underlying economic theory is presented, and cross-country econometrics are used.

In practice, financial liberalization has been far from smooth. In many countries interest rate volatility has contributed to banking fragility. In the former Soviet Union de facto liberalization unsupported by contract enforcement led to an implosion of the monetary economy. In most countries interest rate spreads widened to levels that suggest competition remains limited, despite free entry.

A much more measured and nuanced approach to liberalization would have been better. Eliminating the most severe interest rate distortions did not necessitate complete and immediate removal of interest rate controls, especially in the presence of insolvent or fragile banks. Removal of controls on foreign capital (especially those affecting short-term flows) could have been phased in later than it was. Adequate capitalization and appropriate management should have been required before firms could enter the market. A longer lead-in would have allowed more thorough training and professional preparation of regulatory personnel, though their effectiveness might still have been limited by political interference. Even after liberalization it is possible to regain some of the lost ground by moving beyond supervised capital requirements to the occasional use of more activitist measures, which, although blunt and imperfect, could be more effective.

The results of the study were discussed at a World Bank workshop in March 1999 and are posted on the Web at www.worldbank.org/research/projects/finliber.htm. The study provided input into the Bank's financial sec-

tor strategy paper and its forthcoming Policy Research Report on finance.

Responsibility: Development Research Group, Finance—Patrick Honohan (phonohan@worldbank.org) and Aslı Demirgüç-Kunt; East Asia and Pacific Region, Philippines Resident Mission—Irfan Aleem; Financial Sector Strategy and Policy Department—Gerard Caprio Jr. and James A. Hanson; and Latin America and the Caribbean Region, Mexico Country Management Unit—Luis Landa and Fernando Montes-Negret. With Yoon Je Cho, Sogang University, Seoul; David Cole; Betty Slade; Fabrizio Coricelli, Università de Siena; Enrica Detragiache, International Monetary Fund; Louis Kasekende, Central Bank of Uganda; Charles Wyplosz, Graduate Institute of International Studies, Geneva; C. Calomiris, Columbia University; S. Janjua, State Bank of Pakistan; E. Kane, Boston College; H. Pill, European Investment Bank; and Paolo Vieira da Cunha, Lehman Brothers.

Completion date: December 2000.

Reports

Caprio, Gerard, Jr., and Patrick Honohan. 1999. "Restoring Banking Stability: Beyond Supervised Capital Requirements." *Journal of Economic Perspectives* 13(4): 43–64.

———. 2000. "Reducing the Cost of Bank Crises: Is Basel Enough?" World Bank, Development Research Group, Washington, D.C.

Caprio, Gerard, Jr., Patrick Honohan, and Joseph E. Stiglitz, eds. Forthcoming. *Financial Liberalization: How Far? How Fast?* Cambridge: Cambridge University Press.

Honohan, Patrick. Forthcoming. "Perverse Effects of a Ratings-Related Capital Adequacy System." *Economic Notes*.

Institutional Investors

This project covers second-generation issues involved in setting up private pension funds and developing mutual funds. It examines the impact of stock market volatility on personal pension plans and the insulating effect of various investment strategies; the design, structure, and performance of the Swiss multipillar pension system; and the "feasibility" and "impact" preconditions for the launching of funded pension plans and the realization of their potential benefits for capital market development.

The work on mutual funds focuses on the compilation of a database covering about 40 countries. A paper is under preparation that analyzes the economic determinants of mutual fund growth and examines the regulatory framework necessary for the sound development of the sector.

Responsibility: Development Research Group, Finance—Dimitri Vittas (dvittas@worldbank.org), Patrick Honohan, and Deepthi Fernando. With Max Alier, International Monetary Fund; and Monika Queisser, Organisation for Economic Co-operation and Development.

Completion date: December 2000.

Reports

Alier, Max, and Dimitri Vittas. 2000. "Personal Pension Plans and Stockmarket Volatility." World Bank, Development Research Group, Washington, D.C.

James, Estelle, and Dimitri Vittas. 1999. "The Decumulation (Payout) Phase of Defined Contribution Pillars." World Bank, Development Research Group, Washington, D.C.

Queisser, Monika, and Dimitri Vittas. 2000. "The Swiss Multi-Pillar Pension System: Triumph of Common Sense?" Policy Research Working Paper 2416. World Bank, Development Research Group, Washington, D.C.

Vittas, Dimitri. 2000. "Pension Reform and Capital Market Development: 'Feasibility' and 'Impact' Preconditions." World Bank, Development Research Group, Washington, D.C.

Corporate Governance, Corporate Finance, and Economic Performance in Developing Countries

Issues relating to corporate governance in developing countries have assumed special significance since the East Asian financial and economic crisis. This study looks at corporate behavior in four Asian countries in an attempt to understand the implications of some corporate governance variables for corporate capital structure.

The study analyzes corporate finance and economic performance in India, the Republic of Korea, Malaysia, and Thailand. It compares intertemporal and intercountry debt-equity ratios in developing and industrial countries and uses multivariate analysis to investigate the determinants of debt-equity ratios in the four Asian markets. Finally, it analyzes the cross-sectional and international variation in debt ratios and investigates

links between debt ratios and corporate ownership structures.

Findings on the implications of corporate governance variables for corporate decisionmaking, as expressed in corporate capital structure, should prove helpful in World Bank policy advice on matters relating to corporate governance structures. In addition, findings on the link between corporate governance and capital structure should be helpful for policymakers, shedding light on the implications of different policy regimes for corporate decisionmaking. This could be significant in the development of domestic corporate bond markets, which remain largely absent in most developing countries.

Responsibility: International Finance Corporation, Corporate Portfolio Management Group—Jack Glen (jglen@ifc.org); and Private Sector Development Department, Business Environment Unit—Rughvir K. Khemani. With Ajit Singh, Cambridge University.

Completion date: March 2001.

Bank Insolvency

The analysis of bank crises is important in its own right, but it also sheds light on the institutional roots of government policies more generally. This research examines two crucial issues. First, what regulatory decisions permitted crises, and why were those decisions made? Why, for example, was the exposure of bank portfolios to foreign currency–denominated assets permitted to reach high levels? Since most policy advice is based on countries' regulatory practices, understanding how regulatory decisions were made before crises is crucial to understanding the potential and limitations of this advice. Second, how have countries responded to crisis? Government decisions made early in a crisis have a substantial impact on subsequent financial and economic development. These decisions include, for example, whether to rescue bank owners, borrowers, and depositors and other holders of bank liabilities. The institutional analysis of both questions entails issues that are relevant to the broader analysis of government policymaking in developing countries, such as the role of political competition and checks and balances in encouraging or discouraging government actors from serving the public interest with strict prudential regulation.

The research finds that the effects of most of the financial and economic variables thought to affect the probability of crisis—ranging from economic growth to the liberalization of interest rates—differ significantly in the presence of political checks and balances. At the mean level of checks and balances, for example, liberalization of interest rates increases the probability of a banking crisis by 19 percent; at the lowest level of checks and balances, the probability rises to 35 percent. These results indicate the potential to improve the design of financial sector regulation in institutionally diverse countries.

Future research will focus on the magnitude of crises (research to date has looked at the occurrence of crisis). It will also make more systematic use of the Development Research Group's database on political institutions to test additional hypotheses about the determinants of efficient government policy, include case studies that chart government decisions before and immediately after financial crisis in at least six countries in different parts of the world, and examine more closely the broad institutional determinants of crises that emerge from the cross-country work.

Responsibility: Development Research Group, Regulation and Competition Policy—Philip Keefer (pkeefer@worldbank.org); and Financial Sector Strategy and Policy Department—Daniela Klingebiel and Patrick Honohan.

Completion date: June 2001.

Report

Keefer, Philip. 1999. "Political Institutions and Crisis: The Effects of Political Checks and Balances on the Dynamics of Financial Sector Distress." Paper presented at the meetings of the Western Economic Association, July 6–10, San Diego, Calif.

Measuring Financial Regulation and Supervision

This project will investigate whether a particular mix of financial regulations and supervisory standards is closely associated with successful banking operations and, more generally, with well-functioning financial systems. It will also trace the effect, initially on the financial system and then on overall economic performance, of different regulatory and supervisory features. The research will use

a variety of approaches but will be mostly cross-country empirical work using regression, logit, and probit analysis.

The project will collect comprehensive data on financial regulations and supervisory standards, the structure of regulatory and supervisory agencies, and the capabilities of regulatory and supervisory authorities in a broad cross-section of developing and industrial countries. Information on supervision will include the data and information collected by supervisors, supervisory powers, the number of on-site exams, the budget for supervisory work, and supervisors' compensation relative to that of private sector counterparts.

The data collection will cover the broad financial system, not only because the definition of banking varies widely but also because financial crises can originate among nonbank financial intermediaries, as seen most recently in Thailand. Moreover, World Bank research has shown that both banking and nonbank financial development matters for growth.

The findings will allow the Bank to fine-tune its recommendations on key improvements in regulation and supervision at various levels of financial sector development. And they will allow countries to see how they compare with others. The results will feed into the Bank's Policy Research Report on finance planned for 2001.

Responsibility: Financial Sector Strategy and Policy Department and Development Research Group, Finance—Gerard Caprio Jr. (gcaprio@worldbank.org). With James Barth, Auburn University; and Ross Levine, University of Minnesota.

Completion date: September 2001.

Weather-Based Index Insurance

This study is exploring the feasibility of area-based index insurance as a mechanism for providing rural people with effective, low-cost means of managing the risks of weather events with catastrophic impacts on agricultural production and rural incomes. The essential principle of index insurance is that contracts are written against specific outcomes (rainfall amounts, temperature, soil moisture, or even area yields) verified by independent systems. Because the insurance is triggered by these outcomes, not by individual farm inspections, it is relatively inexpensive to administer and is not subject to the adverse selection and moral hazard problems associated with traditional crop insurance schemes.

The study is first assessing the feasibility of area-based rainfall insurance in four countries—Ethiopia, Morocco, Nicaragua, and Tunisia. In a second phase it will use the results from this analysis to select two countries in which it will pursue a more in-depth analysis that will lead to the design of pilot projects for implementation.

The feasibility assessment involves the following steps:

• *Evaluate the potential demand for rainfall insurance.* To empirically evaluate the potential demand for insurance, the project will carry out field research at selected sites. This work will involve interviews with different types of rural households to determine which catastrophic events they are most concerned about, how frequent they perceive those events to be, how they cope with those risks, and how much they would be willing to pay for insurance if it were available.

• *Ascertain the feasibility of supplying the insurance.* In this step the study will determine whether there are insurable weather events, particularly rainfall events, recorded at local weather stations that correlate highly with the risks that most people are concerned about (such as lower income or loss of assets). This may require some biophysical modeling work to identify critical rainfall events in the agricultural calendar that predict catastrophic production outcomes. If the study can identify such events, it will use historical data from the rainfall stations to calculate the actuarially fair premium rates that would have to be charged for the insurance and compare these rates to the prices that households would be willing to pay.

• *Evaluate the institutional feasibility of supplying the insurance.* The study will assess the private insurance industry's interest in supplying the insurance and its capacity to do so, any constraints that would have to be overcome to sell the insurance and how this might be done, and the possibilities for selling part of the risk in the international financial and reinsurance markets. This step also involves developing links with financial companies abroad that would be willing to participate in the underwriting of rainfall insurance contracts.

The study will conclude with an international workshop in the fall of 2001 to present the results to policy-

makers, insurers, bankers, aid agency officials, and researchers.

Responsibility: Development Research Group, Rural Development—Panos Varangis (pvarangis@worldbank.org) and Donald Larson; Financial Sector Development Department—Vijay Kalavakonda, Rodney Lester, and Don McIsaac; Middle East and North Africa Region, Private Sector Development and Finance Group—Stephanie Gober; and Human Development Network, Social Protection Team—Paul Siegel. With Peter Hazell, International Food Policy Research Institute; Pasquale Scandizzo, Universita di Roma and Sichelgaita, Italy; Jerry Skees, University of Kentucky; Mario Miranda, Ohio State University; and Roberto Pasca, Universita di Roma. The Italian Trust Fund and the Development Marketplace have contributed funding for the research.

Completion date: October 2001.

Bank Privatization in Developing Countries

This project summarizes the problems some countries have had selling insolvent, loss-generating state-owned banks to the private sector. It analyzes the political economy factors that affected the method of privatization and studies how post-privatization performance differed for each method used. The study assumes that political and economic constraints dictate the timing and design of bank privatizations and that timing and design, in turn, affect post-privatization performance.

The research is based on detailed country case studies and econometric analyses of bank-level panel data in Argentina, China, the Czech Republic, Egypt, Hungary, Mexico, and Poland. These studies are complemented by a cross-country analysis of the political economy of bank privatization in the transition economies of Eastern Europe and the former Soviet Union and by a theoretical model of the features of privatization contracts. Data from the country case studies are used to test whether outcomes were consistent with the theoretical model. The variety of approaches tested should provide World Bank task managers with useful information on when it is most advisable to pursue bank privatization, how alternative transaction designs affect outcomes, and how to avoid common obstacles.

A study on the potential benefits and pitfalls of bank privatization in Egypt provides guidelines on the regulatory conditions needed for a robust banking sector and indicates where Egypt stands relative to selected other economies in terms of meeting those conditions.

Responsibility: Development Research Group, Public Economics—George Clarke (gclarke@worldbank.org) and Robert Cull.

Completion date: January 2002.

Reports

Caprio, Gerard, Jr., and Robert Cull. 2000. "Bank Privatization and Regulation for Egypt." Egyptian Center for Economic Studies, Cairo.

Clarke, George, and Robert Cull. 1998. "The Political Economy of Privatization: An Empirical Analysis of Bank Privatization in Argentina." Policy Research Working Paper 1962. World Bank, Development Research Group, Washington, D.C.

———. 1999. "Why Privatize? The Case of Argentina's Public Provincial Banks." *World Development* 27(5): 865–86.

———. 2000. "Provincial Bank Privatization in Argentina: The Why, the How, and the So What." In Harvey Rosenblum, ed., *Bank Privatization: Conference Proceedings of a Policy Research Workshop*. Dallas: Federal Reserve Bank of Dallas.

Financing of Small and Medium-Size Enterprises

Many small and medium-size firms are believed to lack adequate access to external sources of financing. The problem is of concern because small businesses are believed to be important in promoting technological innovation and expanding employment.

This study examines the sources of outside capital available to small and medium-size enterprises and identifies the factors that affect firms' access to external credit. The analysis includes country-specific and cross-country studies that examine both bank and nonbank sources of financing. Cross-country studies include data on about 55 countries, including countries in East Asia, Eastern Europe, and Latin America, for which published statistics are available. Data from Firm Analysis and Competitiveness Surveys in various countries and regions are also used. The analysis focuses on the role of nonbank financing, such as supplier credit and leasing.

The research project also includes a detailed study of bank lending in Argentina, using detailed credit information data that have been obtained from the country's central bank. The analysis of the Argentine data focuses on the segmentation of bank lending between domestic and foreign banks and among borrowers of different quality.

Responsibility: Development Research Group, Finance—Leora Klapper (lklapper@worldbank.org).

Completion date: Ongoing.

Chinese State-Owned Enterprises in the 1980s

Little has been known about the financing of Chinese state-owned enterprises or about their performance contracts with the government. To shed light on these issues, this project used panel data on Chinese state-owned enterprises to examine banks' behavior in allocating credit to them and the effectiveness of performance contracts.

The research found that banks outperform government grant programs in allocating credit. Once the government shifted bailout responsibility to banks, however, the relative effectiveness of bank financing declined significantly. Examination of bank and government decisions to grant credit found that bank finance was more positively related to firm performance and a series of efficiency-enhancing reforms.

The research found that, on average, performance contracts did not improve the productivity of Chinese state-owned enterprises. But the provisions of the contracts did matter. In particular, wage incentives were significantly and positively correlated with productivity. Performance contracts were also more effective when the targets they set focused on profits. And those with longer terms were associated with higher productivity growth.

The findings suggest that performance contracts can improve productivity when they simultaneously set the right targets, offer incentives, and specify a longer contract term. Most of the performance contracts signed by the Chinese government did not do these things, however, and the overall effect on productivity was negligible.

Responsibility: Development Research Group, Regulation and Competition Policy—Lixin Colin Xu (cxu@worldbank.org) and Mary Shirley, and Finance—Robert Cull. Transition Seed Money contributed funding for the research.
Completion date: June 2000.

Reports

Cull, Robert, and Lixin Colin Xu. 2000. "Bureaucrats, State Banks, and the Efficiency of Credit Allocation: The Experience of Chinese State-Owned Enterprises." *Journal of Comparative Economics* 28: 1–31.

Xu, Lixin Colin. 2000. "Control, Incentives, and Competition: The Impact of Reform in Chinese State-Owned Enterprises." *Economics of Transition* 8(1): 151–73.

Xu, Lixin Colin, and Robert Cull. 1998. "Who Gets Credit? The Behavior of Bureaucrats and State Banks in Allocating Credit to Chinese SOEs." World Bank, Development Research Group, Washington, D.C.

Xu, Lixin Colin, and Mary Shirley. 1998. "The Empirical Effects of Performance Contracts." World Bank, Development Research Group, Washington, D.C.

Pension Reform in China: Implicit Pension Debt and Transition Costs

The lack of an effective, sustainable pension system is a serious impediment to economic reform in China. A 1997 World Bank analysis of China's current pension system pointed to two main issues: the short-run problem of the pension burden of state-owned enterprises and the longer-term problem arising from the rapid aging of the population. These problems have become even more severe since that analysis.

After examining international experience with pension reform, this study estimated the effects of pension reform in China and compared different options for financing the implicit pension debt and the costs of transition to a reformed pension system, using a newly designed computable general equilibrium model. It also examined the effects of different reform options on the sustainability of the system and on overall economic growth. Results from these simulations are promising.

• *The baseline scenario.* The labor force is expected to stop growing in 2015–20 and then to shrink, but the age group 65 and over will continue to grow. Thus the old age dependency ratio will rise steadily from 11 percent today to 25 percent in 2030 and 36 percent in 2050. The system dependency ratio, 30 percent today (meaning that three workers support every retiree), will rise

rapidly—to 69 percent in 2030 and 79 percent in 2050.

• *Scenario assuming no change in the current system.* The simulation results confirm that the current pay-as-you-go system (with a notional individual account) is unsustainable. Expanding coverage under the current system would improve its financial situation in the short run but undermine financial viability in the long run.

• *Set of scenarios assuming reform, with the transition costs financed by different taxes.* These scenarios assume reforms that include a new, fully funded individual account, established in 2001. The transition costs would be about 0.6 percent of GDP annually in 2000–10, declining to 0.3 percent by 2050. A comparison of various options for financing—general, value added, corporate, personal income, and private consumption taxes—found that using personal income taxes would be best for promoting economic growth and reducing income inequality.

After fiscal resources are injected to finance the transition costs, the reformed public pillar (basic pension system) becomes financially sustainable. To finance a benefit equivalent to 20 percent of the average wage, a contribution rate of only 10–12.5 percent would suffice to balance the basic pension system annually. If the retirement age of women were gradually increased by five years, the balanced contribution rate would be around 9–10 percent. If the retirement ages of both men and women were gradually increased by another five years, the balanced contribution rate would decline to 6 percent. If a new social security tax were levied to replace the current contributions to the public pillar, the pension system would become not only financially sustainable but also nationally unified.

Findings were presented to a senior policy seminar (Managing Fiscal Risks) for Ministry of Finance officials in Beijing in May 2000; to a conference organized by the Chinese Economist Society and the government of Shanghai in Pudong (Shanghai) in July 2000; and to a seminar at the Bank in May 2000.

Responsibility: World Bank Institute, Economic Policy and Poverty Reduction Division—Yan Wang (ywang @worldbank.org). With Dianqing Xu, Western Ontario University; Zhi Wang, U.S. Department of Agriculture; and Fan Zhai, State Council, China.

Completion date: June 2000.

Report

Wang, Yan, Dianqing Xu, Zhi Wang, and Fan Zhai. "Implicit Pension Debt and Transitional Cost in China's Pension Reform—A Computable General Equilibrium Analysis." World Bank Institute, Economic Policy and Poverty Reduction Division, Washington, D.C.

The Political Economy of Social Policy in Transition Economies

A simple political economy model might conceptualize economic reform and social policy in transition economies as the outcome of decisions by self-interested politicians weighing the expected payoffs of favoring rent recipients (state enterprise workers and managers) against those of favoring transfer recipients (mostly pensioners). Such a model might predict similar social policy outcomes in the Czech Republic, Poland, and the Russian Federation, which started transition with similar conditions and with similar shares of pensioners in the population. Yet this has not been the case.

In Russia there has been massive redistribution of income and wealth, with privatization favoring insiders (managers and workers), tax revenue falling, and pensioners losing much ground relative to workers. In Poland privatization has proceeded more slowly, there has been much less redistribution and rent seeking, and pensioners have fared better than workers.

This study sought to explain these disparate outcomes through case study analysis of policy formulation in Poland and Russia. It developed a political economy model in which policy is the outcome of an interaction among the government, managers and workers, and transfer recipients. The government, which seeks to remain in power, needs the support of either transfer recipients or managers and workers. It can opt for slow privatization, with little asset stripping and significant taxation, and protect its fiscal base, out of which it pays pensioners relatively well (as in Poland). Or it can give away assets and tax exemptions to managers and workers, who then deliver the vote, while providing little to pensioners (as in Russia).

The case study of Russia indicates that the privatization method chosen (including the loan-for-shares deal) reflected the political forces operating at the time

key decisions were made. Empirical analysis of voting behavior in the 1996 presidential election indicates that better educated, richer, and younger Russians and those with more favorable expectations of the future tended to vote for Boris Yeltsin. Pensioners tended to vote against Yeltsin, and entrepreneurs to vote for him.

Responsibility: Development Research Group, Poverty and Human Resources—Branko Milanovic (bmilanovic @worldbank.org). With Ethan Kapstein, University of Minnesota. The University of Minnesota contributed staff time for the research.

Completion date: June 2000.

Reports

Kapstein, Ethan, and Branko Milanovic. 2000. "Dividing the Spoils: Pensions, Privatization, and Reform in Russia's Transition." Policy Research Working Paper 2292. World Bank, Development Research Group, Washington, D.C.

———. 2000. "Responding to Globalization: Social Policy in Emerging Market Economies." Paper presented at Russell Sage–Rockefeller Seminar on Social Policy in Emerging Market Economies, New York, March 24.

Agriculture in Transition: Land Reform and Farm Restructuring in Formerly Socialist Countries

In the formerly socialist countries of Europe and Central Asia land reform and farm restructuring are among the main components of the transition to the market in agriculture. The World Bank has been monitoring progress in these aspects of transition since 1992 for all 23 countries of the former Soviet Union and Central and Eastern Europe through country sector reviews supplemented by extensive farm-level surveys. This monitoring work shows that despite the countries' common heritage of socialist command economy with pervasive collectivization of agriculture, they are not following the same path in market reforms.

This research is assembling and generalizing country materials on the various paths of land reform and farm restructuring in Europe and Central Asia in order to synthesize a coherent picture of agrarian transformation in the context of general sectoral reforms in the region. In addition, it is applying a range of analytical tools to empirically assess the performance of agriculture and the impact of land reform and farm restructuring on the rural population, including the relative efficiency of collectives and family farms. Finally, it aims to analyze the causes of the observed transformation patterns; establish relationships between progress in agricultural reforms and the country's political, economic, social, and cultural profile; and formulate policy conclusions based on an integrated overview of the processes and experiences throughout the region.

The research combines several methodological approaches. The first involves generalizing and synthesizing information on agricultural transformation in the region, evaluating progress in land reform and farm restructuring through a detailed comparison between farming structures in the formerly socialist countries and those in market economies. The second develops a multivariate typology of agricultural reform in different countries through cluster analysis, supplementing and validating existing subjective rankings. The third approach applies statistical and econometric tools to detect the impact of reform by analyzing differences in performance, income, and satisfaction between different groups of stakeholders, between regions with different levels of reform, and between countries with different political orientations. Data envelopment analysis is applied to estimate differences in efficiency between collectives and family farms. Individual choice models (logit and probit regressions) are used to examine the decisions of individuals to become private farmers or to remain in a collective.

The research will produce a book summarizing and generalizing the experiences of the first decade of agricultural transition. The book will be aimed at giving policymakers in the region a cross-country perspective and thus enabling them to judge on the basis of empirical information what transition strategies work better and why. And it will be aimed at giving the international donors and audience outside the region a competent overview of the experience in the first decade of reforms, contributing to the development of assistance strategies for the next decade.

As part of ongoing dissemination efforts, partial results of the research have been presented to international audiences, including scholars from Europe and Central Asia. Upon completion of the research, a special work-

shop will be organized for scholars, policymakers, and government officials in the region.

Responsibility: Europe and Central Asia Region, Environmentally and Socially Sustainable Development Sector Unit—Csaba Csaki (ccsaki@worldbank.org); Development Research Group, Rural Development—Gershon Feder; and Africa Region Technical Families, Rural Development 1—Karen Brooks. With Zvi Lerman, Hebrew University, Israel.

Completion date: September 2000.

Reports

Lerman, Zvi. 1999. "Comparison of Restructured and Non-restructured Farm Enterprises in Ukraine." Paper presented at the Fourth Annual Convention of the Association for the Study of Nationalities, Columbia University, New York, April.

———. 1999. "Farm Restructuring Experience: Comparison of Former Soviet Union and Eastern Central Europe." Paper presented at the Golitsino Workshop on Farm Profitability, Sustainability, and Restructuring, U.S. Agency for International Development and Institute for Economy in Transition, Moscow, October.

———. 1999. "From Commonality to Divergence: How ECE and CIS Agricultures Are Drifting Apart." Paper presented at the conference Land Ownership, Land Markets, and Their Influence on the Efficiency of Agricultural Production in Central and Eastern Europe, Institute of Agricultural Development in Central and Eastern Europe (IAMO) and Food and Agriculture Organization, Halle, Germany, May.

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———. 1999. "Status of Land Reform and Farm Restructuring in the CEE Countries—A Regional Overview." Paper presented at the Second European Union Accession Workshop in the Rural Sector, World Bank and Food and Agriculture Organization, Warsaw, June.

———. 2000. "From Common Heritage to Divergence: Why the Transition Countries Are Drifting Apart by Measures of Agricultural Performance." Paper presented at annual meeting of American Agricultural Economics Association, Tampa, Florida, July.

———. Forthcoming. "Agriculture in Transition Economies: From Common Heritage to Divergence." *Agricultural Economics.*

Evaluation of Active Labor Market Programs in China

As reforms of state enterprises in China have accelerated, addressing labor redundancy in these enterprises has gained urgency. But downsizing has been hindered by enterprise-based provision of social benefits to workers. A practical response to this problem has been the emergence of a new category of workers, *xiagang* workers, who are laid off but retain their links to their enterprises as well as subsistence wages and access to housing and medical benefits.

The government's main response to the unemployment threat has been the Reemployment Project, launched as a pilot in 30 cities in 1994 and expanded to 200 cities in 1995–96. The project encompasses a range of active labor market policies, including retraining, job search assistance and counseling, wage subsidies and tax breaks for enterprises that employ laid-off workers, and assistance for self-employment designed to redeploy unemployed workers in productive activities.

This research is evaluating the cost-effectiveness of retraining and employment services in two cities in China, Shenyang and Wuhan. The study is using a quasi-experimental evaluation design that involves collecting data from individuals who participated in retraining and data from a comparison group drawn randomly from a list of retrenched workers. The study will compare such outcomes as probability of reemployment and earnings after reemployment for the groups to derive the net impact of the programs. Finally, using data on the costs of administering the programs, it will compare the cost-effectiveness of different interventions.

The random sample of retraining participants was drawn from program lists kept at the training institutes. For the comparison group a random sample was drawn from the lists of redundant workers maintained at the municipal labor bureaus. The Institute of Labor Studies collected data for a sample of participants and the comparison group in May–June 2000 and has also collected data on program costs. Analysis of these data will be undertaken soon.

A conference on labor market policies was held in Beijing in May 1999 to discuss the urban labor market adjustment in China, lessons of international experience with active labor market policies, and evaluation methodologies. A conference to disseminate the research results of the evaluation study to policymakers and practitioners in China is planned.

The World Bank already funds projects with active labor market components, and such programs are increasingly being considered in several East Asian economies affected by the economic crisis. This study will add to the body of research on the evaluation of active labor market policies, and its results will be useful in designing and evaluating such interventions.

Responsibility: East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit—Homi Kharas (hkharas@worldbank.org), Tamar Manuelyan Atinc, and Benu Bidani. With Christopher O'Leary, W. E. Upjohn Institute for Employment Research; and Institute of Labor Studies, Beijing.

Completion date: October 2000.

Privatization and Corporate Governance in Transition Economies

Establishing effective corporate governance in transition economies has proved difficult. Large-scale voucher privatization was the preferred vehicle for achieving rapid ownership changes at many state-owned enterprises. The widely dispersed shareholdings that resulted, however, have not generated substantial improvements in performance.

This project documents the evolution of shareholding and describes the changes in firm performance that have occurred since privatization. Using panel estimation techniques, it provides econometric evidence on how well various ownership structures have improved firm performance. The results should provide insight into the longer-term advantages and drawbacks of different privatization methods, especially large-scale voucher privatization. By focusing on the performance characteristics of the weakest governance structures, the research should also help identify ways to improve the existing post-privatization situation in many countries.

The project covers the Czech Republic. Other studies have argued that Czech voucher privatization led to poor firm performance because it produced a dispersed structure of ownership that induced weak corporate governance in a country in which protection of minority owners was weak. But these studies were not able to establish a clear link between ownership structure and firm performance, and they do not explain why a one-shot activity like asset stripping became a dynamic process. Using a new data set on firms privatized between 1993 and 1996, this study shows that even after controlling for size and structure, joint stock companies privatized with vouchers did indeed perform worse than firms with concentrated shareholdings that had to be purchased for cash (that is, limited liability companies and foreign joint stock companies). The study argues that static asset stripping was combined with dynamic looting, because the joint stock companies had privileged access to credit from state-controlled banks that had little incentive to enforce debt contracts. The study shows that, controlling for firm performance, liabilities increased at a much faster rate in joint stock companies than in limited liability companies. If, as the study contends, the problems stemming from ownership structures were compounded by looting, financial incentives and regulation are as important as ownership structure in privatization design.

Responsibility: Development Research Group, Regulation and Competition Policy—Mary Shirley (mshirley @worldbank.org), Robert Cull, and Jana Matesova.

Completion date: January 2001.

Trade Policy in Transition Economies

Integration with the international economy is an essential part of the transition from central planning to a market system. Price distortions, so common under central planning, can be maintained only through formidable trade and foreign exchange controls that divorce 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 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.

This project has looked at trade policy reform issues in the countries of the former Soviet Union. A report summarizing trade performance and the experience with trade policy reform in these countries recommended strategies for increasing their integration with the international economy—strategies that entail actions by the countries as well as by their main trading partners, the OECD countries.

A study of customs unions showed that although preferential trade areas in the Commonwealth of Independent States (CIS) may have served a useful purpose in the past as a transitional device, the time for customs unions and free trade areas in the CIS is over. Integrating with the world economy should be the highest priority now, and customs unions will retard that integration. Work on the issue of accession to the World Trade Organization by the transition economies emphasized that accession provides a unique opportunity for the acceding country to "lock in" a trade policy that is beneficial to that country, as long as it adopts a less than minimalist approach in its accession offer.

The project has also examined issues relating to tariff policy and tariff uniformity for transition economies, focusing on the Russian Federation. And it has assessed the progress of the transition economies in integrating into the world trading system and acceding to the World Trade Organization. This research concluded that for many countries of the former Soviet Union, integrating effectively will require considerable reform and adjustment. But the United States and the European Union also may need to make some changes, especially in their designation of some of these countries as "nonmarket" economies.

Research in the past year focused on the impact of the European Union on the trade policies of Central Europe. Except for certain "sensitive products," the link with the European Union has offset protectionist pressures in Central Europe. The project also examined the effect of overvalued exchange rates on growth and trade policies, initially focusing on Kazakhstan. It found that overvalued exchange rates have a strongly negative effect on growth, just as in other parts of the world.

The study's findings and recommendations have been communicated to the governments in policy dialogue on international trade reform, discussed with representatives of transition economies, and presented at conferences.
Responsibility: Development Research Group, Trade—David Tarr (dtarr@worldbank.org); and Europe and Central Asia Region, Brussels Office—Constantine Michalopoulos.
Completion date: June 2002.

Reports

Kaminski, Bartlomiej. 1999. "The EU Factor in the Trade Policies of Central European Countries." Policy Research Working Paper 2239. World Bank, Development Research Group, Washington, D.C.

Michalopoulos, Constantine. 1998. "WTO Accession for Countries in Transition." Policy Research Working Paper 1934. World Bank, Development Research Group, Washington, D.C.

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———. 1997. "The Economics of Customs Unions in the Commonwealth of Independent States." *Post-Soviet Geography and Economics* 38(3): 125–43. (Also issued as Policy Research Working Paper 1786, World Bank, Development Research Group, Washington, D.C., 1997.)

Shatz, Howard, and David Tarr. 2000. "Exchange Rate Overvaluation and Trade Protection: Lessons from Experience." Policy Research Working Paper 2289. World Bank, Development Research Group, Washington, D.C.

Tarr, David. 1999. "Design of Tariff Policy for Russia." In Harry Broadman, ed., *Russian Trade Policy Reform for WTO Accession.* World Bank Discussion Paper 401. Washington, D.C.

The Role of Interfirm Linkages in Emerging Industrial Clusters

Interest in regional growth has grown substantially in recent years, particularly in the emergence of small regions with very rapid growth in the midst of average—sometimes even declining—national economic conditions. What distinguishes these rapid growers is that their successes relate not to individual firms but to a collection of firms connected to each other through a variety of linkages that reduce transactions costs and enhance competitiveness—often referred to as an industrial cluster or district.

This study undertook an empirical investigation of the role of such linkages in enhancing firm-level productivity using panel data collected through a survey of firms in an emerging industrial cluster in Corum, a province of Turkey. It identified various types of linkages—both horizontal (peer firms) and vertical (suppliers)—and examined several activities that signify cooperative behavior.

The results show that activities that facilitate a lowering of transactions costs in the creation and maintenance of a specialized asset—physical or human—have the greatest effect in raising the productivity of a firm. Vertical linkages are more important than horizontal linkages for performance in Corum, pointing to the importance of coded (as opposed to tacit) knowledge in the early stages of this cluster's formation.

Exploring the empirical correlates of cooperative behavior, the study found that neither size nor age seems to have any influence on a firm's propensity to engage in cooperative activities—nor does the firm's sector. Instead, a firm engages in cooperative behavior if it perceives that cooperation will enhance its performance. The best way to promote cooperation may therefore be to make firms aware of its potential benefits.

The research provides an empirical underpinning for cluster development projects aimed at improving regional economic development. And its findings suggest that techniques used previously to foster regional growth (fiscal incentives, public investments) need to be revisited, and greater attention given to promoting productive linkages between firms. A public subsidy for making a "first point of contact" may be justified.

Responsibility: Private Sector Development Department, Business Environment Unit—Rughvir K. Khemani (rkhemani@worldbank.org) and Hong Tan; and East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit—Manjula Luthria. With Izak Atiyas, Sabanci University, Istanbul.

Completion date: October 1999.

Report

Luthria, Manjula, and Izak Atiyas. "Fighting Poverty with Social Capital: An Empirical Investigation of Cooperation among Rivals." World Bank, East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit, Washington, D.C.

Does More Intense Competition Lead to Higher Growth?

Theoretical work does not provide clear-cut answers to the question of whether a monopolist's greater tendency to innovate is outweighed by the productivity gains induced by competition. Many empirical studies have attempted to settle this issue by using industry- or firm-level data, but these studies fail to capture broader, economywide effects.

This project developed empirical evidence on the impact of competition on economic growth in order to quantify the aggregate gains from promoting competition. It tested the relationship between domestic competition (beyond trade liberalization) and growth in cross-country time-series data. It identified three groups of variables that capture the intensity of competition at the economywide level: competition policy variables, which capture the effectiveness of antitrust or other domestic policies in promoting competition; structural variables, which reflect the extent to which market structure is con-

centrated from an economywide perspective; and mobility variables, which capture the ease with which new enterprises can enter and grow in any market. The study then examined whether any of these variables can explain some of the cross-country variation in economic growth that conventional variables (such as initial income level, trade openness, human and physical capital accumulation, government finances, and macroeconomic stability) cannot explain.

The results indicate that competition policy could be an important determinant of long-run growth. Only one of the potential measures of intensity of competition—the effectiveness of antitrust enforcement (based on direct responses from a large number of market participants across all countries in the sample)—has a strong correlation with unexplained growth. The only other variable exhibiting some robust correlation is a mobility variable, emphasizing the importance of free entry and mobility in the economy. The work highlights the need to collect and compile internationally comparable data on measures of economywide competition, particularly corporate and entrepreneurial mobility.

Results have been discussed in academic forums, including a conference, Industrial Organization and Development, in Toulouse in November 1998. A draft paper was circulated at the competition policy course organized by the World Bank Institute in December 1998.

Responsibility: Office of the Senior Vice President and Chief Economist, Development Economics—Mark Dutz (mdutz@worldbank.org). With Aydin Hayri, Deloitte and Touche LLP; Gregorio Impavido; Richard Caves, Harvard University; and Ross Levine, University of Virginia.

Completion date: December 1999.

Report

Dutz, Mark, and Aydin Hayri. 2000. "Does More Intense Competition Lead to Higher Growth?" Policy Research Working Paper 2320. World Bank, Office of the Senior Vice President and Chief Economist, Development Economics, Washington, D.C.

Corruption

This study aimed to provide evidence on the determinants and consequences of corruption and the policy options that can be used to combat it. Using cross-country data, it identified the determinants of corruption and its correlates, including the relation between corruption and openness, decentralization, and gender. Using firm-level data on estimated bribe payments, it identified the determinants of graft.

The results suggest that corruption is negatively associated with openness and with the degree of fiscal decentralization and that in an environment characterized by systemic corruption, the amount that a firm needs to pay in bribes depends on the firm's characteristics. That is, bribes demanded are not fixed sums for given public services but depend on the firm's ability to pay. There is also evidence that greater participation of women in government is associated with less corruption across countries and that highly variable tariff rates—which create greater opportunities for discretionary behavior by public officials—are associated with more corruption.

The results refute the "efficient grease" hypothesis, which posits that bribery allows firms to get things done in an economy plagued by bureaucratic delays. Cross-country data reveal that firms that face more bribe demands are likely to spend more, not less, management time negotiating regulations with bureaucrats. Moreover, firm-level evidence indicates that the rate of bribery has a significant negative correlation with firm growth. New data from transition economies were used to study the incidence of state capture, in which firms and individuals manipulate the political process to obtain special favors.

Empirical research on governance and corruption is plagued by lack of consistent cross-country data spanning a large set of countries. To overcome this problem, this project constructed a large database, which includes more than 300 indicators. An unobserved components framework was used to combine related governance indicators from various sources into aggregate governance indicators. These aggregates are more reliable and span a larger set of countries than individual indicators, and they also have associated standard errors that are useful for drawing inferences about cross-country differences in governance. The data reveal a strong causal link between six aggregate governance indicators and development outcomes.

The findings have been presented at workshops at the World Bank and in client countries, at universities, and at academic meetings.

Responsibility: Development Research Group, Macroeconomics and Growth—Jakob Svensson (jsvensson @worldbank.org) and Aart Kraay, and Public Economics—Gunnar Eskeland; East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit—Mary Hallward-Driemeier; and World Bank Institute, Governance, Regulation, and Finance Division—Daniel Kaufmann. With S. Filipov, C. Arevalo-Correa, R. Fisman, V. Kartamyshev, G. Mehrez, A. Terada, H. Thiele, T. Vishwanath, Shang-Jin Wei, and Pablo Zoido-Lobaton.
Completion date: June 2000.

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Delivery of Social Justice in Decentralized Arrangements: A Study of the Uganda Situation

This study examines whether decentralization has improved the delivery of judicial services to both men and women in Uganda. Specifically, the study:

- Assesses whether the decentralized mechanism for dispute resolution at lower levels is fully used to help women resolve differences in an appropriate and equitable manner.
- Assesses how social evils such as corruption affect men's and women's efforts to use local council courts.
- Identifies factors that influence women's preference for alternative systems in seeking social redress.
- Makes recommendations that address the inequities in the legal framework within a decentralized setting.

The study is based on interviews with women and local council members and a review of lower court records, local council records, and secondary sources on procedures, jurisdiction, capability of justices, supervision of decisions, institutional capacity, and other factors. The findings help understand the environment in which Bank-supported projects operate—by showing, for example, whether newly decentralized structures have enabled women to enforce their socioeconomic rights at the local level. The study's recommendations will provide insight into the need for investing in improving local judicial institutions.

The study's results are applicable to other countries, especially those that have embarked on the process of

decentralization as a way of including the ordinary person in development decisionmaking and creating local judicial and administrative structures as avenues for adjudicating local disputes.

Responsibility: Operations Evaluation Department, Country Evaluation and Regional Relations—Gita Gopal (ggopal @worldbank.org); and World Bank Resident Mission, Kampala—Mary Bitekerezo. With Dora K. Byamukama, Law and Advocacy for Women in Uganda. The Danish Governance Trust Fund contributed funding for this research.

Completion date: July 2000.

The Causes of Corruption

This study examines empirically the determinants of corruption, paying particular attention to variables that help determine the extent to which policymakers can be held accountable for the actions of their staff. The study focuses on public rather than private corruption. And it focuses on petty corruption (low-level officials extracting small sums through extortion, bribery, theft, or misuse of official property), because this is what empirical measures of corruption assess.

A preliminary step was to collect indicators of the incidence of corruption in a global sample of developing and industrial countries from various sources, including the International Country Risk Guide, Transparency International, and a set of governance indicators constructed by Bank researchers.

Among the potential determinants of corruption, three sets of variables are considered. The first consists of variables reflecting the economic incentives of public servants (such as the relative wages of public officials). The second consists of indicators of the size of the "rent pool" (foreign aid, natural resource wealth, and state-owned enterprises' share of economic activity) and indicators of policy distortions, such as the black market premium and trade barriers. These two sets act as the control variables.

The third set of variables reflects the degree of accountability of politicians and public servants, which can be determined by institutional and economic features. The data are drawn from the Database of Political Institutions, constructed in the Development Research Group, which contains qualitative information on the institutional context in a sample of 177 developing and industrial countries. These data allow the identification of regimes (presidential and parliamentary) that permit reelection of the chief executive and the existence of checks and balances that may affect the extent to which executive branch officials are held accountable for the performance of their lower-level staff.

The study tests the hypothesis that accountable local governments are less corrupt. This hypothesis has both an institutional and an economic dimension. To examine the institutional dimension, the study uses a variable on the existence of local elections. The economic dimension is related to the question of whether voters have an incentive to hold local and central governments accountable. One proxy for this is the revenue raised by central and local governments as a share of GDP. The underlying assumption is that voters' incentive to hold elected officials (and their lower-level staff) accountable is proportional to the taxes they pay relative to their incomes.

The study requires modern econometric techniques for time-series cross-country data with instrumental variables, to account for the fact that corruption itself may influence some of the explanatory variables, including public wages, policy distortions, and revenue collection.

Responsibility: Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit—Daniel Lederman (dlederman@worldbank.org), and Chief Economist Unit—Ana Maria Menendez. With Norman Loayza, Central Bank of Chile.

Completion date: September 2000.

The Regulation of Entry

This research project collected information on the regulation of new entry by firms, including the procedures they are required to follow and the time and cost of following these procedures, in 75 countries. It focused on legal requirements that a business must meet before it can officially open its doors, the official cost of meeting these requirements, and the minimum time it takes to meet them if the government does not delay the process. It then used the data to evaluate alternative economic theories of regulation.

There are two broad views of regulation in economics, the helping hand and the grabbing hand. The *help-*

ing hand view holds that unregulated markets exhibit frequent failures, ranging from monopoly power to externalities. A good government—one that pursues social efficiency—must counter these failures and protect the public through regulation. The helping hand view, initially a normative theory on how regulation should be used, has emerged as a descriptive theory on how governments actually regulate.

The *grabbing hand* view sees the government as less benign and regulation as socially inefficient. It comes in two flavors. In the *regulatory capture* theory, industry incumbents are able to obtain regulations that create rents for themselves, since they typically face lower information and organization costs than do the dispersed consumers. A second strand of the grabbing hand view—the *tollbooth* view—holds that regulation is pursued for the benefit of politicians and bureaucrats. Politicians use regulation to favor friendly firms and other political constituencies and thereby obtain campaign contributions and votes.

The research assessed the regulation of entry around the world from the perspective of these three theories by addressing two broad sets of questions. First, what are the consequences of entry regulation? In particular, who gets the rents? In the helping hand view stricter regulation is associated with higher quality of goods and fewer damaging externalities. In the capture theory it is associated with higher profitability for the incumbents. And in the tollbooth view it is most clearly associated with higher corruption.

Second, what kinds of governments regulate entry more strictly? The helping hand model predicts that governments whose interests are more closely aligned with those of the consumers, generally thought of as more democratic governments, will take a more benign regulatory stance. If entry regulation serves consumers, other things equal, more democratic governments would be expected to regulate entry more strictly. In contrast, the grabbing hand model predicts that the governments least subject to popular oversight will pursue the strictest regulations, to benefit either the incumbent firms or the regulators themselves.

In the sample of countries the study did not find that stricter regulation of entry is associated with higher-quality products or better pollution records, nor with higher profitability of firms. But it did find that stricter regulation of entry is associated with sharply higher corruption and a relatively large unofficial economy. On the face of it, the evidence on the consequences of entry regulation does not support the helping hand or the capture theories, instead favoring the tollbooth view. But a helping hand theorist could perhaps argue that corruption and a large unofficial economy are inadvertent consequences of benevolent regulation and thus cannot be used as evidence against the helping hand view.

The study found that more democratic countries (those with more open access to political power, greater constraints on the executive, and greater political rights) have fewer required procedures for entry—even when per capita income is controlled for—than do less democratic countries. The per capita income control is crucial for this analysis because it could be argued that richer countries are both more democratic and have a lower need for entry regulation, perhaps because they have fewer market failures or better ways of dealing with them. The fact that among countries with similar levels of income, those whose governments have objectives closer to the public's regulate entry less is compelling evidence against the helping hand view. This evidence, along with the evidence on corruption and the unofficial economy, points to the tollbooth theory: entry is regulated because doing so benefits the regulators.

Findings have been presented at the World Bank (February 2000), the University of Maryland at College Park (March 2000), and Harvard University (May 2000). They will also be presented to policymakers from around the world in a workshop. The data set generated through the research will be posted on the World Bank's Web site.

Responsibility: Financial Sector Strategy and Policy Department—Simeon Djankov (sdjankov@worldbank.org). With Tatiana Nenova, Harvard University; Olga Ioffe, University of Michigan; and Ekaterina Trizlova, Tufts University.

Completion date: September 2000.

Report

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2000. "The Regulation of Entry." Harvard University, Department of Economics, Cambridge, Mass.

Corporate Governance in East Asia

Before the East Asian crisis, the distinctive features of East Asian corporations were viewed as one of the reasons for the success of the region's economies. The crisis has substantially altered that view, and many scholars now argue that the weak corporate governance and financing structures of East Asian corporations were partly to blame for the crisis.

Building on recent theoretical and empirical work on corporate governance and the importance of the legal framework for financial sector development, this project analyzes the role of ownership concentration in firm performance and firm valuation. The main source of data is the Worldscope database, which provides financial data (balance sheet and profit and loss statements) as well as the names and holdings of large owners.

Robust results show that deviations of voting from cash flow rights occur as a result of the use of pyramiding, cross-holdings, and dual-class shares. Many East Asian countries are characterized by weak corporate governance frameworks, including poor minority rights protection. As a result, control by a single shareholder has a significant negative effect on corporate valuation, with higher cash flow rights by the controlling shareholder partially offsetting this effect. The risk of expropriation is the major principal-agent problem for public corporations in East Asia.

The results have been used at the World Bank Institute and presented at workshops at the World Bank, the International Monetary Fund, the Federation of Thai Industries (Bangkok), the Korean Development Institute, the Korea Institute of Finance, Vanderbilt University, the University of Illinois, the University of Michigan, the 1999 National Bureau of Economic Research Summer Conference on Corporate Finance, the 1999 Conference on Equity Market Development in Emerging and Transition Economies, the 2000 National Taiwan University Conference on Finance, the 2000 American Economic Association and European Finance Association meetings, a Chilean corporate governance conference, the Organisation for Economic Co-operation and Development–World Bank corporate governance conferences in Seoul and São Paulo, and Asian Development Bank capacity building workshops. Material generated from the research has also been used in various Bank reports, including *East Asia: Road to Recovery* (Washington, D.C., 1998) and *East Asia: Recovery and Beyond* (Washington, D.C., 2000).

Responsibility: Financial Sector Strategy and Policy Department—Stijn Claessens (cclaessens@worldbank.org) and Simeon Djankov. With Larry H. P. Lang, Chinese University of Hong Kong.

Completion date: December 2000.

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The Economics of Ethnicity and Entrepreneurship in Africa

Recent contributions to the literature on cross-country differences in growth suggest that ethnic diversity is associated with lower growth and worse macroeconomic management. The reasons for this association remain unclear, however. An understanding of the mechanisms by which the ethnic composition of societies may influence economic outcomes seems to require investigation into the interaction of ethnicity and institutions at the microeconomic level. Specifically, do entrepreneurial behavior and performance differ by ethnicity? If they do, could the difference be explained by institutional or market failures? Do ethnic networks signify the absence or incompleteness of formal institutions or markets, or are they complements to formal institutions and markets? To answer these questions, this project analyzes manufacturing enterprise survey data from Ethiopia and Ghana. It will then use that analysis as an input to a proposal for a larger research project seeking to expand the research to the rest of Sub-Saharan Africa.

Preliminary results indicate that:

- Entrepreneurs (owner-managers of businesses) are distributed across business sectors very much along ethnic lines.
- Entrepreneurial success as measured by total factor productivity varies substantially by the ethnicity of the entrepreneur.
- Differences in productivity are not explained by either differences in networking behavior or differences in the institutional environment in which entrepreneurs operate.
- Entrepreneurs with reasonable access to formal economic institutions face a negative return to contacts with people from other ethnic groups.
- Employers employ a higher proportion from their ethnic group, but there is no evidence of wage discrimination in favor of those who are from the same ethnic group as the business owner.
- Still, workers from northern ethnic groups earn less than other workers, other things equal.

The completed research will yield preliminary results on the link between the institutional environment and the effects of ethnic diversity on manufacturing in Sub-Saharan Africa, as well as an assessment of the policy implications of those results. It will identify possible limitations of data and ways of overcoming those limitations in subsequent surveys. It will also indicate what might be gained from more in-depth studies of the role of ethnicity in relation to the existence and performance of markets and formal institutions. And it will provide information that may be used in constructing detailed work plans for case studies of particular ethnic groups.

Findings on the effect of ethnicity on employee sorting and wage determination were presented at the World Bank and at a conference, Opportunities in Africa: Micro Evidence from Firms and Households, sponsored by Oxford University's Centre for the Study of African Economies, April 9–10, 2000.

Responsibility: Development Research Group, Regulation and Competition Policy—Mary Shirley (mshirley @worldbank.org), and Macroeconomics and Growth—Taye Mengistae. With Abigail Barr, Oxford University; and Abena Oduro, Center for Policy Analysis.

Completion date: December 2000.

An Empirical Study of the Surgical Instrument Cluster of Sialkot, Pakistan

This project studies the reasons for the extensive involvement of families in owning and managing firms in Pakistan's surgical instrument industry and examines the implications of this pattern of ownership and management for the growth of the industry. The involvement of families reflects labor market distortions in the industry. The policy question, therefore, is whether it is possible to develop measures that alleviate these distortions.

The research is based on primary data collected from 350 firms (90 percent of the industry) in January and February 2000. The data include detailed information on family demographics, production, finance, and marketing for each firm. The analytical approach entails the modeling of family and nonfamily labor as inputs in the production process and the estimation of the firm production function, which yields the relative productivity of the two inputs.

The findings reveal the strong link between family size and firm size. In particular, firm owners who start out with large families (as measured by the number of brothers)

end up with larger firms. Industrial espionage is very common in this industry; family ownership and management are pervasive because of mistrust of outsiders. Because marketing information is crucial for success in the industry, firm owners are hesitant to hire outsiders for management positions. They trust only close relatives, such as brothers and sons, with management responsibilities. As a result, family size becomes an important determinant of firm size.

The next step is to formally model firm behavior and estimate econometrically a parameter for mistrust (or the probability that a nonfamily manager is dishonest). Doing so will allow various policy experiments to be conducted.

This research will contribute to the Bank's efforts to collect primary firm-level data on developing countries. The comprehensive data set collected by this project is the first of its kind on any industry in Pakistan.

Responsibility: South Asia Region, Poverty Reduction and Economic Management Sector Unit—John Wall (jwall@worldbank.org). With Nauman Ilias, University of Pennsylvania.

Completion date: December 2000.

Government-Business Consultative Mechanisms and Economic Governance: A Three-Country Comparison

This research project uses country case studies and comparative analysis to contribute to the understanding of how different organizational practices and institutional structures influence the effectiveness of business-government consultative mechanisms. It focuses on three countries—Ghana, Malaysia, and Mexico—that have recently experimented with consultative mechanisms as a means to enhance their regulatory reform and economic restructuring policies. The three case studies have been completed, based on original field research, secondary materials, and in-depth, semistructured interviews with the major economic actors associated with the consultative mechanisms in each country.

In the past decade Ghana has used three consultative mechanisms to stimulate public-private dialogue on economic policy reforms. The study found that each contributed to policy dialogue, yet failed to create an enduring arena for confidence building or information sharing between government and business. Each eventually fell victim to the underlying suspicion and mistrust that prompted the efforts to improve communication. And each flourished or floundered on the basis of the relationship between one prominent technocrat and the head of state. The process worked only as long as it enjoyed the endorsement and sustained support of the president.

The experience in Ghana also suggests that attaining optimal composition in a consultative mechanism is difficult. A narrow membership can ensure efficiency and rapid decisionmaking, but also reduce the organization's legitimacy. A broad membership may enhance legitimacy, but result in a muddled agenda and cumbersome decisionmaking. The experience also emphasized the complicated relationship between consultative mechanisms and the donor community—if donors push too hard, they may discredit the mechanisms, but without donor encouragement and support, these organizations might never have formed or acted.

Mexican consultative bodies benefited from a historical legacy of well-organized labor and business communities and from the government's commitment to the process, signaled by having top-level officials, including ministers and the president, participate and by discouraging end runs around the dialogues by business or labor participants seeking special favors. The mandate was kept narrow, enabling participants to focus their efforts. And the decision to initially seek short-term agreements allowed quick delivery of results, keeping skeptical business and labor leaders (and their constituencies) engaged. Mexico's consultative processes also show the importance of monitoring compliance with agreements.

The rich Malaysian experience with institutionalized public-private dialogues on economic policy illustrates both promising practices and possible pitfalls. Consultative dialogues enhanced the quality of economic policy in a variety of issue areas as economic stakeholders began sharing information and coordinating actions. Both business and government participants learned from the ongoing dialogues, making it easier for them to move from narrow policy positions to longer-term, more publicly oriented positions. These successes were linked to the participation of high-level government officials, the rep-

utational credibility that developed among participants over time, and the working committees formed to focus on narrow issue areas.

However, lack of monitoring and follow-up mechanisms for some consultative dialogues diminished their credibility, as participants were unable to determine whether and how consultative agreements were translated into policy reforms. A second pitfall was "institutional capture"—the tendency for a small number of stakeholders to benefit disproportionately.

To disseminate and validate the case study findings and check theoretical generalizations arising from the case studies against the broader range of World Bank and external experience with consultative mechanisms, a symposium was held on January 30, 2000, with both Bank and external experts participating.

The results of this research will help clarify for the Bank when and how to promote consultative mechanisms. The study will identify promising national contexts for promoting these mechanisms and the organizational and institutional forms that characterize effective mechanisms. This experience will be summarized and presented in a single volume containing the case studies.

Responsibility: Private Sector Development Department, Business Environment Unit—Andrew Stone (astone @worldbank.org). With Jessie Biddle, Pennsylvania State University; Vedat Milor, Brown University; Michael Lofchie and Carolina Wieland, University of California at Los Angeles; Joseph Ayee, University of Ghana; Jomo Kwame Sundaram, University of Malaysia; Matilda Lunas and Juan Manuel Ortega Riquelme, Autonomous University of Mexico; Robert Bates, Harvard University; Andrew MacIntyre, University of California at San Diego; and Ben Ross Schneider, Northwestern University.

Completion date: December 2000.

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Ayee, Joseph, Michael Lofchie, and Carolina Wieland. 1999. "Government-Business Relations in Ghana: Experience with Consultative Mechanisms." PSD Occasional Paper 36. World Bank, Private Sector Development Department, Washington, D.C.

Biddle, Jesse, and Vedat Milor. 1999. "Consultative Mechanisms and Economic Governance in Malaysia." PSD Occasional Paper 38. World Bank, Private Sector Development Department, Washington, D.C.

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An Analysis of Use Patterns of Latin American Judiciaries

Twenty years of experience with judicial reform have expanded donors' knowledge of technical inputs, but the application of the inputs remains based on the axiomatic argument that "a well-functioning judiciary is essential to economic growth, political stability, and citizen security." This may be true, but a better understanding is needed of what is meant by well functioning, what the links are with these broader goals, and how these links can be most productively reinforced.

Most empirical investigation has been at the macroeconomic level, attempting to link aggregate performance measures (for example, delay) or system characteristics (legal tradition, specific norms or practices) with aggregate impacts (most commonly, economic growth). But in treating "justice" (that is, the output of courts) as an undifferentiated commodity, such research overlooks the potentially enormous variation within and among systems in court services and clients.

This research project takes a different tack: collecting empirical data on current use patterns in a few Latin American judiciaries as a means of identifying who uses courts, for what purpose, and with what immediate and broader consequences. The findings will inform a second wave of reforms, which can go beyond the emphasis on basic modernization to focus on the variable costs and effects of judicial services and help countries decide how best to invest their resources.

Drawing from a random sample of case files, the study is creating and analyzing a database on the use of courts. In addition, it is identifying factors affecting decisions to litigate, based on informant interviews, legal analysis, review of relevant studies, and observation of court practices. In fiscal 2000 data were collected in Argentina and Mexico, and analysis of the data was started.

Initial findings are impressionistic. The research has discovered a high rate of "abandoned" cases, with significant variations between countries and among types of pro-

ceedings; low rates of execution of civil sentences; far more delays in Mexico; and apparent procedural biases toward clients who can tolerate either lengthy delays or high costs. Legal fees and factors discouraging judicial activism appear decisive in explaining these patterns.

The research has used local teams, an Argentine nongovernmental organization (Foro de Estudios sobre la Administración de Justicia, or FORES), and two Mexican universities, and has encouraged exchanges between the two countries. The methodology is new for Mexico and has not been used in this form in Argentina. Databases will be made available to other researchers in both countries.

Responsibility: Latin America and the Caribbean Region, Poverty Reduction and Economic Management Sector Unit—Linn A. Hammergren (lhammergren@worldbank.org); and Poverty Reduction and Economic Management Network, Public Sector Management Division—Richard E. Messick. With German Garavano, FORES; Centro de Investigaciones en Docencia y Economia (CIDE), Mexico; Universidad de las Americas, Mexico; and Herbert Kritzer, University of Wisconsin at Madison.

Completion date: January 2001.

The Quality of Growth: Capital Subsidies, Public Expenditure, and Endogenous Policies

This study examines how capital subsidies and public expenditure affect the qualitative aspects of growth, complementing the research project The Quality of Growth (see the abstract for that project in this volume).

The study has been collecting evidence on capital subsidies and reviewing the literature on their impact. It will single out countries that have appeared to be particularly successful in growth over the past 30 years, but unsuccessful in improving key indicators of quality. Finally, the study will provide a theoretical framework and evidence on how policies and public expenditure allocation have affected the qualitative aspects of growth and on the possible tradeoffs between capital subsidies and the quality of growth. The framework and initial evidence will serve as the basis for a proposal for a larger research project.

The evidence indicates that government subsidies to industry, agriculture, and infrastructure worldwide are large. Although the data are fragmented and partial, and the estimates gross rather than net (not accounting for taxes), initial evidence nonetheless shows that these subsidies introduce elements of nontransparency, discrimination across different activities, and pressures on scarce resources—rendering them distortionary.

In the early 1990s OECD countries spent an estimated $490–615 billion a year subsidizing energy, agriculture, and road transport—equivalent to about 2.5–3.0 percent of their total GDP and 7.6–9.1 percent of total government expenditures. During the same period developing countries spent $220–270 billion a year subsidizing water, energy, agriculture, and road transport—equivalent to some 4.3–5.2 percent of GDP and 19–24 percent of total government expenditures.

Countries give direct subsidies to the manufacturing sector. Subsidies to foreign investors are significant in many countries, with preferential tax treatment for foreign firms sometimes costing the government in forgone tax revenues. Competition for foreign investment is sometimes the reason for these subsidies.

Recent studies examining the effect of corporate subsidies suggest that they have a modest impact on firms' investment and growth in the first year, but little effect on growth in the medium run. They also seem to have a negative effect on the total factor productivity of industries that receive them.

Partner institutes will be invited to conduct case studies as part of the research. Once the research is completed, the results will be incorporated into World Bank Institute courses, seminars, and conferences.

Responsibility: World Bank Institute, Office of the Vice President—Vinod Thomas (vthomas@worldbank.org), Economic Policy and Poverty Reduction Division—Yan Wang, and Environment and Natural Resources Division—Nalin Kishor. With Ramon E. Lopez, Claudia Ocana, and Andres Ulloa, University of Maryland; and Ashok M. Dhareshwar.

Completion date: February 2001.

The Introduction of Pharmaceutical Product Patents in India

Negotiation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) gave rise to an acrimonious debate between industrial and developing countries. Business interests in the industrial world

claimed large losses from the imitation and use of their innovations in developing countries. They also asserted that establishing strong intellectual property rights would benefit developing countries by encouraging foreign investment, transfers of technology, and greater domestic research and development. Developing country governments adamantly opposed this view, worrying about the higher prices that stronger intellectual property rights would entail and about the harm that these rights might cause to infant high-technology industries.

As a result of requirements of membership in the World Trade Organization, many countries that have kept drug prices low by not granting property rights to pharmaceutical companies will have to begin doing so. Patent protection has many potential costs and benefits. Most of the costs are static: a shift from domestic production to imports, higher-cost pharmaceuticals, and possibly a slower diffusion of new drugs to developing countries as inventing firms gain monopoly control of sales. The potential benefits are dynamic and harder to measure: more research and development directed toward therapies for diseases prevalent in developing countries, and more research and development in developing countries, either by multinational subsidiaries or by domestic firms, with associated positive spillovers.

This project is concerned primarily with estimating the likely size of the consumer welfare losses that will be associated with the introduction of pharmaceutical product patents in India and the extent of profit redistribution from Indian companies to foreign patent holders. The first task is to estimate drug demand functions for therapeutic categories where patenting is significant. These estimations will be based on a nested probit consumer choice model, a multistage budgeting model, or both. Insurance often complicates use of this approach for industrial countries, since it means that consumers do not face the full price of drugs. Similarly, the prescriptive power of physicians in industrial countries makes the concept of consumer choice problematic. Both these problems are much less important in India, where few people are covered by insurance and drugs are almost always available without a prescription.

The second task is to determine the range of plausible prices under a patented regime. This can be done with a demand function to estimate the monopoly price of drugs. The project will also attempt to assess the *distributional* impact of the predicted price change and the possible supply response of the Indian pharmaceutical industry.

The research will use data from Operations Research Group, a private industry organization in Bombay. These data, a highly disaggregated set of prices and quantities of products sold to pharmacies over the past 11 years, will allow estimation of the demand functions and the supply response. The distributional effects will be estimated by comparing price changes with data from the Indian National Family Health Survey.

Responsibility: Development Research Group, Public Economics—Jeffrey S. Hammer (jhammer@worldbank.org). With Jean Olson Lanjouw, Yale University; and Rakesh Basant, Indian Institute of Management.

Completion date: March 2001.

Agency Independence and Political Institutions

A frequent policy recommendation offered to countries suffering from poor service delivery to the poor, undisciplined macroeconomic policy, or the reluctance of investors to commit resources to infrastructure development is to either delegate policymaking to independent agencies or adopt a fixed and predictable rule in policymaking. This research investigates the conditions under which these strategies can succeed. It takes advantage of cross-country data sets on the independence of central banks and on exchange rate regimes, as well as the cross-country Database of Political Institutions developed by the Development Research Group.

The study finds that delegation seems to work when political checks and balances are in place and political actors have differences of opinion. Fixed rules—such as fixed exchange rates—seem to work best when the public is uncertain about the motives of and policies pursued by government officials. Where the appropriate political conditions are present, delegation seems to strengthen government promises that it will not reverse policies in the future. Fixed rules do not have this effect. When, however, the credibility of government promises is threatened by a lack of transparency and the public's lack of complete information, rules do have an effect and delegation does not.

Results of this research are being disseminated at conferences around the world. The findings have been important in operational discussions in various countries considering establishing independent agencies to manage government activities in areas ranging from highway maintenance to anticorruption enforcement.

Responsibility: Development Research Group, Regulation and Competition Policy—Philip Keefer (pkeefer @worldbank.org). With David Stasavage, London School of Economics and Political Science.

Completion date: June 2001.

Report

Keefer, Philip, and David Stasavage. 2000. "Bureaucratic Delegation and Political Institutions: When Are Independent Central Banks Irrelevant?" Policy Research Working Paper 2356. World Bank, Development Research Group, Washington, D.C.

Database on Institutions for Government Decisionmaking

In both operations and research there is increasing recognition that policy recommendations and priorities can change substantially once a country's institutional environment is taken into account. The challenge has been to rigorously link particular recommendations to different institutional environments. That challenge is made particularly difficult by the lack of detailed, systematic, objective data on the nature of decisionmaking institutions in countries.

This research aims to narrow this gap. Using several different sources (political almanacs and Web sites), the project has collected data on more than 100 variables in more than 150 countries over the period 1975–97. Variables include whether systems are parliamentary or presidential, how competitive their elections are, which parties are in the governing coalition and in the opposition and how many seats each holds, whether the electoral system is based on proportional representation or first past the post, how many years the executive has been in power, and whether the executive and the defense minister are from the military. All these variables are expected to inform future research on institutions and development. They are also expected to aid operational work, making it easier, for example, to compare the institutional environment in a country considering possible reforms with the environment in countries that have proved the usefulness of particular practices.

The database has been distributed to more than 75 scholars and will soon be in Harvard University's Datavine Archive, whose development was partially funded by the World Bank.

Responsibility: Development Research Group, Regulation and Competition Policy—Philip Keefer (pkeefer @worldbank.org) and Robert Cull, and Public Economics—George Clarke; and Financial Sector Strategy and Policy Department—Thorsten Beck. With Patrick Walsh.

Completion date: June 2001.

Report

Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh. 2000. "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions." Policy Research Working Paper 2283. World Bank, Development Research Group, Washington, D.C.

East Asia Competitiveness Study

This study of the microeconomic underpinnings of competitiveness in East Asia following that region's financial crisis builds on a regional database containing the results of a firm-level survey conducted between October 1998 and February 1999. The survey covered more than 4,000 firms in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand. Comparable across countries, the survey data provide insight into categories of firms on which little information had been available—most of the firms are unlisted private companies, and two-thirds are small or medium-size.

The survey had two areas of focus: short-term issues related to the impact of the crisis and the constraints to recovery, and the determinants of competitiveness and productivity. It generated information on a broad set of firm practices relating to production, employment, training, corporate finance, corporate governance, and technology acquisition as well as on the business environment and feedback on government programs. The resulting database—the first of its kind for the region—provides an information base for regional dialogue on issues of competitiveness, feedback from the private sector to

the government, and research on a broad set of firm behaviors.

The survey results indicate that while more than 70 percent of firms in the five countries were adversely affected by the crisis, at the time of the survey credit constraints were less important than the difficulty in selling goods due to the fall in demand, even among exporting firms. With half the exports destined for other countries in Asia and with widespread devaluations, increasing export volumes still resulted in flat or declining export values for most exporting firms. While the results show that overall credit availability is not the main concern, issues of credit misallocation, transparency, and governance remain. Continued corporate restructuring must keep pace with financial restructuring if many of the weaknesses in the corporate and financial sectors are to be avoided in the future.

Survey results have been incorporated in the Philippine country economic memorandum, and additional work is under way in support of lending and other operational work in all five countries. In addition, more in-depth work has been carried out on Thailand, with two completed rounds of surveys. Analysis of investment patterns and resource allocations leading up to the crisis reveals that imbalances in the manufacturing sector were apparent before the crisis began. A series of labor market studies are also under way and will be further expanded with the new wave of data.

Country counterparts were instrumental in all stages of the project—preparing the questionnaires, implementing the surveys, and preparing country reports. The Bank provided technical assistance and capacity building, including three training sessions on the use of the database and methods of conducting productivity analysis. There is interest in all five countries in continuing the survey and regularly publishing survey results. The multicountry survey is serving as a blueprint for the larger Firm Analysis and Competitiveness Surveys (FACS) initiative by the Development Research Group.

The database has been used by researchers in the World Bank and across East Asia, with results presented at a conference, Asian Corporate Recovery: Corporate Governance, Government Policy, in Bangkok on March 31–April 2, 1999. At the conference high-ranking government officials and representatives of the private sector discussed the prospects for recovery and, in particular, the extent to which credit availability remains a principal constraint. In addition to the regional conference in Bangkok, dissemination seminars have been held at the World Bank, at a meeting of the Association of Southeast Asian Nations (ASEAN) Chambers of Commerce and Industry, and in Hong Kong (China), Jakarta, Kuala Lumpur, Manila, Seoul, Singapore, and Tokyo.

The database is available on the Web at wbln0018.worldbank.org/eap/eap.nsf (under Asian Corporate Recovery).

Responsibility: Development Research Group, Macroeconomics and Growth—Mary Hallward-Driemeier (mhallward@worldbank.org), David Dollar, Giuseppe Iarossi, Dennis Tao, Hairong Yu, and Albert Zeufack; and East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit—Dominique Dwor-Frecaut. With Atchana Waiquamdee, Bank of Thailand; Francis Colaço, Asia Pacific Management; Ronald Duncan, Australian National University; Ken Sokoloff, University of California at Los Angeles; and Dee Sutthiphisal. The Japan and ASEM Trust Funds contributed funding for the research.

Completion date: June 2001.

Reports

Dollar, David, and Mary Hallward-Driemeier. 2000. "Crisis, Adjustment, and Reform in Thai Industry." *World Bank Research Observer* 15(1): 1–22.

Duncan, Ronald, and Meng Xing. 1999. "Corporate Employment and Public Policy." Paper presented at the conference Asian Corporate Recovery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

Dwor-Frecaut, Dominique, Mary Hallward-Driemeier, and Francis Colaço. 1999. "Corporate Credit Needs and Governance." Paper presented at the conference Asian Corporate Recovery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

Hallward-Driemeier, Mary, Dominique Dwor-Frecaut, and Francis Colaço. 1999. "Asian Corporate Recovery: A Firm-Level Analysis." World Bank, Development Research Group, Washington, D.C.

Kawai, Masahiro, Hongjoo Hahm, and Giuseppe Iarossi. 1999. "Corporate Foreign Liabilities in East Asia: Too Much, Too Little?" Paper presented at the conference Asian Corporate Recov-

ery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

Waiquamdee, Atchana, Soravis Krairiksh, and Wasana Phongsanarakul. 1999. "Corporates' Views of the Constraints to Recovery." Paper presented at the conference Asian Corporate Recovery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

World Bank. 1999. "Philippines: The Challenge of Economic Recovery." Washington, D.C.

Zeufack, Albert. 1999. "Employer-Provided Training under Oligopolistic Labor Markets: Evidence from Thai Manufacturing Firms." World Bank, Development Research Group, Washington, D.C.

Firm Analysis and Competitiveness Research

This project uses the information collected in the Firm Analysis and Competitiveness Surveys (FACS) to address policy and research questions relating to firm activities and the determinants of competitiveness.

Using a model survey developed with inputs from both Bank staff and outside experts, researchers collected data in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand. Surveys are being administered in Bolivia and India, and an additional survey is about to be launched in Morocco. Topics addressed include the following:

• *Corporate finance.* Are small and medium-size enterprises credit constrained? Does their inability to raise capital affect their production decisions? Are firms able to borrow internationally? Does their ability to do so affect outcomes?

• *Technology and investment.* How does economic or political uncertainty affect investment? How do trading relations affect technology diffusion? What determines firms' decisions to adopt new technologies?

• *Contract enforcement.* How does the efficacy of the legal system affect market structure? Does contract law foster long-term leases and commitments? Do property rights protect business assets and encourage fixed investment? Do efficient conflict resolution mechanisms encourage the use of the court system?

• *Labor and human resources.* What influences firms' decisions to invest in training their workers? What impact do labor regulations have on firms' hiring, growth, and technology decisions?

• *Government regulations.* How, if at all, do government assistance programs improve productivity, labor practices, and investment decisions? How do government regulations affect firm behavior?

• *Business associations.* Does proximity of firms promote agglomeration economies? What factors affect a firm's decision to join a business group? Does membership in a formal or informal network increase efficiency?

• *Corporate governance.* Does management entrenchment affect corporate decisions? How do ownership links to financial institutions and foreign firms affect leverage decisions? How does operational or financial management by nonowners affect corporate decisions on production, leverage, and the like?

Responsibility: Development Research Group, Macroeconomics and Growth—David Dollar (ddollar@worldbank.org), Mary Hallward-Driemeier, Giuseppe Iarossi, Jakob Svensson, Taye Mengistae, and Albert Zeufack, Regulation and Competition Policy—Mary Shirley, Luke Haggarty, Philip Keefer, Colin Xu, and Francesca Recanatini, Trade—Anthony Venables, Office of the Director—Paul Collier, and Finance—Leora Klapper. With Marcel Fafchamps, Oxford University; Raymond Fisman, Columbia School of Business; John Sutton, London School of Economics; Mark Gersovitz, Johns Hopkins University; Fabio Schiantarelli, Boston College; and James Tybout, Georgetown University.

Completion date: June 2001.

The Impact of Institutions

Work under this project title has changed and will now investigate many of the themes that are to be covered in *World Development Report 2001/2002,* on institutions. In particular, it will try to answer the following questions: What is the relation between institutions and the efficiency of public investment? What is the relation between institutions and fiscal policy? What is the relation among institutions, social polarization, conflict, and economic development?

Preliminary results document the negative relation between the security of property rights and the extent of social polarization, measured by income and land inequality and ethno-linguistic fractionalization. They also indicate that the negative effects of inequality on growth are at least partly due to the intermediate consequences of inequality for secure rights.

Future work, relying heavily on the Development Research Group's new Database of Political Institutions, will examine the relation between institutions and policy outcomes (such as public investment) and social outcomes (such as conflict). That work is expected to shed light on optimal policy recommendations in different institutional and social contexts, as well as tradeoffs in institution building in postconflict societies.

Results of this research will be disseminated through papers, conference presentations, and possible inclusion in *World Development Report 2001/2002*. The design of infrastructure projects, advice in postconflict societies, and macroeconomic advice should all be influenced by this work.

Responsibility: Development Research Group, Regulation and Competition Policy—Philip Keefer (pkeefer @worldbank.org) and Stephen Knack.

Completion date: June 2001.

Report

Keefer, Philip, and Stephen Knack. 2000. "Polarization, Politics, and Property Rights: Links between Inequality and Growth." Policy Research Working Paper 2418. World Bank, Development Research Group, Washington, D.C.

Regional Program on Enterprise Development in Africa

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 improve the understanding of the constraints on enterprise development in Africa and to develop recommendations to ease those constraints.

The program is investigating these issues in three ways. First, it is collecting survey data through interviews conducted periodically with a panel of 200 large and small manufacturing firms in Cameroon, Côte d'Ivoire, Ghana, Kenya, Mozambique, Tanzania, Zambia, and Zimbabwe. The survey focuses on four manufacturing sectors: food processing, woodworking, 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, the program is carrying out a series of case studies of firms selected from a stratified subsample of the panel firms. These case studies focus on selected aspects of the research agenda, such as finance, business strategy, and technological capability, and are conducted to complement quantitative information gathered in the survey.

Third, the program is conducting cross-country studies and 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.

The program links its findings to the Bank's operational work in Africa through participation in the design of regional and country private sector development strategies and programs. It disseminates its findings in the Bank through such activities as Bank seminars, distribution of research papers, and publication of the Findings newsletter. Outside the Bank, the program has hosted seminars and conferences in Cameroon, Côte d'Ivoire, Ghana, Kenya, Tanzania, Zambia, and Zimbabwe as well as in Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States. In addition to the publications listed below, the program has produced more than 80 country studies, analytical reports, case studies, and discussion papers.

Responsibility: Africa Region Technical Families, Private Sector Development and Economics Division—Tyler Biggs (tbiggs@worldbank.org) and Melanie Mbuyi. With John Nasir; Manju Kedia Shah; Lan Zhao; Alfred Robinson; Gerald Tyler; and Ata Mazaheri and Dipak Mazumdar, University of Toronto. Assistance in the field surveys and country reports has been provided by the Ecole des Hautes Etudes Commerciales, Canada; Centre Univer-

sitaire de Douala, Cameroon; Centre d'Etudes et de Recherches sur le Développement International, France; CIRES and ORSTROM, Côte d'Ivoire; Oxford University; University of Ghana; University of Göteborg, Sweden; University of Nairobi; Catholic University, Leuven, Belgium; University of Burundi; Helsinki School of Economics; University of Dar es Salaam; Foundation for Research in Economics and Business Administration, Norway; University of Zambia; Free University of Amsterdam; and the University of Zimbabwe. Funding for the research has been provided by the Belgian Administration for Development Cooperation; Canadian International Development Agency; Danish International Development Agency; Finnish International Development Agency; Ministry of Cooperation and Ministry of Foreign Affairs, France; Federal Ministry of Economic Cooperation, Germany; Ministry of Foreign Affairs, Italy; Ministry of Foreign Affairs, the Netherlands; Norwegian Agency for Development Cooperation; Swedish International Development Cooperation Agency; Swiss Agency for Development and Cooperation; and U.K. Department for International Development.

Completion date: June 2001.

Reports

Biggs, Tyler. 1999. "Microeconometric Evaluation of the Mauritius Technology Diffusion Scheme (TDS)." RPED Paper 108. World Bank, Washington, D.C.

Biggs, Tyler, and Mayank Raturi. 1997. "Productivity and Competitiveness of African Manufacturing." RPED Paper 80. World Bank, Washington, D.C.

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Biggs, Tyler, Vijaya Ramachandran, and Manju Kedia Shah. 1998. "Does Greater Local Competition Improve Firm Performance in Africa?" RPED Paper 85. World Bank, Washington, D.C.

Biggs, Tyler, Manju Shah, and Pradeep Srivastava. 1995. *Technological Capabilities and Learning in African Enterprises.* World Bank Technical Paper 288. Washington, D.C.

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, D.C.

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Lall, Sanjaya, Giorgio Barba Navaretti, Simon Teitel, and Ganeshan Wignaraja. 1994. *Technology and Enterprise Development: Ghana under Structural Adjustment.* London: Macmillan; and New York: St. Martin's.

Mazumdar, Dipak, and Ata Mazaheri. 1999. "The Structure of Labor Markets in Africa." RPED Paper 106. World Bank, Washington, D.C.

Ramachandran, Vijaya, and Manju Kedia Shah. 1997. "The Effects of Foreign Ownership in Africa: Evidence from Ghana, Kenya, and Zimbabwe." RPED Paper 81. World Bank, Washington, D.C.

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Raturi, Mayank, and Anand Swamy. 1997. "Explaining Ethnic Differentials in Credit Market Outcomes in Zimbabwe." RPED Paper 78. World Bank, Washington, D.C.

Service Delivery

Removal of market and external distortions has exposed poor public sector performance as one of the most important constraints to growth and poverty reduction in many low-income countries. A large body of microeconomic literature on households and firms suggests that delivery of public services is important for reducing poverty and stimulating private sector growth. But another strand of literature finds that the link between public spending and growth and social outcomes is ambiguous at best. This contradiction points to an identification problem: public spending is not necessarily the same as public assets or services.

This research explores the process by which public expenditure is transformed into public goods. The work is based on public expenditure tracking surveys (PETS) of service facilities and, in some cases, surveys of firms on infrastructure services. PETS typically collect information on facility characteristics, financial flows, outputs, accountability arrangements, and so forth. These data can be used for multiple purposes. They can help diagnose operational problems, for example, and serve

as the basis for empirical research on capture and cost efficiency.

Results to date show that information and transparency can be a cost-efficient way of overcoming systemic problems in service delivery. In Uganda, where the PETS was pioneered in 1996, the surveys revealed the capture of nonwage primary education spending by local bureaucrats. As a result, the central government launched an information campaign, both nationally and at the district and school level. A repeat survey in 1999–2000 shows that schools now receive 90 percent of nonwage education spending, up from just 20 percent in 1995. This remarkable improvement was achieved through the government's efforts to disseminate information, both through the media and by posting public spending information at schools and in districts.

This research has provided technical support to Bank country teams in Albania, Ghana, Honduras, Macedonia, Mali, Rwanda, and Zambia, which are beginning to implement PETS. In addition, the project is setting up a cross-country database for empirical analysis.

The PETS will be carried out in close collaboration with local research institutions in order to obtain reliable data and build capacity in diagnostic survey work. Dissemination includes publications and in-country seminars.

Responsibility: Development Research Group, Public Economics—Ritva Reinikka (rreinikka@worldbank.org) and Jakob Svensson. With Jan Dehn, Makerere University, Kampala, Uganda; Bank of Finland; Helsinki School of Economics; and Bureau of Economic Analysis, Moscow.

Completion date: December 2001.

Reports

Ablo, Emmanuel, and Ritva Reinikka. 1998. "Do Budgets Really Matter? Evidence from Public Spending on Education and Health in Uganda." Policy Research Working Paper 1926. World Bank, Africa Region, Macroeconomics 2, Washington, D.C.

Reinikka, Ritva. Forthcoming. "Recovery in Service Delivery: Evidence from Schools and Clinics." In Ritva Reinikka and Paul Collier, eds., *Uganda's Recovery: The Role of Farms, Firms and Government*. Regional and Sectoral Studies Series. Washington, D.C.: World Bank.

Reinikka, Ritva, and Jakob Svensson. 2000. "Explaining Leakage of Public Funds." World Bank, Development Research Group, Washington, D.C.

———. 2000. "How Inadequate Provision of Public Infrastructure and Services Affects Private Investment." Policy Research Working Paper 2262. World Bank, Development Research Group, Washington, D.C.

Bank Research Output

Below are listed various types of research output arising from research and policy review activities at the World 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 (for online ordering, go to www.worldbank.org/publications) or from 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. In addition, the full text of some working papers series can be found on the Bank's Web site (www.worldbank.org). Reprints of articles from the Bank's research journals (category C) may be requested from the authors; the full text of recent articles is also available on the Web at www.worldbank.org/research/journals. Other published material can be purchased from the publishers (categories B and D). The following types of fiscal 2000 research output are listed:

A. Research-oriented books written by Bank staff and published by the Bank or by other publishers. This list also includes periodic data publications, such as *Global Development Finance,* 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 series publications.

• *World Bank Discussion Papers.* This series provides an outlet in the public domain for a broad range of Bank output that presents 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 are aimed at a narrower audience.

• *Other published series.* Papers in such series as Operations Evaluation Department and World Bank 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. Papers in this series are posted on the Web at www.worldbank.org/research.

G. Other Bank working papers. These papers are produced and distributed by units throughout the Bank. They disseminate quickly findings of departmental research and are targeted primarily to specialists in the Bank.

H. Background papers to *World Development Report 2000/2001: Attacking Poverty.* 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

Abeles, Martin, and Myrna Alexander. 2000. *Privatizaciones e impacto en los sectores populares.* Buenos Aires: Editorial de Belgrano.

Baker, Judy L. 2000. *Evaluating the Impact of Development Projects on Poverty: A Handbook for Practitioners.* Directions in Development Series. Washington, D.C.: World Bank.

Bamberger, Michael, ed. 2000. *Integrating Quantitative and Qualitative Research in Development Projects.* Directions in Development Series. Washington, D.C.: World Bank.

Betcherman, Gordon, and Rizwanul Islam, eds. 2000. *East Asian Labor Markets and the Economic Crisis: Impacts, Responses, and Lessons.* Washington, D.C.: World Bank.

Bigman, David, and Hippolyte Fofack, eds. 2000. *Geographical Targeting for Poverty Alleviation: Methodology and Applications.* Regional and Sectoral Studies Series. Washington, D.C.: World Bank.

Buckles, Daniel, ed. 1999. *Cultivating Peace: Conflict and Collaboration in Natural Resource Management.* Washington, D.C.: World Bank.

Burki, Shahid. 2000. *Changing Perceptions and Altered Reality: Emerging Economies in the 1990s.* Washington, D.C.: World Bank.

Burki, Shahid, Guillermo E. Perry, Maria Emilia Freire, and Steven B. Webb, eds. 2000. *Annual World Bank Conference on Development in Latin America and the Caribbean—1999 Proceedings: Decentralization and Accountability of the Public Sector.* Washington, D.C.: World Bank.

Cernea, Michael M., and Christopher McDowell, eds. 2000. *Risks and Reconstruction: Experiences of Resettlers and Refugees.* Washington, D.C.: World Bank.

Collier, Paul, Jan Willem Gunning, and associates, eds. 1999. *Trade Shocks in Developing Countries.* New York: Oxford University Press.

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Dasgupta, Partha, and Ismail Serageldin. 1999. *Social Capital: A Multifaceted Perspective.* Washington, D.C.: World Bank.

Dinar, Ariel, ed. 2000. *The Political Economy of Water Pricing Reforms.* New York: Oxford University Press.

Dumol, Mark. 2000. *The Manila Water Concession: An Insider's Look at the World's Largest Water Privatization.* Directions in Development Series. Washington, D.C.: World Bank.

Dwor-Frécaut, Dominique, Francis X. Colaço, and Mary Hallward-Driemeier, eds. 2000. *Asian Corporate Recovery: Findings from Firm-Level Surveys in Five Countries.* Washington, D.C.: World Bank.

Estache, Antonio, and Ginés de Rus. 2000. *Privatization and Regulation of Transport Infrastructure: Guidelines for Policymakers and Regulators.* Washington, D.C.: World Bank.

Fawzy, Samiha, and Ahmed Galal, eds. 1999. *Partners for Development: New Roles for Government and Private Sector in the Middle East and North Africa.* Washington, D.C.: World Bank.

Gill, Indermit S., Fred Fluitman, and Amit Dar, eds. 2000. *Vocational Education and Training Reform: Matching Skills to Markets and Budgets.* New York: Oxford University Press.

Granzow, Sandra. 2000. *Our Dream: A World Free of Poverty.* New York: Oxford University Press.

Grootaert, Christiaan, Jeanine Braithwaite, and Branko Milanovic. 1999. *Poverty and Social Assistance in Eastern Europe.* New York: St. Martin's Press.

Grosh, Margaret E., and Paul Glewwe, eds. 2000. *Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study.* New York: Oxford University Press.

Gustavson, Kent, Richard M. Huber, and Jack Ruitenbeek, eds. 2000. *Integrated Coastal Zone Management of Coral Reefs: Decision Support Modeling.* Washington, D.C.: World Bank.

Hoekman, Bernard, and Hanaa Kheir el Din, eds. 2000. *Trade Policy Developments in the Middle East and North Africa.* Mediterranean Development Forum Series. Washington, D.C.: World Bank.

Hoekman, Bernard, and Jamel Zarrouk, eds. 2000. *Catching Up with the Competition: Trade Opportunities and Challenges for Arab Countries.* Ann Arbor: University of Michigan Press.

International Finance Corporation. 2000. *Emerging Stock Markets Factbook 2000.* Washington, D.C.

Iskander, Magdi, and Nadereh Chamlou. 2000. *Corporate Governance: A Framework for Implementation.* Washington, D.C.: World Bank.

Klapper, Leora. 2000. *The Determinants of Global Factoring: World Factoring Handbook 2000.* Bromley, England: BCR Publishing.

Klitgaard, Robert, Ronald MacLean-Abaroa, and H. Lindsey Parris. 2000. *Corrupt Cities: A Practical Guide to Cure and Prevention.* Washington, D.C.: World Bank.

Kochendörfer-Lucius, Gudrun, and Boris Pleskovic, eds. 2000. *Inclusion, Justice, and Poverty Reduction.* Berlin: German Foundation for International Development; and Washington, D.C.: World Bank.

Lutz, Ernst, ed. 2000. *Agriculture and the Environment: Perspectives on Sustainable Rural Development.* Symposium Series. Washington, D.C.: World Bank. (Also published in French.)

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Moser, Caroline, and Cathy McIlwaine. 2000. *Urban Poor Perceptions of Violence and Exclusion in Colombia.* Washington, D.C.: World Bank.

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Ofosu-Amaah, W. Paatii. 2000. *Reforming Business-Related Laws to Promote Private Sector Development: The World Bank Experience in Africa.* Washington, D.C.: World Bank.

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Tinker, Anne, Kathleen Finn, and Joanne Epp. 2000. *Improving Women's Health: Issues and Interventions.* Washington, D.C.: World Bank.

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