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The World Bank Research Program

Abstracts of Current Studies

2002–03

The World Bank Research Program 2002–03

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Contents

Definition of World Bank Research

Research at the Bank encompasses analytic 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.

Introduction

The World Bank's research program has four basic objectives: to broaden the understanding of development, to assist in developing research capacity in the Bank's member countries, to improve its capacity to advise its members, and to support all aspects of its own operations. Whether these aims are achieved depends in part on how extensively Bank research is used internally and externally. In early 2004 the Development Economics Senior Vice Presidency commissioned two surveys in part to assess the use of publications carrying Bank-wide research (annual flagship publications, Policy Research Reports, Policy Research Working Papers, and the two research journals) by Bank staff and by the Bank's clients.

What Surveys Show about the Use of Bank Research

The first survey resulted in 468 completed questionnaires from Bank staff in Washington, D.C., and country offices. The second brought 1,614 completed questionnaires from external clients in more than 140 countries around the world. These clients had access to Bank Web sites, had expressed interest in Bank publications, and were able to complete the questionnaire in English. Their access to Bank publications thus was not constrained, allowing the survey to focus on the use of accessible publications. At least 100 responses came from each region, with a cross-section of organizations (government, academia, private sector) and job functions. The survey findings led to four main conclusions.

Clients use Bank research publications frequently. Among external clients, 67 percent report using three or more Bank research publications in the past year, and 91 percent at least one. Among Bank staff, 80 percent report using three or more, and 96 percent at least one.

Bank research publications are influential. Bank staff believe that the Bank's publications are influential with key client groups, and the more frequent their contacts with the client groups, the more highly they rate the influence of the publications. Among external clients who read or use the four main categories of publications, 80 percent or more report that the publications influenced their thinking about international development issues a great deal or a fair amount.

Translations are important. Some 64 percent of respondents to the client survey are in countries where English is not the principal language. Of these, 54 percent indicate that translation into their country's main language is important or very important. Since this response comes from a sample sufficiently fluent in English to complete a survey fielded in that language, the demand for translations is likely to be higher among the broader target audience for Bank publications.

For external clients the Internet is an important source of information. The staff survey results suggest that the Bank's core constituencies have ready access to the Internet. Bank staff in country offices, based on their observations, report that Internet access is generally available in the universities, research institutions, private companies, government offices, and civil society organizations that were surveyed. The responses to the client survey are consistent with these observations. Among clients in developing and transition economies as well as industrial countries, 85 percent or more report that the Internet is important or very important for accessing data and statistics, working papers, and journal articles. Indeed, 74 percent or more prefer to access these products online rather than in print, and 59 percent most frequently obtain Bank publications by downloading them from the Bank's Web site. Strikingly, 41 percent of clients in developing and transition economies report using the Bank's Web site at least weekly, and 78 percent or more at least several times a month.

What Research Is Now Under Way at the Bank?

This volume reports on research projects initiated, under way, or completed in fiscal 2002 and 2003 (July 1, 2001, through June 30, 2003). This edition covers slightly

fewer activities than previous ones, but for the first time it includes summaries of large research programs. These multiyear programs undertake analysis on several issues relating to a broad development topic with the aim of providing strategic directions on critical problems facing Bank clients and operations. The Bank's Research Committee provides program grants to fund this research while leveraging additional resources, with the expectation of a major impact on Bank and client policy. Each program is expected to center on a theme giving coherence to the research and its outputs. With their thematic focus and breadth, the programs are expected to be of particular interest for network-based research.

In fiscal 2002 and 2003 five such programs were under way, covered in this volume by a single abstract or several.

Investment Climate. This program has two key components, data provided by the investment climate surveys and research based on those data. Surveys and investment climate assessments are carried out in collaboration with local counterparts, instrumental in building local capacity for systematic collection of firm-level data and for policy-relevant research. The program has completed 16 investment climate assessments, and 16 more are under way.

Looking Beyond Averages. This program has two main objectives. First, it aims to ensure that the Bank's data and tools for poverty analysis and policy advice remain the best available. This work deals with the discrepancies between surveys and national accounts as part of a wider effort to improve the cross-country databases for assessing progress toward the Millennium Development Goal for global poverty. Second, the program seeks to answer the question, Why are some growth processes more effective in reducing poverty than others? This investigation involves looking beyond averages to provide a deeper understanding of what role initial conditions (including initial inequalities) play in a country and what drives the distributional changes seen in survey data.

Rural Development. This program began by focusing on community-driven development, in response to the sharply increased donor funding for this and similar development approaches. The research develops insights about such key operational concerns as the sustainability of community-driven development programs, the role of facilitators, and the interaction between community organizations and local and central government. Studies use a range of methods, from full randomization with baseline and follow-up surveys to ex post evaluations using mixed methods.

Finance. This research was organized around two broad areas: financial sector regulation and taxation, and market structure in banking. It responds to pressing policy questions on how best to regulate and tax the financial sector in a changing environment characterized by privatization, consolidation, and the entry of foreign banks. Research projects have included Bank Regulation and Supervision, Taxation of Financial Intermediation, Bank Privatization in Developing Countries, Foreign Bank Entry in Developing Countries, and Bank Concentration and Competition.

The World Trade Organization and Development. This research program focuses on four main themes:

- Development, trade, and international trade agreements—assessing the implications of alternative international trade rules for developing countries, exploring how international trade agreements can be made to promote development, and evaluating the implications of entering into such agreements.
- Trade, technology, and foreign direct investment—investigating channels of international diffusion of technology, including the role of foreign direct investment and international agreements such as those on intellectual property rights.
- Trade and poverty—investigating how trade and trade liberalization affect the poor in developing countries, especially in the context of World Trade Organization negotiations.
- Trade in services and product standards—evaluating the importance of "behind the border" policy areas for international integration and development.

What Information Is Here—and How to Get More

The abstracts in this volume describe, for each project, the questions addressed, the analytic methods used, the findings to date, and their policy implications and use.

Each abstract also identifies 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 appendix lists reports and publications produced from Bank research and explains how to obtain them.

This is an annual compendium; readers interested in obtaining more timely information on World Bank research and its findings may do so through the Development Economics Senior Vice Presidency's Web site (http://econ.worldbank.org). This site provides access to the *Abstracts of Current Studies*, articles from the Bank's two research journals—the *World Bank Research Observer* and *World Bank Economic Review*—and many research reports and publications.

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Poverty and Social Development

Access to Finance and Poverty Alleviation

This research project assesses the empirical relationship between access to finance, financial sector development, and financial system characteristics (such as ownership and market structure), on the one hand, and poverty alleviation and income inequality, on the other. That financial development has a positive effect on economic growth is known. But this study, using cross-country regressions, is testing the hypothesis that finance has a positive relationship with poverty alleviation and reduced income inequality. A finding of such a relationship would increase the importance of reforms fostering the development of the financial system. In addition, the research aims to identify a specific ownership or market structure or specific financial institutions (such as banking, insurance, or capital markets) that help reduce poverty and income inequality.

Drawing on household survey data for about 40 countries, a second part of the research will assess the relationship between the development and structure of the financial system and household-level poverty. This analysis will test the hypothesis that households in countries with higher financial development have better access to financial services and enjoy higher welfare. It will also attempt to relate specific characteristics of the financial system with households' access to financial services, to assess whether a specific ownership or market structure or specific financial institutions facilitate this access.

The papers, policy notes, and data sets that are produced by the research project will be made available on the Web, and papers will be published in academic journals. In addition, the cross-country analysis may provide a basis for more detailed country-level work on finance and poverty.

Responsibility: Development Research Group, Finance —Aslı Demirgüc-Kunt (ademirguckunt@worldbank.org).

Comparative Analysis of Social Funds

Social funds have become a major source of money for community-supported development projects. Because these projects are demand-driven and rely on communities for implementation and management, they are supposed to represent an improvement over more traditional development projects. But more research is needed on the role of cultural institutions and structures in determining how the processes underlying demand-driven assistance work and on the relationship of these institutions and structures with social and cultural capital.

This research examines the relationship between social funds and community participation by comparing experience in four countries—Jamaica, Malawi, Nicaragua, and Zambia—that have very different cultures as well as internal cultural diversity. Using qualitative and quantitative survey data and a mix of analytic methods, the research addresses four questions:

- How does cultural diversity affect social capital and community participation in accessing funds?
- How does the process of participating in applying for and managing projects affect the cultural underpinnings of participation in collective action?
- Are participatory processes exclusionary on the basis of gender, ethnicity, cultural group, or social class?
- Does community participation make social fund–assisted projects more sustainable than other projects?

Analysis of data from Jamaica shows that the social fund process is driven by elites and that decisionmaking tends to be dominated by a small group of motivated people. But by the end of the project there is broad satisfaction among community members with the outcome. The social fund process improves trust and the capacity for collective action within the community, but these gains are greater for elites. Both participating and nonparticipating communities are now more likely to make decisions that affect their lives. But participating communities do not show higher levels of community-driven decisions than nonparticipating communities.

Findings were incorporated into an evaluation of social funds by the World Bank's Operations Evaluation Department, "Social Funds: Assessing Effectiveness"(Washington, D.C., 2002). Widely disseminated, this report has had an impact on how World Bank–supported social funds are managed. Results of the Jamaica analysis have been presented at academic and policy venues including the World Bank, Johns Hopkins University, the Massachusetts Institute of Technology, Cornell University, and the Northeast Universities Development Consortium Conference at Yale University.

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org); and Operations Evaluation Department, Sector and Thematic Evaluation Division—Soniya Carvalho and Howard White. With Ana María Ibáñez, University of the Ades, Colombia.

Report

Rao, Vijayendra, and Ana María Ibáñez. 2003. "The Social Impact of Social Funds in Jamaica: A Mixed-Methods Analysis of Participation, Targeting, and Collective Action in Community-Driven Development." Policy Research Working Paper 2970. World Bank, Development Research Group, Washington, D.C.

Estimating the Impact of Trade Liberalization on Poverty: Evidence from Mexico

This research is aimed at providing evidence, based on microeconomic data, of the impact of large trade reforms on poverty in a developing country. The study focuses on Mexico, where large trade reforms took place in the late 1980s and early 1990s, poverty was widespread, and several household surveys of good quality are available for the period.

Using data from the household surveys, the analysis looks at the effect of trade reforms on household income and expenditure. On the income side it focuses on labor income and income from the direct production of goods (such as farm goods). On the expenditure side it allows for second-order effects—the adjustments households make to their consumption bundle once the changes in trade policy have affected the relative prices they face and the income they earn.

Results show that the trade reforms in the late 1980s and early 1990s increased the welfare of all households, aggregated by income centile. Richer households gained proportionally more. Households closer to the U.S. border also had larger gains.

The methodology developed in the study was used for the poverty chapter of the multiagency Diagnostic Trade Integration Study completed for Ethiopia in 2003. Additional work is looking at the effect of Ethiopia's trade reform in the 1990s on poverty, the effect of improvements in Ethiopia's market access on poverty, and the antipoverty bias of its trade policy reform.

Papers have been presented at seminars at the World Bank, the University of Geneva, and the Latin American and Caribbean Economic Association meetings in Puebla, Mexico.

Responsibility: Development Research Group, Trade—Bernard Hoekman (bhoekman@worldbank.org) and Marcelo Olarreaga. With Alessandro Nicita and Isidro Soloaga, Universidad de las Americas; and Eugenia Baroncelli.

Reports

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

Early child development programs combine nutrition, health care, and cognitive development in an attempt to offset the disadvantages of growing up in poverty. How effective are such programs? This research, through early coordination with World Bank operations, evaluates 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 Philip-

pine 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 from the discipline of psychology. They also relate indicators of early cognitive development to preschool nutrition. And all three case studies include randomized trials. But the Bolivia case study found that departures from initial research protocols made an evaluation using a matching method preferable.

The Bolivia case study finds that greater program exposure led to higher cognitive development scores. Extrapolating these to the expected increase in earnings, the analysis concludes that while the program was expensive, the expected present value of the gains exceeds the costs.

The Uganda case study finds a small but consistent effect on nutritional status, weaning and other feeding practices, cognitive development, and care giving practices. In an analysis of the effects of deworming on child growth, it finds no clear impact, though it does find that using child day care programs to deliver this service (as well as inoculations and vitamin A supplementation) is effective.

An abstract from the Bolivia case study was translated into Spanish and circulated in La Paz, and a workshop on the Uganda case study results is planned for Kampala in 2004. Results from the Philippine baseline have been presented at an annual meeting of the Population Association of America in Atlanta and at a meeting of the International Union for the Scientific Study of Population in Mexico City in November 2003.

Responsibility: Development Research Group, Public Services—Harold Alderman (halderman@worldbank.org) and Elizabeth King. With Jere Behrman, Yingmei Cheng, and Petra Todd, University of Pennsylvania; Patrice Engle, UNICEF; Donald Bundy, Oxford University; N. B. Kabatereine, Vector Control Division, Uganda; Pia Britto, Columbia University; and Arjumand Siddiqi, Harvard School of Public Health.

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The Geography of Poverty

This ongoing program is aimed at producing finely disaggregated spatial profiles of poverty and inequality in developing countries—or poverty maps. The program includes both upstream research efforts—to refine the methodology underpinning the production of poverty maps—and downstream research efforts—to use poverty maps in investigating questions of great policy significance.

The methodology centers on using statistical techniques to combine multiple data sources so as to take advantage of their respective strengths. The initial idea was to combine census data with household survey data to produce local-level estimates of poverty and inequality. As experience has grown, the research has been able to extend the techniques to other areas, such as estimating nutritional status at local levels and predicting local impacts of policy changes.

The program is producing software modules that can be applied "off the shelf" for the parts of the poverty mapping procedure that lend themselves to standardization —critical because of the technical complexity and the sometimes enormous data sets involved. In addition, it is producing documentation providing a step-by-step description of the methodology.

The program has emphasized disseminating results to peers, to ensure broad professional endorsement and thus avoid transferring to developing countries a methodology that is suspect. The program has also devoted resources to training activities to respond to the strong interest in developing countries in acquiring the technical skills to produce poverty maps. These activities occur on

two fronts: the "training of trainers" (generally highly qualified statisticians and econometricians from industrial and developing countries) and the training of technical staff in developing countries.

The program has been a useful vehicle for stimulating interest in making better use of existing data sources and for strengthening capacity within government statistical agencies. In Kenya, for example, poverty mapping activities strengthened the capacity for statistical analysis more generally. The joint work with the government (and with donor organizations) spurred interest in additional analytic work, resulting in training for Central Bureau of Statistics staff.

Moreover, the methodology has led to downstream research investigating a range of questions. The Madagascar poverty map is being used with other data sources to address such issues as the effect of nutrition programs, the ex ante welfare effects of government programs, and the links between deforestation, infrastructure, and poverty. The South Africa poverty map was used to investigate the relationship between local inequality and crime.

That the research has had broad impact is shown by the fact that some 30 countries have launched poverty mapping activities. This interest shows no sign of waning. In fiscal 2002–03 the program provided advice, technical guidance, and supervision on poverty maps in Albania, Bolivia, Bulgaria, Cambodia, China, Ecuador, Indonesia, Guatemala, Kazakhstan, Kenya, the Kyrgyz Republic, the Lao People's Democratic Republic, Madagascar, Mexico, Morocco, Nicaragua, Panama, Papua New Guinea, South Africa, Thailand, Uganda, and Zambia.

In fiscal 2002–03 the program also organized two conferences: the Poverty Mapping Conference in Amsterdam in October 2002, to disseminate findings to academics, multilateral institutions, and nongovernmental organizations; and, with Columbia University's Center for International Earth Science Information Network, the Global Poverty Mapping Conference at Columbia University in March 2003. In addition, presentations on poverty mapping were made at seminars and conferences in Helsinki (June 2001), Pretoria (November 2001), Fortaleza (January 2002), Almaty (June 2002), Beijing (June 2002), Bishkek (June 2002), São Paulo (July 2002), Mexico City (August 2002), Hyderabad and New Delhi (October 2002), Nairobi (October 2002), Amsterdam (February 2003), and New York (March 2003), as well as at Cornell University (October 2001), Oxford University (March 2002), and Williams College (October 2002). At the World Bank results have contributed to a Living Standards Measurement Study module in a Development Research Group course on poverty measurement.

Responsibility: Development Research Group, Poverty Team—Peter Lanjouw (planjouw@worldbank.org), Berk Özler, and Qinghua Zhao. With Johan Mistiaen, University of Maryland; Johannes Hoogeveen and Chris Elbers, Free University, Amsterdam; Jean O. Lanjouw, Yale University and Brookings Institution; Phillippe G. Leite, Pontifícia Universidade Católica, Rio de Janeiro; Yoko Kijima, Michigan State University; Gabriel Demombynes, University of California at Berkeley; and Matthias Schuendeln, Yale University.

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

Policies affecting the prices of goods—through import tariffs, sales and other indirect taxes, price subsidies, and stipends—have important effects on the poor, and there are many such policies. But the tools that have existed for evaluating the impact on poverty of changes in such policies have limitations. Most important, the tools do not provide tests for the robustness of the analysis—and thus the policy conclusions—to alternative values for the poverty measure, the indicator of well-being, and the poverty line used. Without such tests, analysts risk suggesting policy changes that may end up being regressive.

This research project aimed to develop and test new analytic tools to improve the design of policies relating to prices, taxes, subsidies, stipends, and related instruments. The project first developed new graphical and statistical tests of stochastic dominance to allow robust assessments of the effect of different types of policies on poverty, inequality, and social welfare. It then extended these tools to take into account the targeting effects of programs and policies (who is affected and who is not) and their allocation effects (to what extent households or individuals are affected). The tools were also extended to take into account differences in need between households.

While the project focused on developing new tools, it also included applications of the tools to household-level data for several Latin American countries. Research in Mexico found that programs of cash transfers to farmers tend to have good targeting performance but a weak allocation mechanism compared with other transfer programs. And work on indirect taxation in several Latin American countries showed that increasing taxes on some goods while reducing taxes on goods consumed more by the poor may reduce inequality.

The tools have been integrated into the DAD (Distributional Analysis–Analyse Distribute) software developed at the University of Laval in Canada, facilitating their use by a wider group of researchers. In addition, the tools were used in several training events for researchers from developing countries, particularly in Africa. As a result, these researchers are now preparing papers using the tools.

Responsibility: Africa Technical Families, Poverty Reduction and Economic Management Front Office—Quentin Wodon (qwodon@worldbank.org). With Jean-Yves Duclos, Laval University, Canada; and Paul Makdissi, Sherbrooke University, Canada.

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Duclos, Jean-Yves, Paul Makdissi, and Quentin Wodon. Forthcoming. "Poverty-Reducing Tax Reforms with Heterogenous Agents." *Journal of Public Economic Theory.*

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The Impact of Growth on Poverty in Latin America: Maximum Entropy Estimates and Analysis

When helping client countries set targets for poverty reduction or assessing progress toward those targets, World Bank staff confront the difficult problem of evaluating the elasticity of poverty reduction to growth and explaining why this elasticity may differ between countries or between sectors within a country. This research applied new econometric methods to analyze the relationships between poverty, growth, and inequality in

Latin America and the Caribbean as a whole and in selected countries in that region. The aim was to obtain better estimates of the elasticity of poverty reduction to growth—taking into account the effect of growth on inequality—and to analyze why elasticity differs across countries or sectors.

The research applied generalized maximum entropy methods, which facilitate estimations when the number of data points is small. Estimations of the elasticity of poverty reduction to growth confirmed that higher initial inequality has a nonlinear effect on this elasticity, while higher initial poverty does not have such an effect.

The project also extended in several other directions. Using stochastic frontier estimation techniques, it investigated the relationship between growth, public spending, and progress toward Millennium Development Goals relating to health and education. This work confirmed that beyond greater resources, reaching these goals will require more efficient use of existing resources. Other work, relying on the Gini index of mobility, examined the link between growth, poverty, and inequality, on the one hand, and mobility and convergence, on the other. Largely methodological, this work focused on the measurement of convergence and the link between changes in technical efficiency and convergence. Finally, the study developed new and better methods, based on stochastic dominance techniques, for robust tests of whether growth is pro-poor.

Some of the methods developed by the project are being used in subsequent work, such as a World Bank study on the Millennium Development Goals. The work has provided input into the preparation of the World Bank's *World Development Report 2003: Sustainable Development in a Dynamic World* (New York: Oxford University Press, 2002). The research has also contributed to studies on growth in Central America, the Southern States Development Strategy in Mexico, and public spending and the poor in Latin America. Research findings have been presented in seminars, mostly in Israel and the United States.

Responsibility: Africa Technical Families, Poverty Reduction and Economic Management Front Office—Quentin Wodon (qwodon@worldbank.org) and Ruwan Jayasuriya. With Jean-Yves Duclos, Laval University, Canada; Amos Golan, American University; and Shlomo Yitzhaki, Hebrew University.

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The Impact of Trade and Foreign Direct Investment Reform on the Poor

Adequately assessing the effect on the poor of reform relating to trade and foreign direct investment will require improving the data on key parameters in the models used. For example, one key data requirement of the analysis is the shares of capital, skilled labor, and unskilled labor used in different productive sectors—information that is notoriously inaccurate in the input-output tables.

This project involves econometric work to provide the data improvements needed for analyzing the effect on the poor of trade and foreign direct investment reforms. This work would make it possible to modify the crucial information on the shares of value added that go to unskilled labor in different sectors. It would also allow assessment of why the labor share of income is so much higher in household budget surveys than in national accounts.

Responsibility: Development Research Group, Trade—David Tarr (dtarr@worldbank.org).

Initiatives for Improved Data on Poverty and Inequality

The World Bank is the leading producer of data on poverty and inequality, ranging from household survey data to compilations of summary statistics drawn from these data. This research program is aimed at improving the data and methodological tools that the World Bank uses for monitoring and describing poverty and inequality and for assessing policies designed to reduce poverty—to ensure that these data and tools remain the best available.

The research program has several components. One is rebuilding from scratch a set of consumption and income distributions and other social sector outcome indicators for developing and transition economies. This work will produce greater comparability than ever before and result in an interactive, user-friendly database that will greatly enhance the accessibility of the data. A second component focuses on measuring poverty using such data. A third expands the poverty data available by showing how existing data sources can be linked (see the abstract in this volume for the Geography of Poverty). And another takes advantage of the new data generated by the first three components as well as new methodological tools to advance our knowledge of the effects of policies and programs on poverty and inequality.

A large part of the work in this program is the Comparative Living Standards Project, designed to facilitate the use of Living Standards Measurement Study (LSMS) survey data by both "high end" and "low end" users. A variety of analysts and researchers use the data sets from each LSMS survey, but the utilization can be improved and expanded. The Comparative Living Standards Project is creating two databases for this purpose.

The first is a searchable database of meta data, designed to help users search across all LSMS data sets to determine which surveys contain information on topics of interest. The second contains a subset of indicators common to most LSMS surveys. These indicators are being harmonized for comparability across countries and years. The database will permit users to create quick, on-the-fly tables allowing comparisons of key indicators. And it will allow key indicators to be broken down by welfare levels, a feature unavailable in similar databases. The welfare measures (consumption and income aggregates) are being constructed for the greatest comparability possible, using the harmonized indicators and standard techniques for dealing with missing or incomplete data. The work has been done in close collaboration with the World Bank's Africa Region, which is creating harmonized files from its household survey data sets. Once completed, the two databases will be rolled out with the Development Data Group's Data Dissemination Project.

The program has also supported a major revision of the World Bank's Global Poverty Monitoring database, which was made public at the release of the Bank's *World Development Indicators 2004* (Washington, D.C., 2004). In addition, the program has supported work on a new Web site (PovcalNet) to enhance external access to the data sets being developed as part of the Global Poverty Monitoring task. This will allow users to replicate the World Bank's global poverty estimates based on the dollar-a-day poverty measure, for example, or to perform their own estimates under alternative assumptions.

One strand of the work on methodological tools has focused on how to deal with the discrepancies between surveys and national accounts as part of a wider effort to improve the cross-country databases for assessing progress toward the Millennium Development Goal for global poverty. This work has developed a new method for correcting survey data for selective compliance. The method allows rigorous testing of alternative explanations for the (often worrying) discrepancies between national accounts and survey data—discrepancies that can seriously cloud assessments of progress toward the Millennium Development Goals. The first results suggest that surveys tend to underestimate inequality, though the impacts on poverty are small. A pilot application to the United States shows that a large share of the discrepancy between surveys and national accounts in that country can be attributed to selective compliance in survey designs. Other applications are planned.

This work has also developed methods for calculating purchasing power parity (PPP) exchange rates using unit value data from household surveys. Application of

the method to data from India and Indonesia yields different PPPs than conventional methods.

Other work has been exploring what can be learned about people's welfare from qualitative data based on self-rated perceptions. One finding is that subjective perceptions of economic welfare can differ substantially from standard objective measures. Data for the Russian Federation suggest that people give greater weight to such factors as exposure to risk, ill health, and larger family size than is assumed by standard measures used in the World Bank's poverty profiles. This work has also explored ways of measuring empowerment using self-perceptions of power. That study has found a high correlation in data for Russia between perceived power and economic welfare, both subjectively and objectively assessed. Individual empowerment tends to go hand-in-hand with greater economic welfare.

Another important focus has been developing and applying better tools for evaluating the impact of antipoverty programs. Studies have combined different ex post evaluation methods to assess the poverty impact of social protection programs, taking into account behavioral responses. The methods range from randomization and baseline surveys before the project starts to difference-in-differences and matching methods after the program is in place. This work has emphasized developing evaluation methods that can be feasibly applied in typical operational settings. Many lessons have emerged. One lesson: neither randomization nor baseline surveys are essential for credible ex post impact assessments—but high-quality data are critical.

The program's poverty data and monitoring tasks have been high-profile activities in the international development community. The results have often had a prominent place in discussions on ensuring that growth reduces poverty, including in the context of the Millennium Development Goals.

The work on impact evaluation, conducted in close collaboration with World Bank project managers and government counterparts, has shown how rigorous impact evaluation can be built into the preparation of operational projects. In some cases the evaluation results influenced lending operations. The methodology and research findings have been shared with country counterparts and disseminated through World Bank Institute courses.

Results from the work described here and related analysis (see the abstract in this volume for Why Are Some Growth Processes More Pro-Poor Than Others?) have been widely disseminated. In 2002 results were presented at an African Economic Research Consortium workshop (Nairobi), the Latin American Meeting of the Econometric Society (São Paulo), the annual meeting of the Latin American and Caribbean Economic Association (Madrid), the Northeast Universities Development Consortium Conference (Williams College), the annual conference of the Population Association of America (Atlanta), the annual retreat of the U.K. Department for International Development, the World Institute for Development Economics Research conference on Spatial Inequality and Development (London), and the World Bank Economists' Forum. Results were also presented at seminars and conferences at the Asia Development Forum, Boston University, Columbia University, the Delhi School of Economics, the European Economic Association, Georgetown University, the Indian Statistical Institute, the Institute of Fiscal Studies (London), the International Association for the Review of Income and Wealth (Stockholm), the London School of Economics, the Massachusetts Institute of Technology, the Rand Institute, University College London, the University of Massachusetts, the University of Michigan, Virginia Polytechnic Institute and State University, and Yale University.

In 2003 results were presented at the Annual World Bank Conference on Development Economics, a conference on Conversations between Economists and Anthropologists (Goa, India), a conference on Development Anthropology at London University's School of Oriental and African Studies, a conference on Global Poverty at Columbia University, a National Bureau of Economic Research (NBER) conference on Globalization, Poverty, and Inequality (Boston), the NBER Summer Institute, the Northeast Universities Development Consortium Conference, the annual conference of the Population Association of America (Minneapolis), and the World Bank's Latin American and Caribbean Growth Conference (Bogotá). Results were also presented at

seminars and conferences at the American Economic Association, Columbia University, Cornell University, the European Economics Association (Stockholm), Fundação Getúlio Vargas (Rio de Janeiro), Georgetown University, the German Council of Foreign Relations (Berlin), Hanoi National Economic University, Harvard University, the Institute for Social and Economic Change (Bangalore), the International Monetary Fund, the Latin American and Caribbean Economic Association (Puebla, Mexico), Johns Hopkins University's School of Advanced International Studies, Manchester University, the Massachusetts Institute of Technology, Pontifícia Universidade Católica (Rio de Janeiro), Siena Summer School, the United Nations Development Programme's Human Development Report Office, the University of Maryland, the World Institute for Development Economics Research, and Yale University.

The latest results from this and related research are available on the Web at http://econ.worldbank.org/programs/poverty/.

Responsibility: Development Research Group, Poverty Team—Martin Ravallion (mravallion@worldbank.org), Kathleen Beegle, Shaohua Chen, Calogero Carletto, Branko Milanovic, Kinnon Scott, Diane Steele, Peter Lanjouw, Berk Özler, Emanuela Galasso, and Vijayendra Rao. With Angus Deaton, Princeton University.

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Keeping the Promise of Old Age Income Security in Latin America and the Caribbean

This study takes stock of structural, "multipillar" reforms to social security systems in Latin America, measuring the reforms against their promised benefits in several key areas—fiscal sustainability, labor market efficiency, capital market development, and reduction in poverty and inequality. It then considers the implications for policy.

The study draws on the recent literature as well as empirical work for commissioned background papers (including regression analysis, mathematical simulations, household surveys, and country case studies). It finds that reforms have:

- Improved fiscal sustainability, though transition costs have in some cases been higher than expected.
- Channeled substantial savings to the financial sector and helped modernize regulations, though pension funds remain highly exposed to sovereign risk in most countries.
- Improved the equity of social security benefits among the covered population, but without extending access to a broader segment of society.

The stagnation of coverage ratios is a significant disappointment in the effort to reduce the risk of old age poverty, despite the notable successes of multipillar reforms in the region.

The findings make a case for deeper reforms, with greater attention to the poverty prevention function of social security and a smaller role for mandated savings.

A conference will be held on June 22–23, 2004, in Bogotá, Colombia, to discuss with regional policymakers and academics the report produced by this study and the issues it raises. In preparation for the conference a consultative edition of the report has been posted on the Web so that readers can submit comments, at http://wbln0018.worldbank.org/LAC/LAC.nsf/ECADocbyUnid/146EBBA3371508E785256CBB005C29B4?Opendocument.

Responsibility: Poverty Reduction and Economic Management Network, Office of the Vice President and Head of Network—Indermit S. Gill (igill@worldbank.org) and Todd Pugatch; and Latin America and the Caribbean Region, Social Protection Sector Unit—Truman G. Packard. With Juan Yermo.

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A Manual on Tools for Poverty Analysis

There is much demand among World Bank staff, client countries, and nongovernmental organizations and other partners for adequate ex ante and ex post evaluation of poverty reduction and pro-poor growth strategies. That need is partly met by methods now available, both qualitative and quantitative. But users sometimes lack full knowledge of the strengths and limitations of these methods, their applicability to specific policy issues and contexts, and their requirements (for data and human resources, for example).

The need for practical, easy-to-use analytic tools has led to an effort by the World Bank's Development Economics Senior Vice Presidency and Poverty Reduction and Economic Management Network—in collaboration with such stakeholders as the World Bank's regional vice presidencies, the World Bank Institute, and the International Monetary Fund—to produce and assemble a tool kit for evaluating economic policies for poverty reduction. The tool kit is designed to:

- Help users evaluate policy choices on the basis of their impact on income distribution and poverty.
- Help users identify the best method for ex ante and ex post evaluation of the impact of policies on income distribution and poverty.
- Provide the current best practices for applying the evaluation methods.
- Assess the strengths and limitations of each method, identify its data requirements, and highlight problems associated with it.
- Provide a typology of results obtained using each method.
- Provide useful references for further research.

Three workshops on elements of the tool kit were held in Washington, D.C., in February and April 2003, and two more, on micro and macro tools, in May 2004.

Responsibility: Development Economics, Office of the Senior Vice President and Chief Economist—Luiz Pereira da Silva (lpereiradasilva@worldbank.org) and François Bourguignon; Development Research Group, Poverty Team—Peter Lanjouw, Vijayendra Rao, Martin Ravallion, Kinnon Scott, Francisco H. G. Ferreira, and Michael Woolcock, and Public Services—Jakob Svensson, Dominique van

de Walle, and Ritva Reinikka; Development Prospects Group—Dominique van der Mensbrugghe; East Asia and Pacific Region, Poverty Reduction and Economic Management Unit—Gaurav Datt and Jehan Arulpragasam; Africa Technical Families, Poverty Reduction and Economic Management 1—Delfin S. Go, Poverty Reduction and Economic Management 2—Lionel Demery, and Poverty Reduction and Economic Management Front Office—Quentin Wodon and Krishnan Ramadas; Human Development Network—Shantayanan Devarajan; and Poverty Reduction and Economic Management Network, Poverty Reduction Group—Boniface Essama-Nssah. With Patrick Conway, University of North Carolina at Chapel Hill; Jan Dehn, Credit Suisse First Boston; Moataz El-Said, Hans Lofgren, and Sherman Robinson, International Food Policy Research Institute; Jeffery I. Round, University of Warwick; David E. Sahn, Cornell University; Issouf Samaké; Thomas Walker, Reserve Bank of Australia; and Stephen D. Younger, Cornell University.

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Microfinance Impact Evaluation

Measuring the economic impact of microfinance programs and institutions is fraught with methodological difficulties, and studies often lead to contradictory results even when using the same data. There is no consensus supported by hard scientific evidence on the best methodology for evaluating this impact.

This study proposes an alternative methodology for measuring the effect of delivering credit to microentrepreneurs. It is undertaking the first randomized control experiment to assess this effect, focusing on CrediAmigo, a microlending initiative of the Brazilian development bank Banco do Nordeste and the largest microfinance program in Brazil. The methodology involves randomly assigning clients to treatment and control groups by relaxing some eligibility criteria for participating in the microcredit program. The project will conduct a baseline survey followed by another survey 6–12 months later.

The study will also assess the program's targeting of poor people. By mapping the baseline survey data to existing data on microentrepreneurs in Brazil, it can inform CrediAmigo about how it is doing in reaching poor people. This issue is critical, since CrediAmigo is among the most important pillars of the Brazilian government's fight against poverty.

The results not only will help CrediAmigo better understand its impact and how it can improve its operations, but also will address a worldwide knowledge gap about how microcredit is or is not contributing to poverty reduction. The experimental approach used in the study is one that microfinance institutions could easily apply.

Responsibility: Latin America and the Caribbean Region, Finance Cluster—Susana M. Sánchez (ssanchez@worldbank.org) and Poverty Sector—Emmanuel Skoufias. With Pedro Olinto, International Food Policy Research Institute; and Dean Karlan, Princeton University.

A New Analytic Framework for Evaluating Social Programs

This research introduced a new analytic framework for evaluating social programs and policies. The framework, which builds on the concept of the Gini income elasticity, 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 research developed the new framework, along with variations on it, and applied the techniques to empirical data on social transfer programs, mostly in Latin America but also elsewhere. In addition, work with panel data for some of the empirical applications led to a proposed new measure of income mobility in relation to the Gini index of inequality. This Gini index of mobility makes explicit a simple link between the concepts of inequality, mobility, and horizontal equity.

The research found that evaluations of the performance of programs can be highly sensitive to the weights in the social welfare framework used for the evaluations. In addition, it found that the impact of programs can be decomposed in various ways, including to show who benefits from a program and how the benefits vary among program participants. And the research showed that the techniques it developed can be applied using grouped data, which makes them attractive for cases where researchers lack unit-level data from a household survey.

The tools and related findings were presented in workshops and conferences in Africa, Asia, and Latin America. These presentations focused on the evaluation module of the SimSIP (Simulations for Social Indicators and Poverty) family of Excel-based tools, which incorporates some of the tools developed in the research, facilitating their use by a wider group of researchers. In addition, some of the methods developed in the research are being used in subsequent work.

Responsibility: Africa Technical Families, Poverty Reduction and Economic Management Front Office—Quentin Wodon (qwodon@worldbank.org) and Corinne Siaens; and Poverty Reduction and Economic Management Network, International Trade Department—Mohamed Ihsan Ajwad. With Shlomo Yitzhaki, Hebrew University.

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Patterns of Inequality

Whether global inequality has increased or decreased is a question generating much debate. Complicating the debate, the evidence brought to bear often comes from sources of doubtful value. One source widely used in the literature is the Deininger-Squire database on income distribution, developed at the World Bank in 1996. That database provides a useful point of reference. To remain relevant, however, it must incorporate information from new household surveys. This project updated the database through systematic computation of inequality indexes based on household surveys.

Analysis of the data finds that, contrary to conventional wisdom, it is difficult to identify a distinct trend in inequality after accounting for the increase in Eastern European countries. At the same time the large differences in inequality across regions have largely persisted.

Preliminary results were presented at the 2003 annual meetings of the American Economic Association. The database will be made publicly available on the Web.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org). With Lyn Squire, Global Development Network; and Kihoon Lee, University of Maryland.

Review of Community-Based and -Driven Development Programs

In the past decade many governments and development agencies, including the World Bank, have enthusiastically embraced community-driven development programs, substantially increasing funding for such programs. But does the analytic evidence support this optimism?

This project assesses the evidence on the effectiveness of community-driven development initiatives, reviewing and synthesizing more than 200 empirical and theoretical research papers on the topic. Some of the key findings are as follows.

Targeting. Decentralized community-based targeting of antipoverty programs can be better than centralized targeting, but the evidence remains limited. The evidence does not suggest that community-driven development projects have been well targeted to the poor within communities. Moreover, under certain conditions local inequality can worsen when targeting is decentralized.

Project performance. There is some evidence that community-driven projects create effective community infrastructure and improve welfare outcomes. But such evidence is missing for most projects. Moreover, studies do not establish that it is the participatory elements of projects that are responsible for improving their outcomes.

Social capital. There is some quantitative evidence showing an association between social capital and project effectiveness, but the direction of causality is unclear.

Role of inequality and heterogeneity. Theoretical work has shown that economic inequality need not constrain collective action, but empirical work has shown mixed results. Many studies find a U-shaped relationship between inequality and project outcomes. Most empirical studies that have attempted to measure social fractionalization have shown that it tends to inhibit collective action. In the end, the success of community-driven projects may also be affected by how well heterogeneity is managed.

Capture. Even in the most egalitarian societies elites will almost always dominate a community-driven process of choosing, constructing, and managing a public good. This may not always represent "capture," in the sense that elites appropriate all the benefits. But when local cultures and systems of social organization result in tight control of community decisions by elites, more malevolent forms of capture become likely. The evidence shows, for example, that targeting is markedly worse in more unequal communities, particularly when power is concentrated among elites.

Naive concepts. Key concepts underlying the theory of community-driven development—*participation, community, social capital*—need to be treated critically. A naive application of such concepts could lead to poor project design and outcomes seriously at odds with stated intentions.

Sustainability. Several qualitative studies show that the sustainability of community-driven initiatives depends crucially on an enabling institutional environment. Line ministries need to be responsive to the needs of communities, and national governments committed to the idea of transparent, accountable, and democratic governance.

Role of external agents. Qualitative evidence suggests that the role of external agents, such as project facilitators, is key to the success of community-driven development efforts. Projects often work with young, inexperienced facilitators whose incentives are not aligned with the best interests of the community. Knowledge about the effect of incentive systems and heterogeneity among street-level agents on the success of projects is limited, however.

Evaluations and learning-by-doing. Since the success of community-driven development is crucially conditioned

by local social and cultural systems, it is best done not through wholesale application of best practices from projects successful in other contexts, but through careful learning-by-doing. This requires a long time horizon, good evaluation, and openness to learning from mistakes. But one of the most worrying findings is that most community-driven development projects lack careful evaluations with good treatment and control groups and with baseline and follow-up data.

The findings have been presented at World Bank seminars, the 2003 Annual World Bank Conference on Development Economics in Bangalore, and a seminar at the International Food Policy Research Institute. Within the World Bank the findings have fundamentally changed the way community-driven development is understood and led to a concerted effort to improve the evaluation of community-driven development projects.

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org) and Ghazala Mansuri.

Report

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Safety Nets in an Emerging Market Economy

This research project assessed the effectiveness of the public safety net in Vietnam. Because of a lack of good data, the study first carried out a broad qualitative assessment, identifying key issues on which more needs to be learned. It reviewed existing public safety net programs, the main sources of household vulnerability, and what is known about coping strategies, and outlined an agenda for strengthening the main safety net programs.

Using the newly released 1998 Vietnam Living Standards Survey—which provided previously unavailable data on policy coverage across communes and, in some cases, households—the study then performed quantitative analysis to better understand and assess the performance of programs aimed at reducing poverty and providing insurance to poor households.

The project also examined how well targeted decentralized programs and expenditures for poverty reduction are to poor communes and poor people in Vietnam. It assessed whether programs perform a safety net function, recognizing that this involves both protection from poverty and promotion from poverty. It examined the role of nonincome factors, including whether equally poor communes in different provinces are treated equally and, if not, what accounts for these differences. And it estimated the counterfactual of what household consumption would have been without transfers, with the counterfactual allowing for behavioral responses.

The findings suggest that Vietnam's transfer programs helped few people escape poverty and protected even fewer from falling into poverty. The public safety net appears to have been largely irrelevant to the country's recent record of poverty reduction.

In response to the analysis and recommendations of this project and others, the government of Vietnam is reviewing its flagship poverty program.

Research results were incorporated into *Vietnam Development Report 2000: Attacking Poverty* (Hanoi: Government-Donor-NGO Working Group, 1999). The results were also presented to a conference of government representatives, local nongovernmental organizations, and academics in Hanoi in May 2001.

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

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Social Status in India and the Response to Economic Opportunities

Recent work in economic history provides striking evidence that historical institutions that denied large segments of the population opportunities for economic advancement have long, lingering consequences. The reason, scholars have emphasized, is the effect of past institutions on current opportunities.

This research project proposes and experimentally tests an additional explanation based on the ability of historically oppressed groups to respond to opportunities. It tests the hypothesis that when an individual's social identity (caste) is made public, but not otherwise, individuals will respond differently to economic incentives. The research focuses on India, where a national mandate has created new educational and political opportunities for low castes in villages.

The work is based on eight experimental treatments using 642 junior high school volunteers from a village in India and a survey of 270 households in an area near the site of the experiment. To undertake the experiment, the project trained five Indian nationals on the staffs of nongovernmental organizations. To undertake the survey, it trained a team of 20 Indian university students.

The experiment provides evidence that a history of social and legal disabilities may have persistent effects through its impact on expectations. Participants are asked to perform a task (solving mazes) in response to various incentives. When participants' caste is not announced, there is no caste gap in performance, regardless of the incentive scheme. When participants' caste is announced, low-caste but not high-caste individuals perform much worse, under a variety of economic incentives, compared with a control group whose caste is not announced. When a nonhuman factor (a random draw) is introduced that in part determines rewards, the caste gap disappears. The results suggest that when caste identity is public information, low-caste subjects expect their efforts to be poorly rewarded. Mistrust undermines motivation.

To the extent that the findings can be generalized to economic performance, they suggest that the aggregate effect on society of expectations associated with caste can be viewed as unambiguously negative, and that measures that reduce the perception of bias in the enforcement of economic rights would measurably increase individuals' efforts to escape poverty.

The project has informed World Bank economic and sector work, analytic and advisory work, and lending programs in South Asia. Results have been widely circulated at the World Bank and presented at Cornell University and several conferences: the MacArthur Conference on the Effects of Inequality, Massachusetts Institute of Technology (October 3, 2003); the Roundtable on Providing Services to the Poor, Brookings Institution (December 5, 2003); and the Conference on Behavioral Economics, Public Economics, and Development Economics, London School of Economics (May 28–29, 2004).

Responsibility: Social Development Department—Karla R. Hoff (khoff@worldbank.org); and Development Research Group, Public Services—Monica Das Gupta. With Vinod Jairath, University of Hyderabad; and Priyanka Pandey, Pennsylvania State University. The World Bank–Netherlands Partnership Program and the MacArthur Foundation Network on the Effects of Inequality have contributed funding for the research.

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Thematic Mapping of Nonincome Poverty

Based on data from the 2002 Albania Living Standards Measurement Study (LSMS) survey, the World Bank's 2002 poverty assessment of Albania emphasized the spatial dimension of poverty in the country: remote rural

areas in the northeast have considerably higher poverty than the rest of the country. The poverty assessment combined the LSMS survey data with 2001 census data to produce small area estimates of poverty and inequality. It also looked at nonincome dimensions of poverty, which compound the income deprivation, particularly in remote rural areas.

This research project extends that work, creating a spatial database of nonincome poverty indicators for use in a thematic mapping exercise, to be overlaid with the poverty and inequality mapping done for the poverty assessment. Collecting statistical, administrative, and geographic information system (GIS) data from secondary sources, the project systematically compiled geographically referenced data for all available indicators of nonincome poverty at the levels of prefecture, district, and municipality or commune. In addition to providing the basis for the thematic mapping, the database will serve as an input to a spatial econometric analysis of poverty to be conducted separately.

The work is still under way, but preliminary results confirm the highly spatial nature of poverty in Albania, bolstering the argument for geographic targeting of resources to the country's more destitute areas.

The database provides a valuable resource for use by local and international researchers in analyzing the spatial dimension of poverty and the links between location and other determinants of welfare.

The project has been conducted in close collaboration with local stakeholders, including the Albanian Statistical Institute and line ministries.

Responsibility: Development Research Group, Poverty Team—Calogero Carletto. With Byron Kotzamanis and Marie Noel Duquenne, University of Thessaly.

Trade Liberalization and Household Impact in Vietnam

This study uses the case of Vietnam to advance research on the detailed incidence of national and sectoral trade policies (tariffs and subsidies as related to World Trade Organization accession agreements and other trade arrangements) on particular categories of households in particular regions.

The research develops a methodology that brings together the richness of household-level data with broader shifts in economic variables. The approach integrates a consistent nationwide computable general equilibrium model with a linked regional multimarket model and microsimulation of impacts at the household level based on individual records from the recently completed Vietnam Household Living Standards Survey.

This approach allows better identification of the types of households likely to be positively (and negatively) affected by trade developments through a range of channels. A major advance in this class of modeling efforts is the feature enabling households to respond to changes through occupational choice or mobility.

The study applies this methodology to three poor, mountainous regions of Vietnam.

The social accounting matrix for the computable general equilibrium component of the work was prepared in close collaboration with the Central Institute for Economic Management in Hanoi.

Responsibility: East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Department—Martín Rama (mrama@worldbank.org). With David Roland-Horst, University of California at Berkeley; and Finn Tarp, University of Copenhagen.

Urban Poverty and Social Capital

This project, by examining the role of social networks, intends to improve the understanding of how the urban poor cope with risk and vulnerability in India. Using a multidimensional definition of risk—encompassing health, income, housing, violence, consumption, and water and sanitation—the study attempts to extend the understanding of risk and insurance to urban areas while modeling both economic and social behaviors.

The project combines qualitative and quantitative methods. Using a case study approach focusing on slum areas in Delhi, it integrates focus group discussions and other participatory methods with economic theory and econometric analysis of survey data.

The study finds that the informal governments that form in slums play a crucial role as mediators with the

state. And social networks in slums play an important role in determining living standards. The findings have led to a better understanding of how slums are governed and of the potential for community involvement in local projects.

The research has been presented at the World Bank, Cambridge University, the Institute of Social and Economic Change (Bangalore), and the Institute of Economic Growth (Delhi).

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org) and Michael Woolcock. With Arup Mitra, Institute of Economic Growth, Delhi; Lester Coutinho, Delhi University; and Saumtira Jha, Stanford University.

Reports

Jha, Saumtira, Vijayendra Rao, and Michael Woolcock. "Governance in the Gullies: Democratic Responsiveness and Community Leadership in Delhi Slums." World Bank, Development Research Group, Washington, D.C.

Mitra, Arup. 2003. *Networks, Occupational Choice, and Poverty: An Exegesis on Delhi Slums.* Delhi: Manohar.

Why Are Some Growth Processes More Pro-Poor Than Others?

Why some growth processes are more pro-poor than others is a question often asked in World Bank operations and client countries. Answering it requires a deeper understanding of the role played by initial conditions (including initial inequalities) and of what drives the distributional changes seen in survey data. This research addresses this question from different perspectives, focusing on areas where new research appears to offer high value added and drawing in part on data developed in related work (see the abstract in this volume for Initiatives for Improved Data on Poverty and Inequality).

One strand of work has examined the theory and methods of assessing the extent to which economic growth is pro-poor—and what exactly that means. The research has found standard methods used in the World Bank to be deficient in many respects for monitoring the gains to the poor from economic growth. And it has proposed a better measure of pro-poor growth—the mean growth rate for poor people, which indicates the direction of change in a theoretically defensible measure of the level of poverty.

The research used an application to China's growth process in the 1990s to illustrate the proposed measure. In 1990–99 the ordinary growth rate of household income per capita was more than 6 percent a year, but the pro-poor growth rate was 4 percent. The growth rate by quantile ranged from 3 percent for the poorest percentile to 10 percent for the richest. The pro-poor growth rate rose sharply, to about 10 percent a year, for a few years in the mid-1990s, an increase associated with a policy change that greatly improved the terms of trade for farmers.

The research program has launched a series of country case studies on the determinants of the rate of pro-poor growth. The first study completed, for India, found that the country returned to its historical rate of poverty reduction in the 1990s. But there has been no compelling sign of an acceleration in poverty reduction commensurate with the higher rate of economic growth. The study found that a large share of the gains from growth have bypassed the poor, in no small measure because the growth has not been concentrated in the sectors and regions that matter most to the poor.

A case study of Indonesia showed that while the country experienced rapid poverty reduction in 1984–96, there was a dramatic reversal after the 1997 financial crisis. But these aggregate findings mask substantial diversity in growth and distributional change across regions. A disaggregated analysis reveals that regional differences in poverty persist even after controlling for the effects of provincial income levels, particularly in rural areas. These findings suggest that local factors play an important part in determining poverty and interact with growth to affect poverty reduction in differing ways across Indonesia.

A second strand of work has studied the links between economywide policy reforms and the distribution of living standards. One study examined the effects of globalization on income distribution within rich and poor countries, drawing on country-level databases. This research found strong evidence that at low average income levels it is the rich who benefit from openness

(measured by the ratio of trade to GDP). But as income levels rise—to around $5,000–7,000 per capita at international prices—the poor and the middle class benefit as their incomes increase relative to those of the rich.

Another study examined the welfare impacts of China's accession to the World Trade Organization, combining general equilibrium analysis with unusually rich household survey data to produce highly disaggregated estimates. The study found negligible impacts on inequality and poverty in the aggregate. But diverse effects emerge across household types and regions, associated with heterogeneity in consumption behavior and income sources, with possible implications for compensatory policy responses.

Yet another study developed a rapid response tool to analyze the distributional impacts of economic crises and macroeconomic shocks. Because the method uses only precrisis household information, it allows timely analysis. The study used the method to estimate the compensating variation for Indonesian households following the 1997 Asian currency crisis. It found that virtually every household was severely affected, though the urban poor fared the worst. For poor rural households the ability to produce food mitigated the worst consequences of the high inflation. The geographic location of households mattered even within urban or rural areas.

A third strand of work has looked at impacts of economywide change on a range of nonincome dimensions of welfare. One study investigated the effects of severe macroeconomic crises on population mental health. Using longitudinal data from Indonesia, it found that the incidence of psychological distress increases two- to fivefold for men and two- to threefold for women. Poor mental health persists during economic recovery even as other measures of welfare improve.

Another strand of research has examined the important role of cultural and social factors in determining inequality and poverty and access to public services by the poor. Social exclusion based on caste and gender, which is culturally driven, affects not just access to services but also such behaviors as conspicuous consumption and domestic violence, which have distributional implications and affect investments in human capital.

Other work has tried to unpack how community-driven development—widely touted as a pro-poor growth strategy—really works and how it is driven by social networks and the quality of facilitation (see the abstract in this volume for Review of Community-Based and -Driven Development Programs). These social and cultural aspects of poverty analysis require new techniques mixing quantitative and qualitative methods.

Closely related work has investigated the socioeconomic determinants of local-level success in reaching the poor. One study assessed the local accountability and targeting performance of decentralized antipoverty programs in Bangladesh. This study—among the first to use household data to define, measure, and explain targeting performance in a decentralized setting—shows that in a food-for-education program the center appears to be neutral to poverty at the village level, while most villages achieve pro-poor targeting at the household level. But the study finds large variations in program performance at the local level. Using structural socioeconomic indicators to explain the heterogeneity, it finds that village isolation and local inequality worsen performance in reaching the poor.

Work on country case studies has involved setting up new databases for investigating the determinants of longer-term poverty reduction at the provincial level. In close collaboration with country statistical offices, the program has been assembling and analyzing large household-level databases for studies in four countries: Brazil, China, India, and Indonesia.

An important channel for impact from the research has been the World Bank's economic and sector work and lending operations. The tools developed for measuring and understanding pro-poor growth have been used in many poverty assessments and poverty-focused country reports (including those for Bangladesh, China, Ethiopia, India, Madagascar, and Mozambique). The database developed for the country study in China will be a key input into the poverty assessment for that country. And early results from the work on Brazil contributed to a Latin America and the Caribbean Region report on inequality (David de Ferranti, Guillermo E. Perry, Francisco Ferreira, and Michael Walton, *Inequality in Latin America: Breaking with History?* Washington, D.C.: World Bank, 2004).

The work on community-driven development and decentralized service delivery has influenced the World Bank's thinking in key areas. For example, the work has shown the importance of impact evaluations for community-driven development projects and led to questions on how best to implement and evaluate such projects. Most important, the research has changed the discourse on community-driven development within the World Bank, sharpening the focus on measurable results and on how community-driven development processes really work. The work on culture has begun to persuade anthropologists to think more directly about policy issues and economists to study the implications of cultural processes for development.

The research has also had an impact within governments. In Brazil the government used the work on designing conditional cash transfers, done jointly with local researchers, in integrating four social assistance programs into the unified Bolsa Família. In China the National Bureau of Statistics has agreed to adopt the methods developed for setting poverty lines, so that for the first time there will be complete congruence between the World Bank's poverty assessments for China and the government's.

Results from the analyses and from related data work have been widely disseminated (see the abstract in this volume for Initiatives for Improved Data on Poverty and Inequality). The latest results from this work are available on the Web at http://econ.worldbank.org/programs/poverty/.

Responsibility: Development Research Group, Poverty Team—Martin Ravallion (mravallion@worldbank.org), Shaohua Chen, Branko Milanovic, Kathleen Beegle, Emanuela Galasso, Peter Lanjouw, Michael Lokshin, Berk Özler, Ghazala Mansuri, Vijayendra Rao, and Michael Woolcock; and Development Economics, Office of the Senior Vice President and Chief Economist—François Bourguignon.

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Ravallion, Martin, and Shaohua Chen. 2003. "Measuring Pro-Poor Growth." *Economics Letters* 78(1): 93–99.

Ravallion, Martin, and Gaurav Datt. 2003. "Why Has Economic Growth Been More Pro-Poor in Some States of India Than Others?" *Journal of Development Economics* 68(2): 381–400.

Youth, Identity, and Culture in Multiracial Societies

This research examined the roles that culturally based organizations, cultural expression, and the affirmation of cultural heritage can play in forging positive self-identity among poverty-stricken youth of African descent living in multiracial societies. The research investigated:

- The role of culture in forming self-perception and the individual and social roles of youths of African descent.
- The extent to which these youths identify themselves as part of a specific ethnic, racial, or national

culture and the extent to which their perceptions influence their behavior as individuals, students, and citizens.

• The impact of globalization on the traditional cultural identities and culturally specific skills, expressions, social practices, and enterprises of youths of African descent.

Based on a survey of youth of African descent in an urban neighborhood of South Africa, the study found that youth had a greater concern with their national identity as citizens of South Africa than as people with an African cultural heritage. Since the study was conducted in the years immediately following the end of apartheid in the country, this finding may have to do with a new generation of South African youth being more concerned about their identity as members of the new South African nation than as members of a specific racial group.

The research contributed to the organization in the World Bank of an Afro-descendant and youth program in the Latin America and the Caribbean Region's Social Development Family, a program that has included a major initiative with national census bureaus in Latin America on the demography of Afro-descendant populations and a research program on the disaggregation of Millennium Development Goal indicators by race and ethnicity in particular countries.

The research findings were disseminated at the World Bank during Environmentally and Socially Sustainable Development Week in April 2002, in a panel discussion on Youth, Empowerment, and Inclusion in Conflict-Affected Societies.

Responsibility: Latin America and the Caribbean Region, Social Development Family—Shelton H. Davis (sdavis@worldbank.org) and Jeanette Sutherland. With Abebe Zegeye, University of South Africa.

Report

Zegeye, Abebe, Julia Maxted, and Charl Schutte. 2002. "Mamelodi, Place of Struggles and Whistles: A Window into Youth Culture." World Bank, Latin America and the Caribbean Region, Social Development Family, Washington, D.C.

Health and Population

Child Vulnerability in Peru: Determinants of Nutritional Status, Impact of Social Protection Programs, and Effects of Macroeconomic Crisis on Child Health

This research project looked at several issues relating to child malnutrition in Peru. First, using multilevel regression analysis and data from the Peru Demographic and Health Survey of 2000, it investigated the relationship between altitude and child nutritional status. Findings show a nonlinear relationship. Opposite forces may operate at higher altitudes, where the adverse effects of hypoxia on growth could be compensated for by other, favorable health conditions.

Second, the study examined the impact of macroeconomic crisis on child health, primarily infant mortality and malnutrition. Regression analysis using data from four Demographic and Health Surveys (1986, 1992, 1996, and 2000) showed a large increase in infant mortality (from 50 per 1,000 live births to 75) during the worst years of the 1988–92 economic crisis. It also provided evidence of a significant deterioration in anthropometric outcomes associated with the crisis.

Third, the study looked at the targeting of the Vaso de Leche (glass of milk) program and its impact on nutritional status. The study addressed targeting by decomposing the overall distribution into within- and between-community components. It then used a series of cross-sectional surveys to indicate the relationship between spending on the program and the nutritional status of young children. Findings confirm that the program is comparatively well targeted, with much of the targeting being done by local committees. But even though most assistance is going to low-income households, the study could find no direct benefit in nutrition. That calls into question the motivation for using an in-kind subsidy of perishable milk rather than a cash transfer using a similar targeting criterion.

The research has contributed to a public expenditure review in Peru and will provide input to a poverty assessment in the country. Results have been presented at seminars in the World Bank and at a workshop, sponsored by the Inter-American Development Bank and held in Rio de Janeiro in November 2003, on Evaluating Nutrition Programs in Latin America.

Responsibility: Latin America and the Caribbean Region, Health Sector Unit—Michele Gragnolati (mgragnolati@worldbank.org); and Development Research Group, Public Services—Norbert Schady and Harold Alderman. With David Stifel, Lafayette College.

Reports

Marini, Alessandra, and Michele Gragnolati. 2003. "Effects of Altitude on Child Growth in Peru: A Multilevel Analysis." World Bank, Latin America and the Caribbean Region, Health Sector Unit, Washington, D.C.

Paxson, Christina, and Norbert Schady. 2004. "Child Health and the 1988–92 Economic Crisis in Peru." Policy Research Working Paper 3260. World Bank, Development Research Group, Washington, D.C.

Stifel, David, and Harold Alderman. 2003. "The 'Glass of Milk' Subsidy Program and Malnutrition in Peru." Policy Research Working Paper 3089. World Bank, Development Research Group, Washington, D.C.

Determinants of Success in Immunization Programs

This research will break new ground in exploring why some countries achieve successful immunization programs and others do not. Through four to six country case studies, the research will identify institutional factors related to successful immunization programs in developing countries. Using a cross-country database, it will then test and confirm hypotheses developed from the case studies. The research will also examine factors relating to equity in the outcomes of immunization programs.

The research will identify factors associated with high immunization coverage for measles and DPT-3 (diphtheria, pertussis, and tetanus) vaccines and determine which are most strongly related to immunization

outcomes. Such factors include national income, public spending, institutional structures, donor assistance, political economy issues, education and literacy, and governance and corruption.

By identifying the factors that contribute most to success and equity in immunization programs, the research will help governments and donors improve the structure of vaccine programs and help make the case for financing new vaccines.

Findings will be presented at the World Bank, at academic conferences, and to the Financing Task Force of the Global Alliance for Vaccines and Immunization.

Responsibility: Development Research Group, Public Services—Varun Gauri (vgauri@worldbank.org).

Governance of Public Health

The Indian state of Karnataka, currently undertaking governmentwide institutional reform with support from the World Bank, has a history of supporting civil engagement in governance. For the reform effort in the health sector the government has created a task force drawn from civil society to assess the changes needed. Working with task force members and health service users in Karnataka, this research project aimed to develop tools and information that would help empower citizens and rural local governments to monitor and participate in the implementation of public health arrangements. To this end, the project worked to:

- Support local initiative in developing tools to assess the quality of delivery of preventive health services.
- Build on the governance and public sector reform tools developed by the World Bank and the health service assessment tools developed by the U.S. Centers for Disease Control and Prevention.
- Develop a case study of the situation in Karnataka and its efforts to reform delivery of preventive health services and to engage local communities in the process.
- Develop short case studies of the experience of other Asian countries (such as Malaysia, which has successfully reduced the burden of communicable diseases in recent years) and extract best practices in such areas as engaging civil society in implementing and monitoring public health activities.

Analysis of survey data from administrators, frontline workers, and elected local representatives in Karnataka identified a number of key constraints to the effective management of disease control in India, in misaligned incentives and the institutional arrangements for service delivery. It concluded that India's public health system is configured to be highly effective at top-down reactive work, such as bringing outbreaks of disease under control, but not for the more routine collaborations required for prevention of disease.

The project will include dialogue with users of preventive health services in Karnataka to facilitate greater local participation in implementing and monitoring the services—as well as dialogue with high-level policymakers in India. The project findings have been disseminated in Karnataka at workshops held by the Institute for Social and Economic Change in Bangalore and by the Karnataka health department. The findings have also been disseminated through a presentation at the World Bank, and the project is informing preparation of a new World Bank health sector loan to Karnataka.

The research tools are available on the Web at http://www1.worldbank.org/publicsector/bnpp/Preventhealth.htm.

Responsibility: Development Research Group, Public Services—Monica Das Gupta (mdasgupta@worldbank.org) and Peyvand Khaleghian. With Sekhar Bonu, Rakesh Sarwal, and William Reinke, Johns Hopkins University; and P. Padmanabha, K. Murthy, V. Ranganath, V. Muraleedharan, and Deepak Sahai, Center for Population and Development Research, Bangalore.

Report

Das Gupta, Monica, Peyvand Khaleghian, and Rakesh Sarwal. 2003. "Governance of Communicable Disease Control Services: A Case Study and Lessons from India." Policy Research Working Paper 3100. World Bank, Development Research Group, Washington, D.C.

Health Care Infrastructure and Maternal and Child Health

This research is investigating the effects of the health care infrastructure on contraceptive use, fertility, and infant

mortality in Uttar Pradesh, India, as well as the potentially differential effects of government-run facilities and private providers on these outcomes. The aim is to provide insights into how to improve India's health care infrastructure.

The project first prepared the data set for the analysis, a complex task that involved mapping the services available in facilities in a neighborhood to the women in the households in that neighborhood, at both the district and the *tehsil* level. The data are being analyzed using four sets of methodologies:

- Binary logistic regressions for modeling the demand for contraceptives (sterilization, pills, condoms, and intrauterine devices).
- Probit analysis for modeling infant mortality.
- Ordered probit models for birthweight (available in five categories).
- Poisson and Cox regressions for analyzing waiting time before men and women, especially in rural areas, opt for sterilization.

Preliminary findings suggest that it is essential to differentiate between the services of public providers and those of private providers and to investigate endogenous facility placement in a more complex analytic framework using new estimation methods.

Findings will be disseminated at the World Bank and in India—at the World Bank's New Delhi office, at Banaras Hindu University in Varanasi, and at SIPSA in Lucknow. The data set will be made available in SPSS (Statistical Package for the Social Sciences) software.

Responsibility: South Asia Region, Human Development Sector Unit—Sadia A. Chowdhury (schowdhury3@worldbank.org). With Alok Bhargava, University of Houston; and K. K. Singh, Banaras Hindu University.

Health Care Providers and Markets in Delhi

Quality of care has often been discussed as an important determinant of the demand for health care and the likely health outcomes from getting that care. But it has been a difficult concept to measure. This project has developed a method for measuring the quality of clinical care that is easily transferable to developing country researchers and administrators. The method was tested in seven neighborhoods of Delhi spanning a wide range of incomes.

The method uses two kinds of survey instruments. The first is the use of "vignettes." Hypothetical cases are presented to a provider, with one interviewer acting as a patient and another recording the provider's actions and answering questions a patient could not (such as on the results of blood tests). The vignettes are then analyzed using item response theory as developed in the educational testing literature to extract a measure of provider quality.

In the second technique an interviewer sits with a provider for a day recording every patient's complaints and symptoms, counting all questions asked by the provider, timing the encounter, and recording all treatments. These data can be compared with measures of competence from vignettes to explore the relationship between knowledge and practice.

Analysis of the results has led to three particularly noteworthy findings. First, the analysis sheds light on the debate in India about the relative quality of the public and private health sectors. The private sector consists of two distinct groups: untrained providers of low average quality and trained medical doctors of considerably higher quality. Public providers (all trained) have a bimodal distribution of quality—some very high (mostly working in tertiary facilities) and some quite low (in neighborhood clinics). Public providers in poor areas are only a little better than private providers. Private doctors in rich areas are only a little better than doctors in public hospitals.

Second, there are large problems in quality, with even relatively high-quality providers missing basic and sometimes life-threatening conditions.

Third, there are systematic differences between quality measured by the vignettes and that measured by observation. Private doctors do "too much," prescribing unnecessary treatments even when the vignettes indicate they know better. Public doctors do "too little," asking too few questions to rule out dangerous conditions and spending little time with patients. This gap between knowledge and behavior can be understood given the incentives providers face.

The research suggests that training is likely to have little effect in improving quality. There is already too large

a difference between knowledge and behavior. It also suggests that whether patients will be better served in the public or private sector depends on their illness. If primary treatment is necessary, the private sector is somewhat better; if referral or letting an illness run its course is called for, the public sector is better. Consumers need to be better informed to make the better choice.

Results have been presented at World Bank seminars and incorporated into a health session in the World Bank's Public Expenditure Analysis and Management course. A conference in New Delhi is planned.

Responsibility: Development Research Group, Public Services—Jeffrey Hammer (jhammer@worldbank.org) and Jishnu Das. With the Institute of Socio-Economic Research on Development and Democracy, Delhi.

Reports

Das, Jishnu, and Jeffrey Hammer. 2003. "Money for Nothing: The Dire Straits of Medical Practice in India." World Bank, Development Research Group, Washington, D.C.

———. 2003. "Which Doctor: Combining Vignettes and Item Response to Measure Doctor Quality." World Bank, Development Research Group, Washington, D.C.

———. Forthcoming. "Strained Mercy: The Quality of Medical Care in Delhi." *Economic and Political Weekly.*

Health Policy Research in South Asia

This project undertook quantitative and qualitative research in South Asia aimed at providing evidence in support of health sector reform and restructuring. Much of the research was conducted by national institutions in the region. Data were collected through literature reviews, facility and patient surveys, beneficiary assessment surveys, and interviews of key informants. The research included benefit incidence analysis, public expenditure reviews, national health accounts, and analysis of data on health care utilization and facility costs and expenditures. The results show that empirical research can and should challenge basic assumptions about the health sector and can provide policymakers some of the tools needed to improve and monitor the sector's performance.

Analyses of inequality in the health sector looked at the distribution of public health subsidies in India, the geographic allocation of resources in Bangladesh, and equity in the financing and delivery of health services in Bangladesh, Nepal, and Sri Lanka. Expenditure analyses were carried out through a public expenditure review of the Bangladesh health sector, a survey of health facility efficiency in Bangladesh, and a review of national health accounts in Sri Lanka. Other analyses examined the private health sector in India, Sri Lanka, and the Indian state of Uttar Pradesh. And a last set of studies investigated the perspectives of consumers and providers through an analysis of perceptions of quality in the Indian state of Andhra Pradesh, an examination of the voices of stakeholders in Bangladesh, and a field study of consumer redress mechanisms at public and private hospitals in India.

The research shows that in some parts of South Asia—such as South India and Sri Lanka—governments do a much better job of distributing subsidies in the health sector than other regions. The research points to different policy tools for tackling inequality, including establishing geographic allocation formulas, reallocating resources between different levels of care, educating vulnerable groups about their rights, introducing community-based monitoring, and strengthening mechanisms for redress.

The research documents the dominance of the private sector in Bangladesh and India and finds a very strong private sector in Sri Lanka. It also highlights different policy instruments available to the government for working with the private sector to achieve goals.

Research on the role of consumers both supports the belief that individuals and households can make a difference in how health services are delivered and documents their limited ability to influence health services. It proposes improving consumer education, developing and disseminating a patient bill of rights, building community watch committees to oversee service delivery, and improving consumer redress mechanisms. An underlying need is to strengthen the links between policymakers and potential health care consumers and change the nature of the relationship between consumers and providers.

The project produced a set of research papers published in a volume highlighting the innovations in the

papers, the contributions to advancing policy dialogue, the consultative process of commissioning and supporting national research, and the approach to capacity building for policy research in Bangladesh, India, and Sri Lanka. The research has contributed to the health policy dialogue in South Asia, and its results were incorporated into a World Bank operational report on options for the health sector in Bangladesh.

Responsibility: South Asia Region, Human Development Sector Unit—Abdo S. Yazbeck (ayazbeck@worldbank.org), and Social Development and Environment Unit—Nilufar Ahmad. With David H. Peters, Johns Hopkins University School of Public Health; Liaquat Ali, Shamin Ara Begum, Atia Hossain, Hamid Moral, and Priti Dave Sen, Ministry of Health and Family Welfare, Bangladesh; S. Chakraborty, Indian Institute of Management; Tim Ensor, University of York; Prashanthi Jayawardhane, Ravi P. Rannan-Eliya, and Aparnaa Somanathan, Institute of Policy Studies, Sri Lanka; Leela Karunaratne, University of Sri Jayawardanepura, Sri Lanka; Ajay Mahal, Harvard University; Prasanta Mahapatra, Institute of Health Systems, Hyderabad; Bejon Misra, Consumer VOICE, Delhi; V. R. Muraleedharan, Indian Institute of Technology; and Sunil Nandraj, World Health Organization. The Institute of Policy Studies and Sri Lanka Ministry of Health contributed staff time.

Reports

Peters, David H., Abdo S. Yazbeck, Rashmi Sharma, G. N. V. Ramana, Lant Pritchett, and Adam Wagstaff. 2002. *Better Health Outcomes for India's Poor.* Washington, D.C.: World Bank.

Yazbeck, Abdo S., and David H. Peters, eds. 2003. *Health Policy Research in South Asia: Building Capacity for Reform.* Washington, D.C.: World Bank.

Institutional Determinants of Effective Delivery of Public Health Services

Tackling vector-borne diseases and those spread through poor environmental hygiene is essential for meeting several of the Millennium Development Goals. While many developing countries have succeeded in virtually eliminating these diseases, others continue to suffer high rates of child mortality and adult morbidity because of their persistence. What accounts for the difference? Institutions are part of the answer, but little is known about the institutional determinants of effective delivery of public health services.

Through case studies in 11 developing countries, this study is investigating what institutional factors account for the success of effective public health systems. The aim is to distill clear models that can be adapted to the specific circumstances of countries seeking to improve public health outcomes.

The case studies, structured around a common analytic framework, assess system effectiveness using measures of intermediate and final outcomes. The studies involve World Bank staff working with public health specialists in each country to analyze and write up the lessons from experience in their public health system.

The project should lead to analytic contributions useful for World Bank operations in the health sector. It is already informing preparation of a new health sector loan in India as well as a World Bank report on the Millennium Development Goals and health.

The project will produce a volume collecting the country case studies as well as an overview paper summarizing their key lessons for managing public health programs.

Responsibility: Development Research Group, Public Services—Monica Das Gupta (mdasgupta@worldbank.org) and Peyvand Khaleghian. With Jaime Sepulveda, Ministry of Health, Mexico; Ana Maria Malik; Somsak Chunharas, Ministry of Health, Thailand; Paul Chen, International Medical University, Kuala Lumpur; Lalit Nath; Hong Wang, Yale University; John Fung-Chang Sung, National Taiwan University College of Public Health; Seung-Hum Yu, Yonsei University College of Medicine, Seoul; Ade Lucas; Olive Shisana, Human Sciences Research Council, South Africa; and Tom Nchinda.

Report

Das Gupta, Monica. 2003. "Social Science Research and Development Effectiveness in Public Health." Paper presented at a plenary session of the Global Forum for Health Research, Geneva, December 3.

Rural Health Care in China

This research project is investigating the impact of health shocks on household consumption in rural China and the effectiveness of different means—private, social, and public—in dealing with those shocks. The research will use econometric analysis based on survey data for a panel of thousands of rural Chinese households starting from the mid-1980s. Existing panel data on rural household behavior will be combined with data from a retrospective questionnaire that focuses on health status and risk coping strategies in rural Chinese households.

The results are expected to influence Chinese policymakers' view of rural health care issues and will provide input into World Bank advice on the provision of social services in China's rural sector.

Findings will be disseminated through working papers and journal articles and through presentations at conferences, including a rural issues conference to be organized by the Chinese Economists Society and the World Bank in Hangzhou in the summer of 2004.

Responsibility: Development Research Group, Macroeconomics and Growth—Lixin Colin Xu (lxu1@worldbank.org). With Yang Yao and Mengtao Gao, Beijing University, China Center for Economic Research; and Li Gan, University of Texas at Austin. Beijing University's China Center for Economic Research will conduct the survey and provide part of the funding for it as well as contribute staff time.

Education, Labor, and Employment

Assessing the Long-Term Impact of Early Childhood Nutrition

Individuals in both developing and industrial countries are subject to exogenous shocks. When such events generate variations in consumption—as when households are unable to fully insure against such shocks—they lead to losses of utility. From a policy point of view the significance of such losses depends in part on whether such shocks induce path dependence. Where temporary shocks have such long-lasting impacts, utility losses may be much higher.

This study looks at the long-term consequences of nutrition shocks. It examines the impact of preschool malnutrition on subsequent human capital formation in rural Zimbabwe using a maternal fixed effects, instrumental variables estimator with a panel data set collected over 18 years.

The study finds that exposure to the 1982–84 drought in Zimbabwe reduced height-for-age Z-scores by 0.63. This transitory shock resulted in a loss of stature of 2.3 centimeters and a loss of 0.4 grade of schooling by the time a child reached young adulthood. When the results are extrapolated to estimate the impact of malnutrition on adult earnings, they translate into a 12 percent reduction in lifetime earnings from child malnutrition from any cause.

The findings have been used in discussions of the need for investment in nutrition and in safety nets. And they have been presented in World Bank seminars, at the International Food Policy Research Institute, and in seminars at universities in Canada, England, and the United States. Plans to present the main findings in Zimbabwe were canceled because of the unrest in that country.

Responsibility: Development Research Group, Public Services—Harold Alderman (halderman@worldbank.org). With John Hoddinott, International Food Policy Research Institute; and Bill Kinsey, University of Zimbabwe and Free University, Amsterdam.

Report

Alderman, Harold, John Hoddinott, and Bill Kinsey. "Long-Term Consequences of Early Childhood Malnutrition." World Bank, Development Research Group, Washington, D.C.

Child Labor and Access to Credit: Evidence from Rural Tanzania and Vietnam

This project examines whether access to credit can be an effective policy tool in fighting child labor and poverty. Improving households' ability to insure against income shocks through greater access to credit is often proposed as a policy instrument for influencing child labor. Yet none of the empirical studies reviewed explicitly addresses the effect of risk insurance or access to credit on child labor, probably because of insufficient data.

Using detailed household panel data from Tanzania and Vietnam, this research investigates the effect of access to credit (defined as collateralizable assets at the household level and formal and informal lending sources at the village level) on household decisions on the allocation of time between child labor and schooling. It also analyzes whether families resort to child labor as a mechanism to cope with income shocks (both household and community shocks) and whether these shocks are associated with a reduction in school attendance. In this context it studies whether the presence of formal and informal financial institutions and the relative availability of credit allow households to offset the effects of shocks.

Results show that transitory income shocks (as measured by accidental crop loss) lead to significantly increased child labor. Moreover, they show that households with collateralizable assets are better able to offset the effects of these shocks.

The results have been widely disseminated through presentations, including at the World Bank, the Northeast Universities Development Consortium Conference at Williams College (October 2002), and George Washington University (2003).

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org), and Investment Climate—Roberta Gatti. With Rajeev H. Dehejia, Columbia University and National Bureau of Economic Research.

Reports

Beegle, Kathleen, Rajeev H. Dehejia, and Roberta Gatti. 2003. *Child Labor, Crop Shocks, and Credit Constraints.* NBER Working Paper 10088. Cambridge, Mass.: National Bureau of Economic Research.

———. 2003. "Child Labor, Income Shocks, and Access to Credit." Policy Research Working Paper 3075. World Bank, Development Research Group, Washington, D.C.

Human Capital and Growth in Transition Economies

Some economists have noted that transition economies have abundant human capital and that this should help in achieving high rates of growth. Others argue that skills acquired under socialism are unsuitable for a market-based system and that the abundance of human capital may have been overstated. Taking these arguments, this study considers another dimension of the issue—the role of the institutional environment in shaping returns to human capital—and investigates the links between human capital, institutional development, and economic growth.

The study first created an analytic framework for clarifying these links. It then estimated rates of return to education in a large number of transition economies using household survey data from World Bank poverty assessments and other sources. Preliminary results suggest positive and reasonably high rates of return to education since the beginning of transition, especially in Eastern European economies. Work is under way to analyze the growth effects of such returns and the role of the institutional environment. The aim is to provide a more solid basis for the World Bank's efforts in poverty reduction.

Findings will be presented at the World Bank, in academic settings, and in a number of countries. Papers will be summarized in Russian to make findings accessible to interested readers in Central Asia, Eastern Europe, and the Russian Federation.

Responsibility: Europe and Central Asia Region, Poverty Reduction and Economic Management Sector Unit—Cevdet Denizer (cdenizer@worldbank.org). With Daron Acemoglu, Massachusetts Institute of Technology; and Mehmet Eris, University of Wisconsin.

Report

Acemoglu, Daron, Cevdet Denizer, and Mehmet Eris. Forthcoming. *Human Capital, Institutions, and Growth in Transition Economies.* NBER Working Paper. Cambridge, Mass.: National Bureau of Economic Research.

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

This study investigated the effect of health gains for children on their education, focusing on the case of medical treatment for intestinal helminth (worm) infections among primary school children in rural western Kenya. The study used a randomized evaluation methodology in which 75 primary schools in the sample were gradually phased into the medical treatment program over three years. This methodology addresses many of the concerns about omitted variable bias that plague earlier research. The study also collected data on household, health, nutrition, and education outcomes among the 30,000 children in the baseline sample.

Analysis of the effects of free deworming treatment in 1998–99 shows that treatment substantially improved children's health and school attendance. Treatment reduced serious worm infections in children by half. Pupils receiving treatment reported being sick significantly less often, had lower rates of severe anemia, and showed substantial height gains (averaging roughly 0.5 centimeter).

School absenteeism declined by a quarter (7 percentage points) in treatment schools. Among those receiving treatment, younger children (standards 1–4) attended school 15 more days a year on average, and older children 10 more days.

The program also had significant "spillover" effects—epidemiological spillovers due to reduced transmission

of worm larvae that benefited the entire community and those living up to 6 kilometers away from the treatment schools. Spillover effects allowed pupils in neighboring schools to attend school three to four more days a year on average.

Including the spillover benefits of treatment, the cost of increasing school participation by one year is only $3.50 per child. Keeping a child in school one additional day costs only $0.02. That makes deworming much less expensive than any other method of increasing primary school participation known to the researchers.

The study involved extensive collaboration with officials of the Kenyan Ministry of Health, with eight parasitologists in the Division of Vector-Borne Diseases receiving training in parasitological techniques.

Findings have been presented in seminars in Busia, Kenya; at the World Bank's Nairobi office; and in meetings with the Kenyan minister of education.

Responsibility: Development Research Group, Public Services—Harold Alderman (halderman@worldbank.org) and Sylvie Moulin; and Human Development Network, Education Team—Donald Bundy. With Michael Kremer, Harvard University; Edward Miguel, University of California at Berkeley; Simon Brooker, Imperial College, London; Alfred Luoba, Kenyan Ministry of Health, Division of Vector-Borne Diseases; and Internationaal Christelijk Steunfonds, Nairobi.

Reports

Brooker, Simon, Edward Miguel, Michael Kremer, and others. 2000. "Epidemiology of Single and Multiple Species of Helminth Infections among School Children in Busia District, Kenya." *East African Medical Journal* 77(3): 157–61.

———. 2001. "The Potential of Rapid Screening Methods for Intestinal Schistosomiasis in Western Kenya." *Annals of Tropical Medicine and Parasitology* 95(4): 343–51.

Hall, Andrew, Edward Miguel, and others. 2001. "Anemia in Schoolchildren in Eight Countries in Africa and Asia." *Public Health Nutrition* 4: 749–56.

Miguel, Edward, and Michael Kremer. 2004. "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities." *Econometrica* 72(1): 159–217.

Incidence Analysis of Public Support to the Private Education Sector in Côte d'Ivoire

Côte d'Ivoire encourages private participation in education, providing subsidies to recognized providers and sponsoring "public" students to attend private secondary and tertiary institutions. In 1998 the general allocation to private education amounted to about $28 million, 6 percent of the recurrent education budget. Given Côte d'Ivoire's large subsidy program for private school attendance—what could be called a voucher scheme—this study analyzed the incidence of public spending on students in private schools. It also compared the equity of public finance of private schools with that of public finance of public schools.

To estimate the distribution of public spending across the income distribution, the study used data from the 1998 Enquête Niveau de Vie des Ménages, a nationally representative household survey. The working file used in the analysis contains around 9,000 observations relating to family members of school age (6–30 years old). Of the approximately 5,100 attending school in 1997/98, 965 (19 percent) received some form of education subsidy, with 836 (86.5 percent) of these students going to public schools and 129 (13.5 percent) to private schools.

The study also analyzed the demand for private schooling using regression analysis. And in collaboration with local researchers it undertook a schools survey to learn more about the revenues and expenditures of private schools in Côte d'Ivoire and about the students they serve.

The study found that for students attending public schools, the subsidy per student increases steadily in higher expenditure quintiles, with students from families in the highest quintile receiving four times as much as those in the lowest quintile. This finding is more pronounced for tertiary students. For those attending private schools, the subsidy per student also increases in higher quintiles, but the increase is less pronounced, with students in the highest quintile receiving just over twice as much as those in the lowest quintile. The overall allocation of subsidies seems to be more equitable for children attending private schools than for those attending public schools.

There is a clear tendency for the share of family education spending covered by subsidies to decline in higher quintiles. In public schools subsidies cover almost all household education spending per child in the lowest quintile, compared with 42 percent for the highest quintile. In private schools the share is 81 percent for the lowest quintile, and only 22 percent for the highest. Thus the subsidy system seems to be progressive, and more so for private schools.

The research shows that subsidies to private schools can be beneficial for increasing access to basic education at a lower cost, important information for policymakers and international organizations promoting universal access to basic education.

Research findings have been disseminated through seminars and at the International Conference on Business Economics in Athens on June 26–29, 2003. Results will also be presented to World Bank regional staff.

Responsibility: Latin America and the Caribbean Region, Education Sector Unit—Harry Anthony Patrinos (hpatrinos@worldbank.org); Africa Technical Families, Human Development 2—Rachidi Radji; and Human Development Network, Education Team—Ayesha Vawda. With Emile Bih, Réseau Ouest et Centre Africain de Recherche en Education (ROCARE), Côte d'Ivoire; Chris Sakellariou, Nanyang Technological University, Singapore; and Po Yang, State University of New York at Albany.

Reports

Bih, Emile, Zakaria Berte, Raoul François-Xavier Kone, and Guy Michel Okon. 2003. "Analyse de l'incidence du soutien public au secteur privé de l'education."

Sakellariou, Chris, and Harry Anthony Patrinos. 2004. "Incidence Analysis of Public Support to the Private Education Sector in Côte d'Ivoire." Policy Research Working Paper 3231. World Bank, Latin America and the Caribbean Region, Education Sector Unit, Washington, D.C.

Yang, Po. 2002. "Incidence of Public Spending for Public and Private Education."

Inequality in Education

This research project expanded and updated a database on inequality in educational attainment, conducted a literature review of inequality in education, and analyzed the data.

Using an education Gini index to measure inequality in educational attainment, the analysis found staggering gaps among groups within countries as well as across countries. The analysis used two methods of calculating the education Gini index, generating a quinquennial data set for the population over 15 in 140 countries from 1960 to 2000. It produced five main findings:

- In most of the countries education inequality declined over the past four decades.
- Education inequality as measured by an education Gini index is negatively associated with average years of schooling, but the standard deviation of schooling shows a clear Kuznets curve when average schooling increases.
- Gender gaps are clearly related to inequality in education, and the association between gender gaps and education inequality becomes stronger over time.
- The education Kuznets curve does not exist when an education Gini index is used—but only when standard deviations are used.
- Per capita GDP (adjusted for purchasing power parity) has a negative association with the education Gini index and a positive association with average educational attainment.

The findings have been disseminated in World Bank Institute courses on poverty, trade, and western region development in China. They also served as inputs to the *Quality of Growth* (Vinod Thomas and others, Washington, D.C.: World Bank, 2000), published in 10 languages.

The data compiled in the project were cleaned, publicized, and made available in developing and transition economies. The database is available on the Web at http://www.worldbank.org/devforum/forum_qog3.html.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Yan Wang (ywang2@worldbank.org); and Latin America and the Caribbean Region, Brasilia Office—Vinod Thomas. With Xibo Fan.

Reports

Thomas, Vinod, Yan Wang, and Xibo Fan. 2001. "Measuring Education Inequality: Gini Coefficients of Education." Policy

Research Working Paper 2525. World Bank, World Bank Institute, Washington, D.C.

———. 2003. "Measuring Education Inequality: Gini Coefficients of Education for 140 Countries (1960–2000)." *Journal of Educational Planning and Administration* 17(1).

International Migration and Development

This research program on the development impact of international migration aims to identify policies, regulations, and institutional reforms that will lead to better outcomes for migrants, for developing countries, and for industrial countries. Migration is more likely to be beneficial for developing countries in the long run if industrial countries perceive it to be beneficial as well and are therefore willing to cooperate in designing and implementing sustainable reforms on their side. That is, the reforms most likely to succeed will probably be those that benefit both sets of countries. The research examines the effect of migration on industrial countries as well as on migrants because the effect on both sets of countries will also depend on the success of migrants.

Studies focus on six topics identified as both important from a development perspective and requiring additional research:

- Remittances.
- The brain drain.
- The temporary movement of persons (mode 4) under the General Agreement on Trade in Services.
- The link between trade, foreign direct investment, and migration.
- Labor market and social protection issues.
- Governance.

Analytic approaches include household surveys and literature surveys. Work on the brain drain draws on census data. And theoretical papers examine the link between trade and migration in the presence of social capital.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org); Poverty Reduction and Economic Management Network, Poverty Reduction Group—Richard Adams; Development Economics, Office of the Senior Vice President and Chief Economist—Coralie Gevers; and Development Prospects Group—Dilip Ratha.

Labor Markets and Vulnerability

This research examines the extent to which labor market outcomes have changed with trade liberalization in three East Asian countries—Indonesia, the Republic of Korea, and Thailand. Trade liberalization may have been associated with job creation and growth in mean earnings in some sectors, but it may also have exposed the economy to more and larger fluctuations of the world market. The research investigates whether trade liberalization transmits more shocks into more exposed sectors of the domestic economy, or whether there is more shock during periods of greater openness and thus greater vulnerability for certain groups of workers.

Lacking panel data, the study forms a synthetic panel of cohorts, defined by year of birth, using successive cross-sectional surveys to follow a series of cohorts of randomly selected individuals over time. For Indonesia and Thailand the study uses labor force surveys; for Korea, labor force surveys and establishment surveys. The study identifies trends in key labor market indicators by subgroup of workers and in different sectors to see how these indicators evolve over time in industries with varying exposure to the world market. It also examines the evolution of the mean and variance of earnings during "more closed" and "more liberalized" periods in the economy. The study then estimates the vulnerability of workers to poverty, defined as the likelihood of their receiving earnings below a survival threshold (defined as 60 percent of the national median wage) conditional on their situation in the previous period.

The analysis finds no significant change in year-to-year fluctuations in workers' earnings and employment after trade was further liberalized in the 1990s. Nor did workers' vulnerability differ significantly across manufacturing industries with different degrees of exposure to trade. While the analysis finds no obvious link between trade and vulnerability, it confirms that some workers—women and those with less schooling—are more vulnerable than others. This result reflects the dominant evidence in the literature that gender and skill have a strong discriminatory power in determining one's earnings.

The research has been presented at workshops in Seoul (November 2002); Ithaca, New York (March 2003); and Istanbul (July 2003).

Responsibility: Development Economics, Office of the Senior Vice President and Chief Economist—François Bourguignon; and East Asia and Pacific Region, Poverty Reduction and Economic Management Unit—Chorching Goh. With Vivi Alatas, University of Indonesia; and Dae-Il Kim, Seoul University.

Reports

Alatas, Vivi. 2002. "Labor Market Vulnerability in Indonesia: A Synthetic Cohort Panel Simulation Exercise." World Bank, East Asia and Pacific Region, Poverty Reduction and Economic Management Unit, Washington, D.C.

Bourguignon, François, and Chorching Goh. 2004. "Trade and Labor Market Vulnerability in Indonesia, Korea, and Thailand." In Kathie Krumm and Homi Kharas, eds., *East Asia Integrates: A Trade Policy Agenda for Shared Growth.* Washington, D.C.: World Bank.

Migration, Poverty, and Income Strategies of Rural Households in Albania

Migration may be the most important social, political, and economic phenomenon in postcommunist Albania. According to some estimates, around a fifth of the population has left the country since 1990, and there have been large-scale population movements from rural to urban areas.

Using data from a recent population census and the 2002 Living Standards Measurement Study (LSMS) survey in Albania, this research has documented the demographic transition under way in the country, including the incidence and patterns of migration. It has also carried out a micro-level analysis of households' decision to migrate, estimating two multinomial logit models to investigate what determines the decision to migrate, temporarily or permanently, to different destinations.

The study finds that almost half the households in Albania were exposed to some form of migration in the 1990s. For rural Albanians migration is one of the preferred coping strategies to escape poverty. Tirana is the main destination for internal migration, a process that appears to have accelerated in the second half of the 1990s. Greece is by far the most important destination for temporary migrants, chosen by 8 of 10. Greece is also the main destination for permanent migrants (accounting for 49 percent), followed by Italy (35 percent). Almost half the family members who have left households since 1990 are now living abroad.

Remittances play an important part in the income strategy of Albanian households, accounting for 13 percent of total household income. According to the 2002 LSMS survey, 28 percent of households received some form of private transfer from individuals or institutions in the 12 months before the survey.

This study has provided the analytic basis for additional research on the role of migration networks in individuals' decision to migrate and on the role of migration in the income strategies of the rural poor. It also has provided the basis for a chapter in the World Bank's 2002 poverty assessment of Albania, the first such report to dedicate a full chapter to migration and its links to poverty and rural development. Findings have been discussed with local stakeholders and policymakers and will be further disseminated through workshops.

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org) and Calogero Carletto. With Benjamin Davis and Alberto Zezza, Food and Agriculture Organization; and Marco Stampini, University of Pisa.

Report

Carletto, Calogero, Benjamin Davis, Marco Stampini, and Alberto Zezza. "Internal Mobility and International Migration in Albania." World Bank, Development Research Group, Washington, D.C.

Poetry, Literacy, and Empowerment for Rural Yemeni Women

The illiteracy rate for women in the Republic of Yemen is very high—77 percent in 1996, according to UNICEF. And Ministry of Education personnel find that rural women do not view literacy efforts aimed at them as relevant to their lives. Moreover, there has been a decline in poetry composition by rural Yemeni women and with it a loss of social voice. In the Republic of Yemen poetry is an important tool for managing conflict and expressing personal wishes and opinions. But for rural women

modernity has led to a decline in occasions for poetry composition.

This study explored potential links between traditional arts and effective learning strategies by using learners' oral poetic traditions to teach literacy. It addressed two broad questions: Can a focus on local oral traditions encourage women to attend literacy classes? And does women's attainment of literacy skills encourage the perpetuation of local poetic traditions and culturally acceptable modes of self-expression?

In a community-driven pilot literacy project using the language experience approach to community literacy as well as community counseling learning, women were taught reading and writing skills through the transcription of poems that they and their neighbors composed. These poems were printed and disseminated within and outside the community.

A formal evaluation of the pilot in May 2003 found that results surpassed targets and expectations. Of the 95 learners completing the first year, 77 percent had met or surpassed the goals of reading and writing a short paragraph and reading short verses from the Quran and other works in print.

Moreover, the pilot appears to have overcome disdain for local lore among younger learners and renewed interest in traditional folklore among learners of all ages. Supervisors and teachers agreed that the method helped learners develop new skills of self-expression and boosted self-confidence. And community attitudes toward female education have changed so that it is no longer considered shameful for a young girl or an unmarried woman to attend classes in the village.

The pilot sparked much interest among local stakeholders and potential international donors. The Yemeni Social Fund for Development, which explores alternative methods of teaching literacy to women, took over funding and administration of the pilot in January 2003 and added four new classes. An informational meeting in June 2003 was attended by representatives of a number of organizations.

Responsibility: Middle East and North Africa Region, Social and Economic Development Group—Carmen Niethammer (cniethammer@worldbank.org). With Najwa Adra.

Report

Adra, Najwa. Forthcoming. "Literacy through Poetry: A Pilot Project for Women in the Republic of Yemen." *Women's Studies Quarterly.*

Semiparametric Methods for Evaluation of Social Policies and Programs

Econometric work to evaluate the impact of social programs and policies typically assumes that the impact is the same across the distribution of the indicator under review (such as income). This assumption stems from the fact that in a traditional regression setting, parametric methods yield one parameter estimate for the impact whether the program or policy is captured through a continuous or categorical variable. Even when interaction effects are used, the impact is generally assumed to be the same for all those with the given interaction. But in reality some households may benefit (or suffer) more than others from a program or policy.

One way to avoid imposing such assumptions is to rely on semiparametric methods. This research explored the application of semiparametric methods to estimate the impact of the minimum wage on the distribution of income. The main findings of this work are in line with the literature: increases in the minimum wage tend to reduce wage inequality when employment effects are not taken into account, but the impact may be reversed when employment effects are included and a sufficiently large weight is placed at the bottom of the income distribution (where those losing their jobs are located).

Since a key objective was to apply new analytic methods, the study also used decompositions of the Gini index into gap-narrowing and reranking effects to analyze the wage and employment effects of changes in the minimum wage and developed a risk-adjusted welfare framework to analyze the impact of such policies, distinguishing between ex ante and ex post evaluation methods. Other work analyzed different aspects of wage inequality, including gender, and the effect of changes in wages on poverty.

Some of the methods developed are being used in subsequent studies. The work on risk-adjusted welfare, for example, is being used to study cash crops in Africa.

In addition, work on Brazil and Colombia informed a World Bank Latin America and the Caribbean Region report on inequality (David de Ferranti, Guillermo E. Perry, Francisco Ferreira, and Michael Walton, *Inequality in Latin America: Breaking with History?* Washington, D.C.: World Bank, 2004). The research also provided input into poverty assessments of Colombia and Paraguay.

The methodology for risk-adjusted welfare analysis was presented in training sessions for World Bank staff and at a conference on risk and vulnerability organized by the World Bank and the International Food Policy Research Institute. Research findings were also presented at a Georgetown University seminar and at a Midwestern Economic Association conference in St. Louis.

Responsibility: Latin America and the Caribbean Region, Poverty Sector Unit—Quentin Wodon (qwodon@worldbank.org) and Diego Angel-Urdinola. With Paul Makdissi, Sherbrooke University, Canada.

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Environment

Capital Markets and Environmental Performance: Evidence from the Republic of Korea

Designing effective incentives for pollution control requires understanding what determines the environmental performance of industrial enterprises. The World Bank's Development Research Group recently pioneered studies of the role and impact of local communities and capital markets in exerting pressure on enterprises to improve their environmental performance. Results show that capital markets do react to news about the environmental performance of an enterprise.

While this finding is of interest, of much greater interest is whether the reactions of capital markets (that is, drops in market value) induce enterprises to improve their environmental performance. No study has looked at this question in developing countries. This research is aimed at filling that gap, using data from the Republic of Korea.

Since 1989, in what may be the longest-running environmental public disclosure program, Korean environmental authorities have published a monthly list of enterprises violating the country's environmental rules and regulations. In 1993–2001 these monthly lists recorded more than 7,000 violation events, involving more than 3,400 different companies. The study undertook a comprehensive descriptive analysis of this data set. Results suggest that the news media have given important (though perhaps declining) coverage to the violation lists, focusing on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

The research also looked at the reaction of investors to the monthly violation lists. Using event study methodology, it found that enterprises appearing on these lists experienced a significant decline in their market valuation. Of 96 events, 61 (63.5 percent) had an impact on securities returns. And 46 of 61 firms (75.4 percent) responded unambiguously to environmental news. These findings indicate the potential role of capital markets in inducing enterprises to invest in their environmental performance.

Responsibility: Development Research Group, Infrastructure and Environment—Susmita Dasgupta (sdasgupta@worldbank.org), Benôit Laplante, and Craig Meisner. With Jong Ho Hong, Hanyang University, Seoul; and Nlandu Mamingi, University of West Indies, Barbados.

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Climate Change and Rural Poverty

The world takes notice of extreme climate events such as floods, hurricanes, and prolonged droughts, because they can have dramatic effects on those in their path. When the victims also happen to be poor, the effects can be extreme—hunger, disease, and even death. But because of inadequate information, monitoring the impact of natural disasters on poor rural communities has been difficult in many parts of the world.

This study will investigate the links between climate and rural poverty. First, it will explore to what extent climate can explain the observed distribution of agricultural productivity and rural income. Using economic agricultural data and climate satellite data, the study will quantify the effect of climate on agriculture in several countries of Latin America (Argentina, Brazil, Chile, Colombia, Ecuador, Uruguay, and República Bolivariana de Venezuela). It will then use this information to link climate and rural income. The study will also examine techniques used by farmers to adapt to local climate conditions.

Second, the study will examine how climate in Latin America affects natural resource management and rural

projects supported by the World Bank. It will identify which projects are expected to be especially sensitive to climate conditions and what policies or modifications might reduce this sensitivity.

Third, the study will forecast effects from global warming. Using climate forecasts from climate models, the study will calculate a detailed forecast of what will happen to agriculture in the region. Changes in rural income will also be forecast. This analysis will carefully integrate adaptation into these empirically based estimates. And it will identify policies to cope with both short- and long-term changes in climate.

Responsibility: Agriculture and Rural Development Department—Ariel Dinar (adinar@worldbank.org). With Antonio Avila, Brazilian Agricultural Research Corporation (Embrapa); Alan Basist, Commodity Hedgers; Robert Evenson, Robert Mendelsohn, and Christopher Timmins, Yale University; Cooperative Program for the Agricultural-Technological Development of the Southern Cone (Procisur), Uruguay; and Cooperative Program for Agricultural-Technological Innovation of the Andean Group (Prociandino), República Bolivariana de Venezuela.

Corruption, Pollution, and Foreign Direct Investment

Foreign investors are often suspected of relocating their pollution-intensive production to developing and transition economies, which may have good environmental protection laws but lack good enforcement. Lax enforcement tends to be correlated with bureaucratic corruption. So pollution-intensive multinational firms may be particularly inclined to locate production facilities in corrupt host countries if it is cheaper to "purchase" the ability to pollute through bribery than to acquire the technology to reduce emissions.

This study tested the hypothesis that host country corruption attracts disproportionately more foreign investment that is relatively pollution intensive. Empirical analysis examined the relationship between the pollution intensity of inward foreign direct investment and the performance of the host country on environmental standards and corruption (or lack of the rule of law). The broad conclusion is that there is very little empirical evidence in support of the hypothesis.

The analysis drew on data from a 1995 European Bank for Reconstruction and Development survey of investment projects undertaken by a sample of multinational corporations from around the world in transition economies of Eastern Europe and the former Soviet Union in the first half of the 1990s; firm-level data from the Amadeus database on investment flows within Western Europe and between European Union member countries and transition economies in the late 1990s; U.S. Environmental Protection Agency data on average emissions per unit of output; U.S. Census Bureau data on average abatement costs per unit of output; and information from various sources on corruption and lack of the rule of law across host countries.

The study has added to our knowledge of the potential benefits and drawbacks of foreign direct investment in developing countries and to our understanding of the channels through which corruption may contribute to poverty as broadly defined.

Findings have been presented at the World Bank International Trade Seminar Series (June 2001), Empirical Investigations in International Trade Conference at Purdue University (November 2001), International Atlantic Economic Society Conference in Paris (March 2002), Yale University School of Management Seminar Series (April 2002), and meetings of the American Economic Association in San Diego (January 2004).

Responsibility: Development Research Group, Trade—Beata Smarzynska (bsmarzynska@worldbank.org).

Reports

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Economic Instruments for Habitat Conservation

The Central Atlantic Forest Corridor of Brazil exemplifies the issues that arise when economic pressures threaten important biodiversity resources. The Atlantic Forest is ranked by many conservation biologists among the habitats with highest priority for conservation, and the section in the south of the state of Bahia among its most important parts. But this section is now reduced to relatively small fragments. Moreover, less than a fifth is protected, and the rest is threatened by conversion, often to uses with low economic value. Without interventions to maintain, expand, and link habitats, the long-term viability of this ecosystem is in doubt.

Prevailing approaches to constructing biodiversity corridors rely on land use zoning, which tends to be ineffective when it imposes large uncompensated costs on landholders. An alternative is to offer incentives for environmentally sustainable land uses, on the model of the U.S. Conservation Reserve Program or the Costa Rican Environmental Services Payment Program. But whether such an approach is affordable or is effective for biodiversity corridors has not been known.

This project was designed to find cost-effective, economically attractive, and socially acceptable policies for conservation of the forest section in South Bahia and of similar biodiversity hotspots. The project constructed and applied a bioeconomic model representing the economic and environmental impact of specific land use configurations and carried out a simulation of incentive-based land use policies. It defined an environmental objective function, gathered and integrated geographic data on land characteristics, defined biologically distinct subzones of the study area, estimated a hedonic model of land value and imputed it across the landscape, and constructed a software model, TAMARIN, that draws on these components. TAMARIN is a spatially explicit (geographic information system–based) model that represents land cover at a 30-meter resolution and incorporates planning units of 1 square kilometer.

The simulations envision an auction-based program similar to the U.S. Conservation Reserve Program, where landholders voluntarily bid to put land under conservation easements and the bids are ranked by a simple cost-effectiveness formula. For each policy scenario TAMARIN reports, in tabular and mapped form, economic outcomes (such as expenditure on incentives and the opportunity cost of land selected for conservation) and environmental outcomes (including land cover, habitat connectivity, edge effects, and representation of different subecosystems). The central concern is whether uncoordinated individual responses to incentives can yield connected habitats large enough to sustain viable populations of key fauna.

The research has found that land in South Bahia has a relatively low market value, with forested land worth about 70 percent less than otherwise equivalent land. This suggests that tradeoffs between conservation and agriculture may be modest and that incentive-based policies have the potential to achieve conservation goals at relatively low cost. These findings have implications for several types of economic instruments now under discussion in Brazil and elsewhere, including payments for carbon sequestration services from regeneration.

Project findings, data, and tools have been presented to the management of the Ecological Corridors Project (part of the Pilot Program to Conserve the Brazilian Rain Forest, a joint effort of the Brazilian government, civil society, and the international community), which is designing biodiversity corridor policy for the study area. Conservation International has adapted and refined the TAMARIN framework for application in other biodiversity hotspots, including Madagascar. And TAMARIN has shown potential for use as a tool to facilitate negotiation between stakeholder groups. Information on TAMARIN, which is freely distributed, is available on the Web at http://www.tamarinmodel.org.

Findings have been disseminated through two workshops in Salvador, Bahia, one in June 2001 for government officials and environmental organizations and the other in December 2003 for the management committee of the Bahia Ecological Corridor. The work also has been cited in a World Bank Institute course on territorial development in Brazil.

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth M. Chomitz (kchomitz@worldbank.org). With Institute for Computational Earth System Science, University of California

at Santa Barbara; W. Wayt Thomas, New York Botanical Gardens; Andre Mauricio de Carvalho, Comissão Executiva do Plano da Lavoura Cacaueira (CEPLAC), Brazil; Industrial Economics, United States; and Timothy Thomas. The Rain Forest Trust Administration Unit contributed funding for the research, Instituto Brasileiro de Geografia a Estatística contributed data, and Conservation International (Brazil and the United States), the Center for Advanced Biodiversity Science, the Federal University of Minas Gerais, and Instituto de Estudios Sócioambientais do Sul da Bahia contributed data and staff time.

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Environmental Indicators

This project responds to the need for better environmental measures to guide the World Bank in setting priorities for its environmental lending and analytic and advisory activities. The study has constructed comparable indicators for the World Bank's priorities and its actual environmental lending and analytic and advisory activities in all member countries. Using these indicators, it has completed comparisons of priorities and actual activities relating to six themes: pollution, biodiversity, fragile lands, water resources, global emissions, and environmental institutions.

Results of the research, presented to World Bank staff, have contributed to priority setting for regions by the World Bank's Environment Department and to the improvement of environmental management by the World Bank.

The project has created a database on environmental indicators and World Bank lending and analytic and advisory activities in a composite format (Excel) that allows consideration of alternative scenarios for such activities. The complete set of interactive indicators and the supporting database are available on the Web at http://www.worldbank.org/nipr/Atrium/mapping.html.

Responsibility: Development Research Group, Infrastructure and Environment—David Wheeler (dwheeler1@worldbank.org), Susmita Dasgupta, Uwe Deichmann, and Maureen Cropper. With Kiran Pandey, Piet Buys, and Craig Meisner.

Report

Buys, Piet, Susmita Dasgupta, Craig Meisner, Kiran Pandy, David Wheeler, Katharine Bolt, Kirk Hamilton, and Limin Wang. 2003. "Measuring Up: New Directions for Environmental Programs at the World Bank." Policy Research Working Paper 3097. World Bank, Development Research Group, Washington, D.C.

Fiscal Incentives for Conservation in Brazil

Recently there has been growing interest in promoting habitat conservation through the use of direct or indirect incentives for land protection. While theoretical analysis suggests that such programs could provide a flexible, cost-effective approach to conservation, few examples exist in the developing world. Consequently, much skepticism remains about their practical feasibility and effectiveness. A key question is how to reduce the transaction costs associated with providing incentives to individual landholders.

This research project examines one of the largest and longest-running conservation incentive programs in the developing world: the ICMS Ecológico (Ecological Value Added Tax) programs of Brazil. Over the past decade

several Brazilian states have modified their revenue sharing arrangements so as to provide incentives for *municipios* (counties) to create and maintain protected areas. The research addresses fundamental questions about the political economy of these programs:

- What is the distributional impact of these programs? Do they favor poor areas? What are the preconditions for their adoption?
- Do these programs stimulate the creation of public and private reserves? If so, how and why do they work? How are the incentives transmitted to landholders?

The project is examining the ICMS Ecológico experience in two states, Paraná and Minas Gerais, using quantitative and qualitative methods. Qualitative analyses, now complete, examined institutional issues, looking inside the black boxes of municipal and state administrations to understand how and why the system functions as it does. These analyses were based on structured interviews at the municipal and state levels.

Quantitative analyses will use municipal-level data on fiscal distributions, protected areas, poverty rates, and other socioeconomic and geophysical characteristics. Distributional studies will correlate net gains or losses from ICMS Ecológico with poverty rates, proxies for demand for environmental amenities, and sociopolitical characteristics of the *municipio*. Econometric analysis will test whether the ICMS Ecológico programs had an incentive effect, using program-induced variations in payments per hectare as the basis of a natural experiment.

Field studies show that municipal authorities do in fact use the municipal-level incentive to motivate conservation actions by individual landholders. This suggests that conservation incentive programs may be able to greatly reduce operational costs by working at the municipal rather than landholder level. But further work is needed to assess the effectiveness of these actions.

Findings will be of particular interest to Brazil, where more states are considering adopting these programs and where there is a national debate about fiscal reform that could affect the programs' continuation. More broadly, an assessment of how these programs work could inform the design of new, more ambitious programs involving incentive payments directly to landholders.

The research has been presented at the Conference on Developing Markets for Forest Environmental Services in Vancouver in October 2000, at the World Parks Conference in Durban in 2003, at the Mexican Forest Institute, and informally in Brazil.

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth M. Chomitz (kchomitz@worldbank.org). With Peter May, Fernando Veiga Neto, and Valdir Denardin, Federal Rural University of Rio de Janeiro; and Wilson Loureiro, Paraná Environmental Institute.

Report

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Foreign Direct Investment and Pollution Havens

This study aims to contribute to the debate on the pollution haven hypothesis—the contention that stringent environmental regulation in industrial countries drives firms from those countries to establish plants in developing countries with more lax regulation. While there has been little econometric work to test this hypothesis, empirical studies have suggested that there is no evidence to support it.

But analytic weaknesses in the earlier work suggest a need for more testing. Many of these studies probably suffer from omitted variable bias, neglecting the influence of agglomeration and relative abundance of skilled labor in explaining the incidence of foreign direct investment. Most have been only loosely motivated by the theoretical literature on location choice or pollution emissions and abatement. And many have been limited by the level of aggregation and the inability to measure environmental stringency across regions and pollution intensity across industries.

This study, designed to overcome such analytic weaknesses, econometrically tests the pollution haven

hypothesis by examining foreign direct investment inflows across provinces in China using a location choice model. Chinese data present an ideal test for the hypothesis: China has been the largest developing country recipient of foreign direct investment since 1990, the distribution of the investment across provinces has been highly uneven, and environmental regulations are implemented at the provincial level.

The econometric model is derived from a well-specified theoretical framework, incorporating a firm production and abatement decision model, agglomeration, and the relative abundance of skilled labor. The model is estimated with conditional logit, using data on joint ventures, effective environmental levies on water pollution as measures of environmental stringency, and estimates of Chinese emissions and abatement costs at the industry (three-digit ISIC) level as measures of pollution intensity.

Although the analysis is incomplete, preliminary results show that relatively high pollution levies deter investment from Hong Kong (China), Macao (China), and Taiwan (China). But they attract investment from OECD and other non-Chinese countries—the reverse of the pollution haven hypothesis.

The preliminary results have been presented at workshops in the United States.

Responsibility: Development Research Group, Infrastructure and Environment—Hua Wang (hwang1@worldbank.org).

The Functional Value of Biodiversity and Its Correlates

Efforts to incorporate biodiversity into development projects and policies have been frustrated by a lack of comprehensive, science-based assessments of the functional contribution of biodiversity conservation to rural livelihoods and economic development. To help remedy this situation, this project aims to provide systematic assessments, for significant areas of the humid tropics, of the functional values of forest-derived biodiversity and its correlates in promoting local livelihoods and resilience to economic and environmental shocks. It will also assess the nature, magnitude, and geographic scope of these functional values and their relationship to poverty.

The focus is mainly on the hydrological values of maintaining habitats important to biodiversity. The study will investigate the science: To what extent, and under what biogeophysical conditions, does maintaining biodiversity-related habitats reduce erosion, sedimentation, and flooding risk and increase dry-season flows?

The project has several complementary parts. In an initial global overview the project will integrate global data sets on soils, climate, topography, biodiversity, forest cover, and population (mostly at a 1- to 5-kilometer resolution) to identify areas where the links between biodiversity, hydrology, and poverty are likely to be important. It will also sponsor literature syntheses by experts in hydrology, biodiversity, and rural livelihoods. National and mesoscale studies will take a much finer look at the issues, using newly available data on the geographic distribution of poverty and on land cover and biodiversity correlates. Possible areas for analysis include Central America, Ecuador, and the Philippines. A final global synthesis will incorporate the findings of the case and field studies as well as improved geographic data on a world scale.

Based on its findings, the study will attempt to identify workable strategies to address any externality problems related to land cover and to promote biodiversity with improved livelihoods. The results should help the World Bank respond to increasing requests from clients for advice and assistance in establishing payment systems for environmental services.

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth M. Chomitz (kchomitz@worldbank.org). With Thomas Tomich, Meine van Noordwijk, and David Thomas, International Center for Research in Agroforestry; Kate Sebastian and Stanley Wood, International Food Policy Research Institute; Ellen Douglas and Charles Vorosmarty, University of New Hampshire; and Jeffrey Richey, University of Washington.

Global Overlay—Brazil

This study analyzed the economic and environmental aspects of land use and forest conservation in two parts of Brazil, the Amazon Basin and the state of Minas

Gerais. The goal was to examine potential land use policies and to assess the complementarities or tradeoffs they present for three goals—protecting biodiversity, mitigating climate change, and providing local economic benefits.

The study had three components, all centered on how policies will change spatial patterns of incentives for forest preservation, management, and conversion and, in turn, how alternative spatial patterns of exploitation and conversion affect economic output, carbon sequestration or emissions, and habitats of particular importance for biodiversity. To the extent possible, a geographic information system (GIS) framework was used to integrate economic, carbon, and biodiversity information.

The first component assessed the potential effects of changes in the implementation of the legal forest reserve requirement. This long-standing (and imperfectly enforced) requirement obliges Brazilian landholders to maintain a fixed proportion of each property under natural vegetation. The project constructed a spatially explicit simulation model for Minas Gerais that assessed the impact on forests and agriculture of permitting trade in these obligations under different scenarios. The results suggest that allowing trade could drastically reduce landholders' cost of complying with the regulation, making it easier to enforce and improving environmental outcomes. Allowing wider ambits of trade (biomes or river basins rather than microwatersheds) would reduce costs, provide greater protection to areas of higher importance for biodiversity, and probably increase carbon storage.

The second component looked at historical patterns of plantation and woodland exploitation related to Minas Gerais's charcoal-fueled pig iron industry, interpreting them through simple models of plantation and pig iron operation. The goal was to elucidate the effect of plantation subsidies and a ban on woodland exploitation for charcoal on greenhouse gas emissions and biodiversity loss related to pig iron production. Though data are weak, it appears that this policy combination succeeded in shifting Minas Gerais's pig iron industry toward zero net carbon emissions. Payments for carbon sequestration services could help smaller pig iron producers maintain production on an environmentally sound basis.

The third component, focusing on the Amazon, analyzed spatial econometric patterns of deforestation using fine-scale data on agricultural land use. It also constructed a map of the farm gate price of cattle (a hypothesized determinant of incentives for deforestation) based on a survey of Amazonian slaughterhouses. Under traditional land uses of pasture and some annual crops, agricultural prospects for the Amazon Basin decline with increasing rainfall. This suggests that restricting deforestation in moister areas of the Western Amazon would entail minor opportunity costs while providing significant benefits in biodiversity and carbon storage.

The project has contributed to the ongoing debate in Brazil on the reformulation of the Forest Code and to World Bank economic and sector work and dialogue with Brazil relating to development and environment in the Amazon. It has also contributed to project dialogue and design for the Prototype Carbon Fund. And it has provided a basis for discussions with the federal government, state governments, and environmental organizations in Brazil on the implementation of the forest reserve requirement. Project results were featured in the World Bank's *World Development Report 2003: Sustainable Development in a Dynamic World* (New York: Oxford University Press, 2002).

The research has been presented at a workshop on Market-Based Instruments for Environmental Protection at Harvard University's John F. Kennedy School of Government (July 1999); a workshop on Land Use for Conservation and Development: Getting the Incentives Right in Palmas, Tocantins, Brazil, for state-level officials engaged in land use planning and regulation in the Amazon (October 1999); a meeting of the International Regional Science Association in Montreal (December 1999); a series of environmental debates in the World Bank's Brasilia office (May 2000); a meeting of the International Association of Agricultural Economists in Berlin (July 2000); a congress on Brazilian rural economics and sociology in Juiz de Fora, Minas Gerais (July 2003); a BIOECON workshop in Venice for academics and researchers (August 2003); a World Bank Institute distance learning seminar on territorial development at several locations in Northeast Brazil (October 2003); and the International Forum on Territorial Development in

Fortaleza, Brazil, for government officials, nongovernmental organizations, and academics (November 2003).

Responsibility: Development Research Group, Infrastructure and Environment—Kenneth M. Chomitz (kchomitz@worldbank.org). With Timothy S. Thomas; Eugênio Arima, Amazon Institute of People and Environment (IMAZON), Brazil; Peter May, Federal Rural University of Rio de Janeiro; Aline Tristão Bernardes; Antônio Salazar Brandão; and Biodiversitas, Brazil. The research was funded in part by the Denmark Trust Fund through the Global Overlay Program. Instituto Brasileiro de Geografia a Estatística provided data for the research.

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Landfill Gas Utilization in Sub-Saharan Africa

In African cities, where populations are growing rapidly, municipal waste will increase proportionately, providing a potentially important energy source. Using urban waste for energy production mitigates the environmental impact of urban waste disposal while providing relatively clean energy in the form of methane for direct combustion (such as in heating and cooking) or electricity generation. But this potential energy source is not being tapped. Indeed, few African cities are aware of how much waste is being generated, collected, and disposed of.

To help evaluate the potential for landfill gas utilization in Sub-Saharan Africa, this project assessed the availability of data on urban waste in the region and reviewed the accuracy and reliability of the data. To identify cities offering good opportunities for landfill gas capture, the study then applied a specially tailored methodology integrating different sources of information.

The first two criteria adopted—a population of more than 1 million and annual rainfall exceeding 635 millimeters—do not mean that cities with less population or less rainfall would be ineligible for landfill gas capture projects. Cities with a small population but more organic content in municipal solid waste could generate as much landfill gas as a large city. And a city with a large population could generate substantial landfill gas with less rain (such as Dakar).

A review of the data showed that two good candidates for landfill gas capture projects are Conakry (with a potential of 5.4 megawatts) and Dakar (8.5 megawatts). A simple financial analysis suggests that such projects would have an internal rate of return of about 35 percent in Conakry and 26 percent in Dakar, and a payback period of less than seven years.

The methodology developed will be used for screening projects in Sub-Saharan Africa proposed for financing by the Prototype Carbon Fund or Community Development Carbon Fund.

Responsibility: Energy and Water Department, Energy Unit—Masaki Takahashi (mtakahashi@worldbank.org). With Fatimata Ouedraogo.

Report

Ouedraogo, Fatimata. 2003. "Landfill Gas Capture Opportunity." ESMAP Technical Series. World Bank, Washington, D.C.

Markets for Environmental Resources

The U.S. market for sulfur dioxide emission permits is seen as a model for managing air pollution—one with implications for implementing the Kyoto Protocol, which envisions using tradable assets such as these permits as a way to control greenhouse gas emissions. But some environmental advocates believe that the creation of such assets slows the adoption of new (and less-polluting) technologies. This study considers how inventories of sulfur dioxide permits affect technology choices, drawing lessons from the long-standing U.S. program for the Kyoto market mechanisms.

Econometric estimates based on panel data suggest considerable substitution possibilities between emissions, fuels, labor, and capital in electric power generation. In the short run, with fixed stocks of emission permits and capital, changes in prices of low-sulfur fuel have the largest effects on factor substitution. While prices of emission permits are significant, relative fuel prices in the short run are a more important determinant of factor substitution than are changes in permit prices. As stocks of capital and permits adjust in the long run, relative fuel prices continue to be the predominant force inducing factor substitution.

The results also clearly demonstrate that an uncertainty premium exists that justifies holding stocks of permits even in the presence of sizable user costs. Prices for permits induce factor substitution that improves the environment.

Although the findings suggest a short-run positive elasticity between emissions and permit stocks, this effect is small and insignificant. Thus fears that a large initial allocation of permits may lead to higher emissions may be unfounded.

Responsibility: Development Research Group, Rural Development—Donald Larson (dlarson@worldbank.org).

Report

Considine, Timothy, and Donald Larson. 2004. "The Environment as a Factor of Production." Policy Research Working Paper 3271. World Bank, Development Research Group, Washington, D.C.

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

Lake Sevan, the largest high-altitude reservoir of freshwater in the Transcaucasus and among the highest lakes in the world, has been sharply depleted over the past 50 years. As a result of withdrawals for irrigation and energy production, the lake's level has fallen by 18 meters, its surface area by 15 percent, and its volume of water by more than 40 percent. The Armenian government is working on an action plan to stop or partially reverse the damage. The costs of these actions are estimated to be high. The benefits have not yet been estimated.

This research aimed to estimate the benefits related to Lake Sevan's recreational and nonuse values by measuring Armenians' total willingness to pay to prevent further degradation of the lake. It also sought to improve the understanding of the diaspora's willingness to pay for environmental amenities in their country of origin. And it sought to provide new insights into the contingent valuation methodology by further developing the stochastic contingent valuation approach and comparing different formats for eliciting value (open-ended, close-ended, likelihood) and different survey modes (mail surveys, in-person interviews)—and thus to provide better tools for conducting contingent valuation studies in both industrial and developing countries.

The project conducted mail surveys in Armenia, France (Paris), and the United States, and in-person interviews in Armenia. Two different commodities were the objects of valuation: the prevention of a further lowering of Lake Sevan's level, and the raising of its level by 3 meters. Respondents received a thorough description of the predicted consequences of these actions—as well as of no action—for fisheries, biodiversity, the landscape, and energy and irrigation. Open-ended, close-ended, and likelihood questions were used,

and the answers compared. All respondents were asked questions relating to their current and future recreational uses of the lake as well as questions designed to better understand their responses.

The results show that households in Armenia are willing to pay about $1.40 a month on average, or 1.4 percent of their incomes, to prevent a further decline in water level. Armenians living in France and the United States are willing to donate about $160 per household to maintain the current water level. Contrary to research findings in the United States, this study finds higher willingness to pay with mail surveys than with personal interviews.

The research results have been presented at a number of international workshops, including the Second World Congress of Environmental and Resource Economists.

Responsibility: Development Research Group, Infrastructure and Environment—Hua Wang (hwang1@worldbank.org), Maureen Cropper, Benôit Laplante, Craig Meisner, Xun Wu, Wenhua Di, and Yanghong Jin.

Pesticide Use in Brazil

Most environmentalists agree that liberalization of agricultural trade is likely to bring about big growth in the use of chemical pesticides in developing countries—along with associated human health hazards and environmental degradation. But empirical evidence on this issue is inadequate, owing to a dearth of reliable data on pesticide use in developing countries.

This research analyzed the use of chemical pesticides in Brazil in the 1990s, a decade of trade liberalization. The research, probably the first systematic analysis of trends in pesticide use in Brazil in that period, documented the environmental costs and human health hazards associated with pesticide use, mapped regional differences, and identified areas and crops where the problem is most intense and where monitoring and intervention can yield the greatest social benefits. The methodology included geographic information system (GIS) overlays and cross-sectional heteroskedasticity-adjusted regressions.

Drawing on a wide range of data, the study found that the remarkable growth in Brazil's agricultural trade is a success story clouded by serious human health and environmental damage caused by chemical pesticides. Use of chemical pesticides more than doubled in the past decade, and examples of human pesticide poisonings and environmental damage abound.

The results suggest widespread pesticide use in the major agricultural regions in the central part of southern Brazil. The incidence of pesticide use is higher in municipalities with high incomes, high education levels, large farms, and a high prevalence of sharecropping. To the extent that cross-sectional results can be extrapolated to time series, the results indicate that the continuation of trends toward commercialized agriculture and consolidated landholdings and away from family farming will further encourage chemical pesticide use.

Still, the main message is a hopeful one. The results suggest that pesticide use in Brazil is heavily skewed toward a few cash crops for export: soybeans, sugarcane, cotton, fruits, and tobacco. Thus targeting interventions to a few crops should be a promising strategy for slowing the growth in pesticide use in Brazil.

The project transferred the models and databases it produced, including an algorithm for estimating pesticide use intensities, to Instituto Brasileiro de Geografia e Estatística through a series of staff training sessions.

Responsibility: Development Research Group, Infrastructure and Environment—Susmita Dasgupta (sdasgupta@worldbank.org) and Craig Meisner. With Nlandu Mamingi, University of West Indies, Barbados; Rosane de Andrade Memoria Moreno, Instituto Brasileiro de Geografia e Estatística; and Guilherme Soria Bastos Filho, Instituto Brasileiro de Economia. Instituto Brasileiro de Geografia e Estatística provided data from the 1995/96 Agricultural Census of Brazil.

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Dasgupta, Susmita, Nlandu Mamingi, and Craig Meisner. 2001. "Pesticide Use in Brazil in the Era of Agro-Industrialization and Globalization." *Environment and Development Economics* 6(4): 459–82.

Meisner, Craig, and Nlandu Mamingi. 1999. "Seeking Solutions for Agro-Chemical Pollution: Evidence from Brazil." Paper presented at American Agricultural Economics Association International and Industry Conference on Agroindustrialization.

Globalization, and International Development, Nashville, August 6–7.

Pollution from Chemical Use in Agriculture

Indiscriminate use and inappropriate handling of chemical pesticides in agriculture have led to serious human health and environmental problems in many developing countries. Despite the severity of these effects, however, information on these issues remains largely anecdotal.

Through empirical research in Bangladesh, this project aims to contribute to a more systematic assessment of the risks relating to pesticide use in developing countries. The research is undertaking a thorough analysis of the risks associated with chemical pesticides and their delivery system; the availability of information on risks, safe handling practices, and safer alternatives to chemical pesticides; the dynamics and determinants of farmers' choices; their perception of the risks associated with pesticide use; and gaps in knowledge about appropriate application and related externalities.

The analysis is based on primary data collected from pesticide traders and users in Bangladesh as well as secondary data on active ingredients in pesticides and on pesticide intoxications. The methodology includes geographic information system (GIS) overlays and cross-sectional heteroskedasticity-adjusted regressions.

The findings will have immediate applicability, particularly for the government of Bangladesh. The research will provide a comprehensive view of occupational exposure to pesticides; perceptions of risk among wholesalers, retailers, and users; their knowledge and use of safe handling practices; and the potential for safer alternatives. The results will also contribute to World Bank operations in rural and agricultural development in Bangladesh.

Responsibility: Development Research Group, Infrastructure and Environment—Susmita Dasgupta (sdasgupta@worldbank.org) and Craig Meisner; and Development Policy Group—Mainul Huq. With Nlandu Mamingi, University of West Indies, Barbados.

Public Disclosure of Industrial Pollution in China

China is experimenting with public disclosure of industrial pollution as a way to induce industries to reduce polluting emissions. This study, designed to inform China's State Environmental Protection Agency and the international community about the benefits and costs of the pilot disclosure program, is analyzing the effect of disclosure on emissions and the cost associated with the pilot program. The research is based on econometric analyses of data from surveys of firms, plant managers, and local government agencies.

The results will be widely distributed in China as well as in other countries, where it is expected that they will be used in deciding whether, and in what form, to adopt disclosure as a regulatory policy. In response to widespread interest, informational presentations were made to policymakers in China in November 2003.

Responsibility: Development Research Group, Infrastructure and Environment—David Wheeler (dwheeler1@worldbank.org) and Hua Wang. With Jinnan Wang and Dong Cao, Chinese Research Academy of Environmental Sciences, Beijing; and Genfa Lu and Yuan Wang, Nanjing University, School of the Environment.

Report

Wang, Hua, Jun Bi, David Wheeler, Jinnan Wang, Dong Cao, Genfa Lu, and Yuan Wang. 2002. "Environmental Performance Rating and Disclosure: China's Green-Watch Program." Policy Research Working Paper 2889. World Bank, Development Research Group, Washington, D.C.

Valuing Mortality Risk Reductions

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 cholesterol or high blood pressure) and the quantitative risk reductions that such measures provide.

Results from Canada and the United States suggest that the willingness to pay to reduce the risk of dying decreases only slightly with age and is unaffected by current health status. Estimates of the value of a statistical life are slightly lower than those obtained in the labor market literature.

The results of the research were cited by the U.S. Office of Management and Budget in formulating guidelines for cost-benefit analyses of health and safety regulations.

Responsibility: Development Research Group, Infrastructure and Environment—Maureen Cropper (mcropper@worldbank.org). With Anna Alberini, University of Maryland; 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. The National Science Foundation (United States), the U.S. Environmental Protection Agency, and Resources for the Future contributed funding for the research. Health Canada provided funding for administering the Canadian survey.

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Alberini, Anna, Maureen Cropper, Alan Krupnick, and Nathalie Simon. Forthcoming. "Does the Value of a Statistical Life Vary with Age and Health Status? Evidence from the U.S. and Canada." *Journal of Environmental Economics and Management.*

Krupnick, Alan, Maureen Cropper, Anna Alberini, Nathalie Simon, Bernard O'Brien, Ronald Goeree, and Martin Heintzelman. 2002. "Age, Health, and the Willingness to Pay for Mortality Risk Reductions: A Contingent Valuation Survey of Ontario Residents." *Journal of Risk and Uncertainty* 24(2): 161–86.

Infrastructure and Urban Development

Connecting Cities with Macroeconomic Concerns: The Missing Link

Taking private firms as the primary actors in urban economies, this research project examined the relationship between cities and national economic development and the implications of this relationship for public policy, especially that relating to poverty reduction. Studies have shown that the way in which cities are structured, governed, and managed has an impact on economic welfare levels. In particular, lack of adequate urban services affects the incentives for private investment and employment creation. This study estimated the cost and forgone revenue associated with failures to provide essential urban services and the effect on economic activity, exports, and employment creation. And it identified ways to help local authorities pay attention to those cases.

The study was conducted by five regional research centers in five cities: Belo Horizonte (Brazil), Montreal (Canada), Puebla (Mexico), San José (Costa Rica), and San Salvador (El Salvador). Each center surveyed 50–60 firms in selected sectors to investigate the costs associated with failure to provide adequate urban public goods (including safety, regulations, property rights, and specific transport conditions) as well as mixed public-private goods (such as water and solid waste management). After the surveys were implemented, the project organized focus groups to provide additional information and assembled the final database.

Results of the analysis show that such factors as safety, urban violence, and corruption consistently affect the productivity of firms in the sample.

The results are being disseminated through several regional seminars organized with the partner research centers. In addition, the project is producing tool kits to help local authorities and World Bank urban staff improve urban development strategies, measure the effect of urban development and improvement activities, and better identify and deal with urban poverty and the investment climate in large cities.

Responsibility: Latin America and the Caribbean Region, Urban Cluster Sector Unit—Mila Freire (mfreire@worldbank.org). With Mario Polèse and Pamela Echeverria, Institut National de la Recherche Scientifique, Montreal; Alvaro Ramalho Jr., Fundação João Pinheiro, Belo Horizonte, Brazil; Rosendo Pujol, Programa de Desarrollo Urbano Sostenible (Produs), University of Costa Rica; Mario Lungo, Oficina de Planificación de la Area Metropolitana de San Salvador, El Salvador; and Salvador Perez-Mendoza, Benemerita Universidad Autonóma de Puebla, Mexico.

Reports

Freire, Mila, and Mario Polèse, with Pamela Echeverria. 2003. *Connecting Cities with Macroeconomic Concerns: The Missing Link—Do Local Public Services Matter? A Case Study of Five Cities.* Montreal: Institut National de la Recherche Scientifique; and Washington, D.C.: World Bank.

Lungo, Mario, and A. Abrego. 2003. "Servicios urbanos deficientes en San Salvador? Un obstaculo para la instalación de nuevas empresas?" Oficina de Planificación de la Area Metropolitana de San Salvador, El Salvador.

Perez-Mendoza, Salvador, and F. Aguilar Cruz. 2003. "Servicios publicos, infraestructura y marco regulador en el costo de las empresas del vestido y alimentos. El caso de la ciudade de Puebla (Mexico)." Benemerita Universidad Autonóma de Puebla, Mexico.

Pujol, Rosendo. 2003. "Importancia de los bienes publicos para la industria alimenticia y textil: el caso de San Jose Costa Rica." Programa de Desarrollo Urbano Sostenible (Produs), University of Costa Rica, San Jose.

Ramalho, Alvaro, Jr. 2003. "Investigaciónes de campo de Belo Horizonte-Brazil. Industria del vestuario productivo de confecciónes." Fundação João Pinheiro, Belo Horizonte, Brazil.

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

This research project developed an approach to assist water resource managers in devising strategies for

sustainable use of storage reservoirs by addressing the problem of sedimentation management. The approach includes a mathematical optimization model that can be used to determine the engineering and economic feasibility of sustainable reservoir management.

The study found that traditional practice in designing dam and reservoir projects needed to be reconsidered. Traditional practice is based on a "design life," which assumes that water resource projects recover the project investment over their life through the benefits they produce. This approach does not consider how to deal with projects at the end of their design life, instead assuming that future generations will deal with problems with reservoir sedimentation and abandonment.

The study recommends a "life cycle management" approach, aimed at designing and managing water resource infrastructure for perpetual use. Alternatively, if it is known in advance that a project cannot be managed sustainably, a retirement fund should be set up. Incorporating the salvage value of water resource infrastructure and performing economic optimization into perpetuity makes it possible to determine the economic feasibility of sustainable use.

As the application of the reservoir conservation (RESCON) concept develops, it could influence the way policymakers and engineers approach dam design. It could also introduce the concept of intergenerational equity and promote establishment of retirement funds. RESCON components are already being considered or included in several World Bank operations.

Policymakers in several developing countries were involved during the implementation of the project and in sharing the results after its completion, including Kenya (Tana and Ahti River Development Agency and the city of Nairobi), Morocco (Direction Générale de Hydraulique), and Sri Lanka (Mahaweli Authority). In addition, results were discussed in 23 international gatherings in both developing and industrial countries and with World Bank staff at meetings and during operational missions.

Responsibility: Environmentally and Socially Sustainable Development Vice Presidency, Quality Assurance and Compliance—Alessandro Palmieri (apalmieri@worldbank.org) and Catherine Golitzen; and Agriculture and Rural Development Department—Ariel Dinar. With Farhed Shah and Shigekatzu Kawashima, University of Connecticut; George Annandale and Tamara Butler-Johndrow, Engineering and Hydrosystems; Atila Bilgi, Halliburton KBR; Rodney White and Edmund Atkinson, HR Wallingford, United Kingdom; Hideki Otsuki, NEWJEC, Japan; Dale Whittington, University of North Carolina at Chapel Hill; John Nestler, U.S. Army Engineering Research and Development Center; Khalid Mahmood, George Washington University; Gian Paolo di Silvio, University of Padova; Thomas Haglund, San Marino Associates; and Faten Saihi, Golder Associates. The Water Resources Environment Technology Center, Japan; and the World Bank–Netherlands Water Partnership Program contributed funding for the research. The U.S. Army Corps of Engineers contributed staff time.

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Kawashima, Shigekatzu, Tamara Butler-Johndrow, George Annandale, and Farhed Shah. 2003. *Reservoir Conservation: Economic and Engineering Evaluation of Alternative Strategies for Managing Sedimentation in Storage Reservoirs.* Vol. 2, *RESCON Model and User Manual.* Washington, D.C.: World Bank.

Palmieri, Alessandro, Farhed Shah, George Annandale, and Ariel Dinar. 2003. *Reservoir Conservation: Economic and Engineering Evaluation of Alternative Strategies for Managing Sedimentation in Storage Reservoirs.* Vol. 1, *The RESCON Approach.* Washington, D.C.: World Bank.

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

Intuitively, the success of such projects as roads, irrigation projects, fertilizer distribution programs, and small business assistance schemes would seem to depend critically on where they are located. But research has shed little light on the effect of location on economic outcomes. This research aims to begin filling that gap by studying the relationships among infrastructure, geographic location, and economic development in Nepal—a particularly suitable place to study spatial specialization because of its extreme diversity in 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 a modified von Thunen model of specialization. The econometric estimation takes a nonparametric approach that allows for a flexible relationship between household decisions and proximity to cities of different sizes.

The first stage of the research combines household data from the 1995/96 Nepal Living Standards Survey with geographic information system data on travel time to major cities, and uses urban population data 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 also show the importance of city size. The research also finds significant border effects: proximity to Indian towns does not have the same effect on local specialization as proximity to Nepalese towns.

The research uses the 1999 Labor Force Survey data—covering 14,355 households in 719 villages across 73 districts—to study the pattern of specialization at the level of individuals and villages rather than households. The econometric estimation, based on a simple theoretical model of specialization in the presence of increasing returns and agglomeration effects, reveals that villages in and near cities have more diversified and market-oriented activities—implying the existence of externalities that are harnessed through markets. The agglomeration effects appear to be much smaller within sectors—except in manufacturing, where proximity to cities is associated with larger firm size and more diversified employment structures. In addition, evidence shows that urban women specialize more than rural women. Urban women either work in regular paid jobs or engage in household chores, while rural women work within and outside the household at the same time.

This research implies that better infrastructure will dramatically change not only the specialization pattern but also women's role in the workforce. The effects on the specialization pattern will be magnified because of the agglomeration effects that work through markets rather than within sectors.

The results, though promising, are based on cross-sectional analysis, in which the geographic location of households is partly endogenous. To account for individual-specific fixed effects and the endogeneity of road placement, the second stage of research will use data from the 2003/04 Nepal Living Standards Survey, which will provide information 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 liberalization of trade with India has affected border trade and the spatial division of labor within Nepal.

The research results should help in identifying suitable location strategies for projects. Since the size and accessibility of the market have a significant influence on the types of rural diversification observed, the results suggest that these factors should be taken into account in deciding the location of infrastructure and rural development projects.

Findings have been presented to World Bank staff in the South Asia Region and at development conferences and incorporated into economic and sector work on trade and competitiveness in Nepal.

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

Reports

Fafchamps, Marcel, and Forhad Shilpi. 2003. "The Spatial Division of Labor in Nepal." *Journal of Development Studies* 39(6): 23–66.

———. 2003. "Subjective Well-Being, Isolation, and Rivalry." World Bank, Development Research Group, Washington, D.C.

———. Forthcoming. "Cities and Specialization: Evidence from South Asia." *Economic Journal.*

The Impact of Urban Spatial Structure on Travel Demand

This research aims to quantify the effects of urban sprawl and availability of public transport on the travel demand (annual miles driven and choice of transport mode for commuting) of U.S. households. A presumption exists that decentralizing jobs and housing greatly increases travel demand. But attempts to measure this effect have been hampered by the use of city-level data on travel, which is determined simultaneously with urban spatial structure. To overcome this problem, this study matches city-level measures of sprawl and transit supply, which are exogenous to individual households, with household-level data on annual miles driven and principal mode of commuting.

The study first constructs measures that capture different aspects of the spatial configuration of cities and are exogenous to individual households, including a measure of compactness (a spatial Gini coefficient of residential sprawl), a measure of jobs-housing balance, and a measure of city shape. To describe the transit network, the study measures the supply of public transit (bus and rail miles supplied) and road density.

The study then merges its measures of urban spatial structure, computed for the 114 largest U.S. metropolitan areas in 1990, with the 1990 National Personal Transportation Survey. It uses the resulting data set of around 9,000 households to estimate equations for annual vehicle miles traveled and choice of transport mode for commuting. This yields estimates of the elasticity of travel demand with respect to population and employment sprawl and characteristics of the transport system, controlling for such relevant household characteristics as income, education, and household size and composition.

The study finds that lower road density, higher population centrality, and higher rail miles supplied significantly reduce the probability of driving to work in U.S. cities. Population centrality and jobs-housing balance have a significant effect on annual household vehicle miles traveled, as do city shape, road density, and (in rail cities) annual rail miles supplied. The elasticity of vehicle miles traveled with respect to each variable is small. But changing several measures of urban form simultaneously can significantly reduce annual vehicle miles traveled. For example, moving the sample households from a city with the characteristics of Atlanta to a city with those of Boston would reduce annual vehicle miles traveled by 25 percent.

Results have been presented at seminars at the National Bureau of Economic Research, at annual meetings of the American Economic Association, and at Columbia University and the universities of California, Colorado (Boulder), Illinois, and Texas (Austin).

Responsibility: Development Research Group, Infrastructure and Environment—Maureen Cropper (mcropper@worldbank.org) and Zmarak Shalizi.

Report

Bento, Antonio M., Maureen Cropper, Ahmed Mushfiq Mobarak, and Katja Vinha. 2003. "The Impact of Urban Spatial Structure on Travel Demand in the United States." Policy Research Working Paper 3007. World Bank, Development Research Group, Washington, D.C.

Information, Knowledge, and Capacity Building for Effective Urban Strategies: Information-Based Instruments for Urban Management

Decisionmakers in urban areas increasingly are becoming responsible for designing policies and programs to improve the quality of life of urban residents. To help improve the efficacy of such policies and programs, this project has initiated research and analytic work to develop detailed information systems within cities for identifying, evaluating, and prioritizing issues relating to urban management, urban productivity, and urban poverty. The underlying premise is that public disclosure of credible information can offset weak institutions: public dissemination of data—by encouraging transparency, accountability, and participation in decisionmaking—can improve the effectiveness of public programs and the quality of urban management.

Focusing on India, the project has initiated collaborative efforts between the World Bank and local

governments, research institutions, the private sector, and nongovernmental organizations to encourage the collection and use of spatially detailed data and related analytic methods for urban planning and policy. Large-sample, georeferenced household surveys have been administered in Bangalore, Bhopal, Jaipur, and Pune to capture heterogeneity within these cities in living standards, service delivery, and resource mobilization.

Once the data are collected, validated, and analyzed, the project will undertake efforts to train local government counterparts in using the data in economic and spatial analysis, build capacity for using and sharing spatial data for urban management, and provide training in conducting surveys to monitor service delivery and quality of life. The data will be made publicly available to researchers once the results have been shared with the partner city governments.

Government officials and researchers have been involved from the outset in designing and implementing the project, forming a national steering committee to ensure that the research is useful for policy analysis and decisionmaking. And coordination with World Bank operations staff aims to ensure its utility for lending and policy dialogue.

Responsibility: Development Research Group, Infrastructure and Environment—Zmarak Shalizi (zshalizi@worldbank.org), Somik V. Lall, and Uwe Deichmann. With Pulin Nayak; Atul Sarma; and the Society for Development Studies, India. The U.K. Department for International Development is contributing funding for the research.

Reports

Deichmann, Uwe, and Somik V. Lall. 2003. "Are You Satisfied? Citizen Feedback and Delivery of Urban Services." Policy Research Working Paper 3070. World Bank, Development Research Group, Washington, D.C.

Deichmann, Uwe, Somik V. Lall, Ajay Suri, and Pragya Rajoria. 2003. "Information-Based Instruments for Improved Urban Management." Policy Research Working Paper 3002. World Bank, Development Research Group, Washington, D.C.

Kapoor, Mudit, Somik V. Lall, Mattias K. A. Lundberg, and Zmarak Shalizi. Forthcoming. "Location and Welfare in Cities: Impacts of Policy Interventions on the Urban Poor." Policy Research Working Paper. World Bank, Development Research Group, Washington, D.C.

Lall, Somik V. 2003. "Property Taxes and Local Government Finances in India." World Bank, Development Research Group, Washington, D.C.

Lall, Somik V., Uwe Deichmann, Mattias K. A. Lundberg, and Nazmul Chaudhury. 2002. "Tenure, Diversity, and Commitment: Community Participation for Urban Service Provision." Policy Research Working Paper 2862. World Bank, Development Research Group, Washington, D.C. (Also forthcoming in *Journal of Development Studies*.)

Information Technology and Development

This research is looking at the impact of information and communications technology on poverty in developing countries, particularly in rural areas. It will assess both the impact of policy reforms relating to such technology and the effect of the development of information and communications infrastructure.

The study includes both a macroeconomic and a microeconomic component. The macroeconomic component will use econometric analysis of cross-country data to assess the impact of different policies on the diffusion of information and communications technology in developing countries, focusing on access for poor people.

Using nationwide data on information and communications infrastructure and village-level survey results, the microeconomic component will assess the impact of change in policies and infrastructure on the socioeconomic conditions of poor people in rural Bangladesh and Guatemala.

The study is now constructing supporting databases.

Responsibility: Development Research Group, Infrastructure and Environment—David Wheeler (dwheeler1@worldbank.org), Susmita Dasgupta, Robert Schware, and Charles Kenny. With Kiran Pandey, Craig Meisner, and Mainul Huq.

Infrastructure Logistics and the Costs of Doing Business: Physical, Policy, and Institutional Barriers

As production, marketing, and distribution activities have become decentralized worldwide, logistics have come to play a critical role in defining, disaggregating,

and directing economic activities and flows of goods and services. Improvements in logistics services lower the cost of goods delivered by reducing institutional inefficiencies such as customs delays—and thus expanding market access, private investment opportunities, and employment.

Most developing countries confront serious inadequacies in logistics services, however. Beyond typical inefficiencies in physical infrastructure, such as inefficient ports and poorly linked transport networks, they also face significant policy and institutional barriers. These impediments not only directly increase the cost of delivering goods to markets but also seriously affect quality, reliability, and delivery time, undermining countries' positions in highly competitive international markets.

This research project will assess the effects of logistics costs, time, and timeliness on the trade performance of developing countries. Since these factors cannot be considered in isolation from others that affect trade flows, the research must proceed by testing hypotheses within a comprehensive framework for international trade analysis. The analytic approach is based on a multistage model grounded in discrete choice theory and incorporating the effect of logistics costs and time. The model will be extended to address timeliness. Like the gravity model, the discrete choice framework can incorporate complementarity, transferability, and intervening opportunity effects.

The project is now collecting data from several countries in Africa, East Asia, and Latin America. Once the project is complete, the data will be shared through the World Bank's Private Sector Development Web site. And where appropriate and possible, country-level data will be shared in policy discussions with countries.

Responsibility: Investment Climate Unit, World Bank—Uma Subramanian (usubramanian@worldbank.org). With William P. Anderson and T. R. Lakshmanan, Boston University.

Million Connections Fund

Shell has proposed a Million Connections Fund aimed at achieving an additional one million connections to basic electricity service using renewable energy technologies over the next five years. The fund would primarily finance modest cash grants per connection to ensure affordability and attract rural businesses to sell, install, and service connections. Financing for the grants would be raised as new and additional funding from donors and the Global Environment Facility (GEF). The target fund size is $150 million, implying per-connection subsidies in the range of $100–150, depending on assumptions about how much of the fund would be used for administration and other purposes. The unit grant is based nominally on small solar home systems. The Million Connections Fund would operate through existing institutions, achieving "scale-up" by replicating ongoing projects.

This research aims to determine the viability and attractiveness of the Million Connections Fund from the point of view of World Bank financing and the need to build photovoltaic markets in developing countries. It is also examining the economic rationale for energy subsidies for the poor through a literature review.

The project is reviewing and analyzing existing projects and other efforts in the off-grid sector and estimating their likely outcomes, evaluating the potential for scale-up in various countries and assessing the priority accorded to the off-grid sector by World Bank client countries, and developing a method for estimating economically justified levels of support for off-grid systems. The project is also holding discussions within the World Bank Group's energy practice on the approach to scale-up, how it fits in with other rural energy initiatives, and how to manage it within a broader rural energy context.

The research has found no clear argument for establishing a new and separate fund to do what the GEF is already doing. Indeed, the proposed fund is much more narrowly focused than GEF grant cofinancing for renewable energy. And it provides no new value added to the World Bank Group's search for efficient, effective means of broadening access to off-grid renewable energy services. The World Bank Group's portfolio of off-grid renewable energy projects already targets some 1.5 million connections.

Findings have been disseminated through presentations to World Bank senior management, the GEF, and Shell management.

Responsibility: Energy and Water Department, Energy Unit—Richard Jeremy Spencer (rspencer@worldbank.org).

Reports

International Resources Group. 2003. "Evaluating the Potential for Scale-Up of Off-Grid Renewable Power." Washington, D.C.

Teplitz-Sembitzky, Witold. 2003. "Economically Justified Levels of Support for Off-Grid Electricity Supply." World Bank, Energy and Water Department, Washington, D.C. Draft.

Regulation by Contract for Private Electricity Distribution Companies

This research project examined international experience in developing successful and unsuccessful regulatory systems for private sector participation. In the light of the literature on the theory and practice of economic regulation, the research analyzed case studies of the experience of developing country regulators in establishing new regulatory systems for privatizing electricity distribution.

The analysis revealed the following key lessons relating to regulation by contract:

- Independence is not enough.
- The regulatory contract must be a political contract.
- Regulation by contract as against regulation by commission is a false dichotomy.
- Regulation by contract is a new name for an old paradigm.
- Electricity consumers cannot be the forgotten third party to a regulatory contract.
- Investors must have confidence that the contract will be enforced fairly and efficiently.
- The heart of a regulatory contract is a prespecified, performance-based, multiyear tariff setting system.
- A regulatory contract is sustainable only if the underlying economics are viable.
- A multiyear tariff system can be put into operation even in the absence of high-quality data.
- Regulation by contract should be reserved for private distribution companies.

The findings have been discussed in World Bank operational missions in India and Lesotho. The research was the subject of a panel discussion at the Second World Forum on Energy Regulation in Rome in October 2003.

Responsibility: Energy and Water Department, Energy Unit—Bernard Tenenbaum (btenenbaum@worldbank.org).

Report

Bakovic, Tonci, Bernard Tenenbaum, and Fiona Woolf. 2003. *Regulation by Contract: A New Way to Privatize Electricity Distribution?* World Bank Working Paper 14. Washington, D.C.

Regulatory Review of Power Purchase

Power purchase costs constitute the single largest cost for electricity distribution companies. But the pass-through of power purchase costs for distribution companies is a frequently ignored regulatory issue in industrial and developing countries alike. Pass-through rules tend to be especially important for developing countries, because incumbent utilities are likely to be the sole supplier for most retail customers for the foreseeable future. Electricity regulators therefore need to establish rules that create incentives for distribution companies to purchase efficiently while allowing them to recover the costs of their purchases.

This study compares and contrasts several pass-through methodologies used in both industrial and developing countries, identifying lessons and best practices. Its review suggests that the best methods for establishing pass-through benchmarks rely on market prices and competitive procurement. But when power sectors are at an early stage of reform, market prices may be unavailable or distorted by market power. Based on an examination of these cases, the study proposes an evolutionary path for pass-through regulation. This regulatory path is meant to be indicative rather than prescriptive. Ultimately, the best methodology depends on a country's objectives and the power sector's structure, implying a need for case-by-case design of pass-through rules.

Responsibility: Energy and Water Department, Energy Unit—Luiz Maurer (lmaurer@worldbank.org).

Report

Arizu, Beatriz, Luiz Maurer, and Bernard Tenenbaum. 2004. "Pass Through of Power Purchase Costs: Regulatory Challenges and

International Practices." Energy and Mining Sector Board Discussion Paper 10. World Bank, Energy and Mining Sector Board, Washington, D.C.

River Basin Management at the Lowest Appropriate Level

An internationally accepted principle of river basin management calls for decentralizing decisionmaking to the lowest appropriate level. But experience with World Bank–financed projects around the world suggests that while translating this concept into laws and regulations is relatively easy, its actual application often encounters obstacles because of the varying interests of stakeholder groups. As a result, projects based on this principle may fail to realize potential benefits.

Until now, however, there has been no comprehensive review of the performance of river basin organizations, especially of the political economy issues involved. Because centralized basin management usually fails, decentralized management with water user associations is generally assumed to be the answer. This research will shed analytic light on that assumption and on whether there is a need to adjust the decentralization policies that have been promoted. The findings should be important to World Bank clients, given the major institutional changes implied by decentralizing river basin management to the lowest possible level.

The study will also develop a methodology for analyzing local settings, to help design processes for decentralizing river basin management, as well as for analyzing the outcomes of World Bank projects that include such decentralization.

The study is surveying river basin organizations to gather the data needed to test hypotheses developed from a theoretical model. An econometric analysis of 80–100 observations, using various functional forms and model specifications, will provide quantitative estimates of the importance of different economic, institutional, political, and locational characteristics to success in decentralization. Surveys have been sent to around 130 members of the International Network of Basin Organizations, and statistical analysis will start once a satisfactory sample has been obtained.

In addition, the project will study eight cases in depth through field visits and interviews: Alto Tietê (Brazil), Brantas (Indonesia), Fraser (Canada), Guadalquivir (Spain), Jaguaribe (Brazil), Murray Darling (Australia), Tárcoles (Costa Rica), and Warta (Poland).

Initial results point to the importance of political economy in implementing river basin management strategies, the long-term nature of such projects, the need for champions, and the risk of setbacks occurring when political conditions change. They also appear to show that the political implications of decentralization are often underestimated and that decentralization cannot be addressed as a technical issue alone.

Results will be disseminated through publications, a country workshop, World Bank workshops and seminars, and consultation with staff of the World Bank and the International Network of Basin Organizations.

Responsibility: South Asia Region, Environment and Social Sector Unit—Karin Erika Kemper (kkemper@worldbank.org); and Agriculture and Rural Development Department—Ariel Dinar. With William Blomquist and Anjali Bhat, Indiana University; Maureen Ballestero; Rosa Maria Formiga; William Fru; Consuelo Giansante, University of Seville; Brian Haisman; David Marshall, Fraser Basin Council, Canada; Jyothsna Mody; Kikkeri Ramu; and Andrzej Tonderski.

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 contribute to policy discussions of how best to allocate scarce public resources. The study is conducting an empirical investigation in Vietnam—where the World Bank is financing and helping to implement a large-scale rural road project for poverty reduction—to find out how the determinants of living standards change over time in communes that have road projects compared with ones that do not.

The analysis is based on panel data from surveys—a baseline survey of a random sample of 100 project communes and 100 nonproject communes in 1997, followed by subsequent rounds of data collection in 1999, 2001, and 2003. Other surveys were also conducted in each round. In each sampled commune a questionnaire was administered to 15 randomly sampled households. A 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 a road project varies with the size 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 analysis is using the baseline data to model the selection of project sites, with a focus on the underlying social, economic, and political economy processes. It is using the later rounds to understand gains measurable at the commune level, conditional on selection. Several approaches have been tried, including double differencing with matching methods and a modified random effects model allowing for endogeneity of program placement. Matching methods are used to select ideal controls from among the 100 sampled nonproject communes, and outcomes in project communes are then compared with those found in the control communes before and after the introduction of the road projects. Outcome indicators 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 Services—Dominique van de Walle (dvandewalle@worldbank.org) and Dorothyjean Cratty. With Vu Tuan Anh, Economics Institute, Hanoi.

Reports

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

———. 2000. "Choosing Rural Road Investments to Help Reduce Poverty." Policy Research Working Paper 2458. World Bank, Development Research Group, Washington, D.C.

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van de Walle, Dominique, and Dorothyjean Cratty. 2002. "Impact Evaluation of a Rural Road Rehabilitation Project in Vietnam." World Bank, Development Research Group, Washington, D.C.

Traffic Fatalities and Economic Growth

While the death rate due to traffic fatalities has fallen in most high-income countries over the past 25 years, it has risen in developing countries. This is a result of the effect of economic development on the motorization rate (the ratio of vehicles to population) and on fatalities per vehicle. To better understand these effects requires studying how rapidly the motorization rate increases as economies grow and how rapidly fatalities per vehicle decline.

This study examines the effect of income growth on the death rate due to traffic fatalities—as well as on fatalities per vehicle and on the motorization rate—using panel data from 88 countries for 1963–99. Estimating fixed effects models, the study projects traffic fatalities and the stock of motor vehicles to 2020.

The relationship between fatalities per vehicle and per capita income at first increases with per capita income, reaches a peak, and then declines. The reason is that at low income levels the increase in motor vehicles outpaces the decline in fatalities per motor vehicle. At higher income levels the reverse occurs. The income level at which per capita traffic fatalities peaks is around $8,600 (in 1985 international dollars)—within the range at which other externalities, such as air and water pollution, have been found to peak.

Projections of traffic fatalities suggest that the global road death toll will grow by around 66 percent between 2000 and 2020. But the rate of change will vary in different parts of the world: fatalities will decline by around 28 percent in high-income countries but increase by almost 92 percent in China and 147 percent in India. And while the fatality rate will fall to less than 1 per 10,000 persons in high-income countries by 2020, it will rise to around 2 per 10,000 in developing countries.

This research has provided input to the World Health Organization's *World Health Report 2004* (Geneva,

forthcoming), which focuses on road traffic injuries. Results also have been presented at seminars at the University of Maryland and Resources for the Future and at a transport conference in Hungary.

Responsibility: Development Research Group, Infrastructure and Environment—Maureen Cropper (mcropper@worldbank.org) and Zmarak Shalizi.

Report

Kopits, Elizabeth, and Maureen Cropper. 2003. "Traffic Fatalities and Economic Growth." Policy Research Working Paper 3035. World Bank, Development Research Group, Washington, D.C.

Urban Growth Management Initiative

According to the most recent United Nations projections, the urban population of the developing countries, now growing by 2.3 percent annually, will double in 30 years—from around 2 billion in 2000 to nearly 4 billion in 2030. Based on current settlement practices, that implies a doubling of built-up areas in developing country cities on average and, accounting for per capita income growth, even a quadrupling in some cases.

This research seeks to expand our understanding of the dimensions and patterns of urban land consumption —an understanding that is essential if governments are to pursue the most efficient, equitable, and sustainable urban development policies and to prepare adequately for urban expansion.

The project has drawn a stratified random sample of 120 cities from the universe of 2,719 world cities with populations in 2000 of more than 100,000, selecting cities in nine geographic regions, four city size groups, and four national per capita income groups. This sample was drawn from the United Nations Global Urban Observatory sample of 335 cities. For each city in the sample the project will obtain Landsat data and spatially disaggregated demographic data from the U.S. Geological Survey and the U.S. Census Bureau and other census sources for two recent periods, approximately a decade apart.

Using these data, the project will define a set of measures of urban land consumption for all the cities in the sample. With the help of statistical models, it will then use the sample results to estimate preliminary measures of urban land consumption for all cities with populations in 2000 of more than 100,000, so as to establish the present global norms of urban land consumption for different types of cities.

Using the census data, the study will construct statistical models to examine the relationships between different dimensions and patterns of urban land consumption and four key dimensions of urban poverty—overcrowding, access to piped water, access to sewerage, and access to home ownership.

Given the norms established by the statistical investigation, the project will identify a dozen cities in the sample that are clear outliers, consuming much larger or smaller quantities of urban land and generating significantly more or less compact patterns of urban expansion. It will study these cities in greater detail to determine what factors and, most important, what public policies lead to their deviating from the norms.

The project will also identify three cities—one each in Africa, Asia, and Latin America—that are preparing for growth and assist them in developing projects for this purpose. (Tegucigalpa, Honduras, has been identified as the city in Latin America.)

Finally, the project will create a forum for bringing together the mayors of the dozen outlier cities and the three cities preparing for urban growth to discuss measures needed to prepare for the doubling in size of developing country cities.

This research effort will provide new quantitative measures, new data, and new explanations for variables that have not been systematically measured on a global scale over time—information needed to obtain a global perspective on urban expansion and to design a coordinated strategy for managing urban expansion in developing countries.

Responsibility: ransport and Urban Development Department, Urban Unit—Robert M. Buckley (rbuckley@worldbank.org). With Shlomo Angel, New York University and Princeton University; Stephen Sheppard, Williams College; and Daniel Civco, University of Connecticut.

Agriculture and Rural Development

Access to Land in Latin America and the Caribbean

Many Central American countries have recently liberalized their agricultural sector, initiated programs to improve the security of property rights, and eliminated restrictions on land transactions—all in the hope of improving the functioning of land and credit markets and increasing access to land by the poor. This research project investigates whether the reforms have fulfilled these expectations—and if not, why not. The research is based on econometric analysis of panel data from household surveys in Colombia, Honduras, Mexico, and Nicaragua.

Results for Mexico show that its *ejido* reforms have improved the performance of land markets, leading to greater allocative efficiency. The reforms have also had a major noneconomic impact by clearing up legal disputes and eliminating one of the main sources of political patronage in the countryside.

In Nicaragua policy reform and land titling have significantly increased productivity (land values for titled plots are 30 percent higher than those for untitled ones) and somewhat improved the functioning of land markets. But because of the financial crisis, the reforms did not lead to a perceptible increase in access to credit. Moreover, markets remain very thin, implying that reaping the full benefits of the reforms will require complementary measures (such as in financial infrastructure and marketing).

In Honduras reforms of land markets have improved their functioning. But because of credit market imperfections, the impact of these reforms has been less than would have been expected. That suggests that additional measures may be called for—such as measures to improve the functioning of credit markets and thereby help rural households take advantage of the opportunities opened by the liberalization of land markets.

The research has formed the basis for World Bank economic and sector work in Colombia, Mexico, and Nicaragua and provided input into land administration projects in Honduras and Nicaragua and a learning and innovation loan in Mexico. And its findings influenced a rural diversification project and peace and development project in Colombia.

Results were presented at a Latin American workshop organized by the Mexican secretary of agricultural reform and the World Bank, an international conference in Mexico (November 2002), and national dissemination workshops in Mexico (March 2003), Nicaragua (May 2003), and Colombia (October 2003). A Central American workshop in Nicaragua is under preparation, in collaboration with the European Union and U.S. Agency for International Development.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org). With Bradford L. Barham and Michael R. Carter, University of Wisconsin at Madison; and Juan Sebastian Chamorro, Office of the President, Nicaragua.

Reports

Barham, Bradford L., Michael R. Carter, and Klaus Deininger. 2003. "Making Land Market Liberalization Work for the Welfare of the Rural Poor in Honduras." University of Wisconsin, Department of Applied Economics, Madison.

Carter, Michael R., and Juan Sebastian Chamorro. "Impacto de proyectos de legalización de la propiedad en Nicaragua: Informe final."

Deininger, Klaus, and Juan Sebastian Chamorro. Forthcoming. "Investment and Equity Effects of Land Regularization: The Case of Nicaragua." *Agricultural Economics.*

Deininger, Klaus, Fabrizio Bresciani, and Isabel Lavadenz. "Mexico's Second Agrarian Reform: Implementation and Impact."

Deininger, Klaus, Eduardo Zegarra, and Isabel Lavadenz. 2003. "Determinants and Impacts of Rural Land Market Activity: Evidence from Nicaragua." *World Development* 31(8): 1385–404.

Olinto, Pedro, Klaus Deininger, and Benjamin Davis. 2000. "Land Market Liberalization and the Access to Land by the Rural Poor: Panel Data Evidence of the Impact of the Mexican *Ejido* Reform." http://www.wisc.edu/ltc/live/basca0002a.pdf.

Commodity Marketing Systems

Over the past dozen years the governments of many developing countries have fundamentally changed policies designed to support and manage commodity markets. Through case studies and literature reviews, this research examines such reforms to extract the main lessons.

The research finds that approaches designed to stabilize and support prices were unsustainable and gave way, often during periods of economic crisis. When institutions charged with stabilizing prices were dismantled, care often was not given to finding ways to provide appropriate regulation and market support. Moreover, the range of market reforms and the consequences of reform differed across countries and especially across commodity subsectors.

The research contributes to the debate about how best to manage commodity markets.

Responsibility: Development Research Group, Rural Development—Donald Larson (dlarson@worldbank.org).

Reports

Akiyama, Takamasa, John Baffes, Donald Larson, and Panos Varangis. 2003. "Commodity Market Reform in Africa: Some Recent Experience." *Economic Systems* 27(1): 83–115.

———, eds. 2000. *Commodity Market Reforms: Lessons of Two Decades.* Washington, D.C.: World Bank.

Inequality and Investment: Land Tenure and Soil Degradation in the Indus Basin

Landownership in Pakistan is extremely unequal, leading to very active land leasing markets. This study investigates the incentive problems that arise from land leasing arrangements, analyzing the impact of the structure of land lease contracts on productivity and on investment in soil quality. The analysis uses data from the 2001 Pakistan Rural Household Survey, which includes detailed information on input use, plot-level production, and the terms of tenancy contracts. To examine the incentive to invest in land, the analysis focuses on the application of farmyard manure, which has productivity effects over multiple seasons.

The analysis finds that investment is lower on leased plots than on owned plots cultivated by the same household. This result survives even after taking into account potential adverse selection in the leasing market. The study also finds that greater security of tenure increases investment on leased plots. Differences in tenure security across tenants are largely the result of differences in landlords' willingness to commit to long-term contracts.

The findings suggest that there is scope for effective tenancy reform in rural Pakistan. Legislation binding landlords to long-term contracts with their tenants, to the extent that it could be enforced, would encourage the tenants to undertake certain kinds of investment.

The project has contributed to the World Bank's poverty assessment in Pakistan and to a factor market study being undertaken in the South Asia Region's Rural Development Sector Unit.

The findings were presented in late 2002 in seminars at the University of North Carolina, George Washington University, and Cornell University; at the Winter Econometric Society Meeting in Washington, D.C.; and at the South Asia Econometric Society Meeting in Lahore.

Responsibility: Development Research Group, Rural Development—Hanan Jacoby (hjacoby@worldbank.org).

Report

Jacoby, Hanan, and Ghazala Mansuri. 2002. "Incomplete Contracts and Investment: A Study of Land Tenancy in Pakistan." World Bank, Development Research Group, Washington, D.C.

Land Institutions and Land Policy

This study followed on a March 2001 consultative meeting on land policy issues attended by representatives of a wide range of donor and civil society organizations. Participants reached broad consensus on a number of general land policy issues but also highlighted the need for more background work and for incorporating regional experience in particular areas.

The study summarized existing operational and research experience relating to land policy, conducted new research in areas where significant gaps existed (particularly on land taxation, the operation of land markets, and the impact of land conflict), and held regional work-

shops to obtain feedback, disseminate results, and discuss how these can inform policy. The findings are reported in a World Bank Policy Research Report, *Land Policies for Growth and Poverty Reduction* (Klaus Deininger, New York: Oxford University Press, 2003).

Key findings include these:

• Land policy has important repercussions not only for equity and efficiency but also for governance and fiscal sustainability of local governments.

• Tenure security is crucial for achieving higher levels of investment, and there are a wide range of mechanisms, besides traditional titling, that can help promote it.

• Outcomes from land sales markets depend more on the functioning of financial markets.

• Land rental markets contribute to both greater equity and greater efficiency.

• Governments can contribute to improved land use through a wide range of policy measures, but they need to introduce such measures in the context of a coherent overall policy.

The preparation process for the report prompted the European Union to create a land task force and to prepare a set of land policy guidelines that draw heavily on the report. Through this task force, the European Union is supporting in-country dissemination of the report in an effort to improve the integration of land issues into country strategies and Poverty Reduction Strategy Papers.

The report forms the basis for a four-day distance learning course organized by the World Bank Institute and the Development Economics Senior Vice Presidency with support from other donors. This course, adapted to local conditions, has been conducted in South Asia, three times in Africa (in East Africa, southern Africa, and West Africa), and in Central America.

Launched in Paris in June 2003, the report was presented at several national and regional events relating to land policy issues, including in Colombia, Mali, the Philippines, Spain, and Switzerland (for heads of Eastern European land registries).

It is expected that Chinese, French, Portuguese, Russian, and Spanish translations of the report will also be published. In addition, the Food and Agriculture Organization has agreed to publish 15 of the country case studies prepared for regional workshops in a special issue of its journal *Land Reform*. And a set of the best papers presented at the Eastern European workshop is being published in a special issue of the *Quarterly Journal of International Agriculture*.

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

Reports

Deininger, Klaus. 2002. "Agrarian Reforms in Eastern European Countries: Lessons from International Experience." *Journal of International Development* 14(7): 987–1003.

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Deininger, Klaus, and Raffaella Castagnini. 2003. "Incidence and Impact of Land Conflict in Uganda." Policy Research Working Paper 3248. World Bank, Development Research Group, Washington, D.C.

Deininger, Klaus, and Songqing Jin. 2002. "Land Rental Markets as an Alternative to Government Reallocation? Equity and Efficiency Considerations in the Chinese Land Tenure System." Policy Research Working Paper 2930. World Bank, Development Research Group, Washington, D.C.

———. 2003. "The Impact of Property Rights on Households' Investment, Risk Coping, and Policy Preferences in China." *Economic Development and Cultural Change* 51(4): 341–67.

———. 2003. "Land Sales and Rental Markets in Transition: Evidence from Rural Vietnam." Policy Research Working Paper 3013. World Bank, Development Research Group, Washington, D.C.

Deininger, Klaus, and Paul Mpuga. 2003. "Land Markets in Uganda: Incidence, Impact, and Evolution Over Time." World Bank, Development Research Group, Washington, D.C.

Deininger, Klaus, Songqing Jin, Berhanu Adenew, Samuel Gebre-Selassie, and Berhanu Nega. 2003. "Tenure Security and Land-Related Investment: Evidence from Ethiopia." Policy Research Working Paper 2991. World Bank, Development Research Group, Washington, D.C.

Land Rental Markets in Eastern Europe

The World Bank Policy Research Report *Land Policies for Growth and Poverty Reduction* (Klaus Deininger, New York: Oxford University Press, 2003) has sparked interest in many countries in addressing land policy issues. While Eastern European countries have made significant (though variable) progress in establishing more secure land rights, formal and informal barriers to the operation of land rental markets persist in many of them. This research aims to characterize such barriers, assess their impact, and identify policies that can help to overcome them.

The research is based on empirical analysis of data from farm household surveys conducted by the University of Leuven under the auspices of the European Union's Phare project between 1998 and 2002, complemented by data from Living Standards Measurement Study (LSMS) surveys for the same countries.

The analysis finds that policy choices relating to privatization continue to affect the functioning of rural and urban land markets, though other factors also are increasingly playing a role. The functioning of markets, in turn, affects the productivity of land use and household welfare.

The research is expected to improve the understanding of the role of land and other factor markets in the region and to lead to ideas that may be incorporated into policies and projects. It will also generate a survey module that will help better capture land policy issues in these countries.

Responsibility: Development Research Group, Rural Development—Klaus Deininger (kdeininger@worldbank.org). With Sara Savastano, University of Rome; and Alexander Sarris, University of Athens and Food and Agriculture Organization.

Report

Deininger, Klaus, Alexander Sarris, and Sara Savastano. Forthcoming. "Rural Land Markets in Transition: Evidence from Six Eastern European Countries." *Quarterly Journal of International Agriculture.*

Macro-Micro Linkages of Irrigation Water Management

Where irrigated agriculture remains an important sector in terms of resource use, policy interventions aimed at improving water use in the sector will have direct and indirect effects on the rest of the economy. Irrigation policy reform has direct effects on the farm firm, these effects have an impact on the broader economy, and the adjustments in the economy then feed back to affect the farm firm.

This study traces direct and indirect effects of policy reform. The analytic framework relies in part on a computable general equilibrium (CGE) model aligned with a built-in farm-level model. Using these components, the study has developed a tractable empirical model of the macro-micro linkage and applied it to data from Morocco to test the influence of microeconomic on macroeconomic policies—and the influence of macroeconomic on microeconomic policies.

The study has conducted two sets of policy analysis to show how the macro-micro linkage works. The first set centers on macroeconomic policies, with trade reform illustrating the links. The second set deals with microeconomic policies, with water reform chosen to illustrate the links.

Trade reform removing protection causes all endogenous variables to change, shifting the economy to a new equilibrium—and benefiting the country as a whole. The trade reform affects the shadow prices of water (that is, the productivity of the allocation of water), lowering the shadow price of water allocated to protected crops.

The direct effect of water reform at the farm level in Morocco was to reduce the water allocated to soft wheat production by 36.6 percent, and that for sugarcane production by 3.7 percent. The water released was then allocated to other crops.

Responsibility: Development Research Group, Rural Development—Ariel Dinar (adinar@worldbank.org).

Mauritania: Technology Fosters Tradition—Preserving the Environment through Grassroots Law Making

This research project will investigate, through fieldwork in Mauritania, whether rural farmers and herders in marginally productive areas follow strong traditional rules on land use in lieu of modern state regulations. The analytic approach will rely on self-assessment and documentation —on the sand, on paper, on a drawing board, and in an electronic form conveyable by the Internet—of land rights and use patterns in the area the villagers and herders consider "theirs."

The findings are expected to influence the reform of land use processes, the making of law, and the understanding of local empowerment. The findings should also contribute to World Bank work in designing community-driven development approaches and legal reform initiatives. And they are expected to help empower local populations to enforce their traditional land use rights against the interests of the central government and donors.

Results will be disseminated locally, regionally, nationally, and internationally. In 2004 presentations are planned at the Millennium Ecosystem Assessment Conference in Alexandria, Egypt, and the conference of the International Association for the Study of Common Property in Oaxaca, Mexico.

Details on the project can be found on the Web at http://www.cbnrm.net/webhosting/tft/.

Responsibility: Legal Department, Africa—Hans W. Wabnitz (hwabnitz@worldbank.org). With Lars Soeftestad, Supras Consulting, Norway; and Christian Contardo.

Nonfarm Rural Development

This project comprises a series of studies on key questions relating to the nonfarm economy that are not yet fully resolved or have not yet received adequate attention in the literature. It gives particular attention to the knowledge gaps directly relevant to the design of policy interventions.

A big part of the work is aimed at contributing to the empirical evidence on the role of infrastructure in determining rural nonfarm growth. The provision of infrastructure is perhaps the most important lever available to policymakers aiming to promote the rural nonfarm economy. But while many studies in the literature document a correlation between nonfarm activities and access to infrastructure, there is much less certainty about the causal relationship between provision of infrastructure and subsequent nonfarm growth. Moreover, much remains to be learned about the relative importance of different types of infrastructure—such as roads, power, and telecommunications.

A second part of the research seeks to shed further empirical light on underexplored questions about the role of education and credit: How do education and rural credit influence nonfarm entrepreneurial behavior in rural areas? And how might education and credit policies be devised to effectively promote nonfarm rural investment?

The last part of the research examines the complex and wide-ranging mechanisms through which the nonfarm sector can influence poverty and inequality. It is quite possible, for example, for the poor to benefit more indirectly—through links between the nonfarm and farm sectors—than directly—through employment in nonfarm activities. While empirical work tracing these links is ongoing, more research is needed to provide further detail and to document the diversity of experience.

The studies cover a range of developing countries—Bangladesh, Guatemala, India, Morocco, Nicaragua, and Peru. Several of the studies involve new data collection, and several others involve combining multiple data sources in new ways. As a result, findings remain tentative.

Responsibility: Development Research Group, Poverty Team—Peter Lanjouw (planjouw@worldbank.org) and Yoko Kijima; Human Development Network, Social Protection Team—Renos Vakis; and World Bank Institute, Poverty Reduction and Economic Management Division—Shahidur Khandker. With Leonardo Corral and Paul Winters, Inter-American Development Bank; Javier Escobal, Group for the Analysis of Development (GRADE), Peru; Marcel Fafchamps, Oxford University; Andrew Foster, Brown University; Thomas Reardon, Michigan State University; and Mark Rosenzweig, Harvard University.

Reports

Escobal, Javier. 2003. "Enhancing Income Opportunities for the Rural Poor: The Benefits of Rural Roads."

Foster, Andrew, and Mark Rosenzweig. 2002. "Constructing a Consistent Village-Level Time-Series on Infrastructure, Agricultural, and Rural Nonagricultural Growth: India, 1971–2000."

Lanjouw, Peter, and Renos Vakis. 2002. "New Options for the Rural Poor? Insights from the Nonagricultural Sector in Guatemala."

Nonmarket Land Allocation in Vietnam

This project studied the political economy of land allocation during major policy reforms in Vietnam—reforms that effectively privatized most farmland in the country. It aimed to improve the understanding of how the central government's initial intervention was reflected in what happened on the ground, recognizing that this also depended on the objectives and constraints facing other political actors. It also aimed to identify the welfare effects at the household level, both initially and over time, recognizing that land allocation is endogenous.

The study developed a theoretical model and tested it using regression analysis. It also developed a dynamic model incorporating a distribution dependence in the growth process arising from credit market failures.

The research found that the initial assignment of land use rights in Vietnam achieved a more equitable outcome than would be expected from a consumption-efficient allocation, entailing an equity-efficiency tradeoff that favored the poorest households. It found no evidence of widespread local capture. This, together with favorable initial conditions—primarily an equitable distribution of education—explains the overall equitable outcomes at decollectivization.

After decollectivization, land reallocations responded positively but slowly to the inefficiencies of the initial land allocation. In the aggregate about a third of the initial gap between the actual and the efficient allocation was eliminated within five years. The slowness of the adjustment appears to be inherent to the workings of the market process in Vietnam rather than due to countervailing nonmarket forces. Indeed, such forces tend to aid adjustments toward greater efficiency.

The research provides a deeper understanding of the ways in which central policy initiatives affect welfare when key aspects of policy implementation are decentralized. It also provides evidence on the performance of nonmarket allocation, offering lessons for nonmarket privatization schemes.

Results have been presented at a World Bank seminar (April 2001), a conference on Political Economy and Development at Yale University (2001), a seminar at the National Economics University and Institute of Social Studies in Hanoi (February 2002), the Northeastern Universities Development Consortium Conference at Williams College (October 2002), the MacArthur Foundation Conference on Inequality at the Massachusetts Institute of Technology (2003), and a DELTA-INRA seminar in Paris (October 2003). Presentations have also been made at Boston University, Michigan State University, the University of Massachusetts, and the University of Michigan.

Responsibility: Development Research Group, Public Services—Dominique van de Walle (dvandewalle@worldbank.org), and Poverty Team—Martin Ravallion.

Reports

Ravallion, Martin, and Dominique van de Walle. 2001. "Breaking Up the Collective Farm: Welfare Outcomes of Vietnam's Massive Land Privatization." Policy Research Working Paper 2710. World Bank, Development Research Group, Washington, D.C.

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

Many agricultural training and extension programs seek to enhance farmers' knowledge of improved cultivation practices and their ability to make ecology-conscious choices. One training approach attracting attention and support in recent years is the farmer field school. This approach emphasizes participatory methods and understanding of the plant-pest ecology. One of its key aims is to reduce chemical pesticide use by promoting integrated pest management. But the approach is costly, and there is merit in evaluating its effectiveness.

This research used three country studies to investigate the effectiveness of farmer field schools in improving the knowledge of farmers, boosting yields, and reducing pesticide use. It also assessed the fiscal sustainability and economic viability of the approach.

For Indonesia household panel data were available for 1991 and 1999, allowing an econometric analysis using a difference-in-differences approach. For the Philippines and Peru only cross-sectional household data (for 1999–2000) were available. But because the Philippine sample was drawn from an area where the farmer field school program had been operating for some years, recall questions were administered, providing insights into changes over time. In Peru, where a pilot school had just been implemented, a control sample was established using propensity scores, and impacts were simulated using pretraining differentials among farmers with different levels of knowledge.

All three country studies showed that trained farmers' knowledge of improved farming practices increased. But results from Indonesia and the Philippines showed that knowledge did not diffuse from trained farmers to other members of their community, apparently because the information is complex and not amenable to diffusion through informal communication. The study in Indonesia concluded that there were no significant effects on yield and pesticide use attributable to the farmer field school.

Analysis in Indonesia and the Philippines concluded that given the limited diffusion of knowledge from farmer to farmer, and the limited uptake of formal training responsibilities by farmer-trainers, the programs' cost per trained farmer (including overhead costs and technical assistance) was very high—in the range of $45 or more. Such costs raise the risk of financial unsustainability if farmer field school training is to be applied on a national scale.

Results suggest that as long as the costs are as high as in the past decade, the economic viability of the farmer field school approach is questionable. These results have important implications, since the approach is gaining popularity with external donors and the World Bank has funded a number of farmer field school activities. The study indicates that the current design of such activities could be ineffective in conveying and diffusing knowledge of integrated crop and pest management on a large scale. Moreover, the approach is likely to be fiscally unsustainable. Thus launching numerous small pilot projects, as is widely done, is an ineffective use of scarce external funds, since the pilot projects are unlikely to be scaled up to national programs and the lessons from the pilots are unlikely to be applicable to larger-scale projects.

Modifications are needed that retain some of the positive features of farmer field school training (such as its participatory nature) while increasing the likelihood of farmer-to-farmer diffusion and reducing the costs. Prioritizing the curriculum, simplifying the knowledge content, and reducing the number of training sessions could cut the cost, improve the transfer of information, and allow greater coverage of the farming population.

Findings have been presented at a joint World Bank–International Food Policy Research Institute workshop on extension approaches in Washington, D.C. (November 2002), a seminar at the University of California at Berkeley (March 2003), a World Bank seminar (June 2003), a conference of the International Association of Agricultural Economists in Durban, South Africa (August 2003), a seminar at the University of Florida at Gainesville (October 2003), and a seminar at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico (October 2003).

Responsibility: Development Research Group, Rural Development—Gershon Feder (gfeder@worldbank.org); World Bank Institute, Evaluation Group—Jaime Quizon; and

South Asia Region, New Delhi Office—Rinku Murgai. With Agnes Rola, University of the Philippines at Los Baños; Oscar Ortiz, International Potato Center, Lima, Peru; Alain de Janvry, Erin Godtland, and Elizabeth Sadoulet, University of California at Berkeley; and Hania Rahma.

Reports

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Weather-Based Index Insurance

Rural people in developing countries must often cope with weather events that have a catastrophic impact on agricultural production and rural incomes. This research project explores the relationships between climate, risk, and productivity-related choices in developing countries with the aim of contributing to the development of better policies and instruments for managing such weather-related risks.

One part of the research uses case studies in Ethiopia, Mexico, Morocco, Nicaragua, and Tunisia to assess the feasibility of area-based index insurance as a mechanism for providing low-cost, effective risk management for coping with weather events. This type of insurance avoids most of the moral hazard and adverse selection problems that plague crop insurance programs. And it can potentially lower lending risks for rural financial institutions.

Another part of the research develops basic information on climate, bringing together information from ground weather stations and satellite data. A third part incorporates information on climate in econometric analyses of productivity and technology choices.

The study finds that when long time series of weather data are available, most technical issues in writing insurance contracts covering weather-related risks can be solved. More difficult is a lack of institutions that back insurance markets generally. The study also finds that weather data have been undervalued in many developing countries. Such data are collected and often saved, but are less often organized and maintained for research. Satellite information can be used in limited ways. Evidence shows that climate information is an important determinant of productivity differences and technology choice.

The research results have been discussed at workshops in Washington, D.C., and in developing countries. Results for Ecuador appear in the 2003 poverty assessment for that country.

Responsibility: Development Research Group, Rural Development—Donald F. Larson (dlarson@worldbank.org); Agricultural and Rural Development Department—Panos Varangis; and Latin America and the Caribbean Region, Rural Development Family—Paul Siegel. With Jerry R. Skees, University of Kentucky.

Reports

Larson, Donald F., and Frank Plessmann. 2002. "Do Farmers Choose to Be Inefficient? Evidence from Bicol, Philippines." Policy Research Working Paper 2787. World Bank, Development Research Group, Washington, D.C.

Skees, Jerry R., Panos Varangis, Donald F. Larson, and Paul Siegel. 2002. "Can Financial Markets Be Tapped to Help Poor People Cope with Weather Risks?" Policy Research Working Paper 2812. World Bank, Development Research Group, Washington, D.C. (Also forthcoming in Stefan Dercon, ed., *Insurance against Poverty*, Helsinki: World Institute for Development Economics Research.)

China's Long-Run Fiscal Sustainability: A Computable Equilibrium Model of Overlapping Generations

China's public debt has risen rapidly in recent years. Yet no study has used a rigorous model to analyze the country's fiscal sustainability. This research investigates China's long-run fiscal sustainability by developing and simulating a computable equilibrium model of overlapping generations. Introduced by Paul Samuelson in 1958, this widely used model has a solid microeconomic foundation and is particularly useful in dealing with problems involving intergenerational redistribution.

The research considers the sustainability of deficits by examining the change in the ratio of fiscal debt to GDP and the effects of deficit policies on capital accumulation, per capita output, and social welfare. It conducts several policy experiments: permanent and temporary increases in debt-financed government spending and permanent and temporary changes in tax rates (for value added, labor income, and capital income taxes).

Results show that in a closed economy the spending-driven government debt will cause private investment and capital stock to decline in both the short and the long run, labor supply to increase in the short run but decrease in the long run, output to rise in the short run but fall in the long run, and welfare to increase for some older generations but decline for young generations.

In an open economy the spending-driven government debt will cause private investment and capital stock to decline in both the short and the long run with all debt financing methods except labor income taxation, labor supply to increase in the short and long run but decrease in the medium run, output to rise in the short and long run but fall in the medium run, and welfare to increase for some older generations but decline for young generations.

The results suggest that the expansionary fiscal policy is less detrimental in an open economy than in a closed one. And they show that capital taxation is the most inefficient method for financing government debt because it reduces output more than the other methods.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Yan Wang (ywang2@worldbank.org). With Shuanglin Lin, University of Nebraska; and Fan Zhai, Development Research Center, State Council of China.

Report

Lin, Shuanglin, Yan Wang, and Fan Zhai. 2004. "China's Expansionary Fiscal Policy in a Computable Overlapping Generations Model." World Bank, World Bank Institute, Washington, D.C.

The Impact of Fiscal Arrangements on Private Sector Development in the Russian Federation

In modern federations fiscal federalism is meant to serve two roles. First, local control over revenue collection is meant to provide a check on the capacity of central authorities to arbitrarily tax local capital. Second, retention of taxes raised locally is meant to establish incentives for subnational authorities to foster economic growth as a way of promoting local tax bases. In the Russian Federation, however, fiscally autonomous regions have often resisted market-oriented reforms, the enactment of rules protecting private property, and the dismantling of price controls and barriers to trade. Do fiscal arrangements in Russia distort the incentives of local and regional governments to support private sector development?

This study tests the hypothesis that fiscal incentives of the Russian regions are an important determinant of regional economic performance. Moreover, it seeks to understand the conditions under which fiscal autonomy prompts regional growth and recovery—and the conditions under which it has adverse economic effects. It posits that the presence of unearned income streams, particularly revenues from natural resource production or from budgetary transfers from the central government,

has turned regions dependent on these income sources into rentier regions. As a result, governments in these regions have used local control over revenues and expenditures to shelter certain firms (natural resource producers or loss-making enterprises) from market forces.

Using new fiscal data from 80 Russian regions for 1996–99, the study tests this central hypothesis in both single- and simultaneous-equation specifications. The results indicate that tax retention (as a proxy for fiscal autonomy) has had a positive effect on the cumulative output recovery of regions since the break-up of the Soviet Union. But it also finds that this effect decreases as rentable income streams to regions increase.

Findings have been presented at a World Bank seminar.

Responsibility: Europe and Central Asia Region, Private and Financial Sectors Development Unit—Itzhak Goldberg (igoldberg@worldbank.org).

Report

Desai, Raj M., Lev M. Freinkman, and Itzhak Goldberg. 2003. "Fiscal Federalism and Regional Growth: Evidence from the Russian Federation in the 1990s." Policy Research Working Paper 3138. World Bank, Europe and Central Asia Region, Private and Financial Sectors Development Unit, Washington, D.C.

Investment Patterns and the Quality of Growth

Earlier research has suggested that long-run growth depends not only on the speed of asset accumulation but also on the "blend" of at least three key assets: physical capital, human capital, and natural capital. Some asset accumulation blends make significant long-run economic growth with equity possible; others are likely to lead to long-run economic stagnation along with social inequity and environmental destruction. Economies can achieve the "right blend" if savings are allocated to investment in the asset among the three that has the highest social rate of return (net of investment cost) so that in the long run the net social rates of return to investment in each asset are equalized. But market imperfections prevent this efficient allocation. In some cases they have led to the subsidization of physical capital and underinvestment in human and natural capital.

This research is investigating these issues. It first estimates the size of physical capital subsidies in a few countries, then examines the relationship between these subsidies and the allocation of public and private investment in physical, human, and natural capital. The research focuses on such countries as Brazil, Chile, and India.

The countries studied have experienced differing growth rates, varying improvements in human capital, and a serious deterioration in natural capital. Some have had a decline in net total wealth per capita, and 9 of 12 countries in Latin America a decline in total net wealth. Argentina, Brazil, and Chile experienced negative growth in human and environmental assets in 1990–2001. The imbalance between subsidization of physical capital and deterioration of human and natural capital is an issue of huge importance, with implications for fiscal deficits and national debt.

The research is expected to aid the World Bank's policy dialogue in many countries and help reshape the development strategy toward more equitable and sustainable growth. It is also expected to facilitate a shift from the Washington Consensus toward a broader set of policies for better shared development.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Yan Wang (ywang2@worldbank.org); and Latin America and the Caribbean Region, Brasilia Office—Vinod Thomas. With Ramón E. López, University of Maryland; Nalin Kishor; Ashoka Guha, Georgetown University; Milwida M. Guevara; and Jisoon Lee, Seoul National University.

Reports

Guevara, Milwida M. 2002. "Capital Subsidies and the Quality of Growth: The Case of the Philippines." World Bank, World Bank Institute, Washington, D.C.

Guha, Ashoka. 2001. "The Quality of Growth: An Assessment and an Illustrative Case Study of India." World Bank, World Bank Institute, Washington, D.C.

Lee, Jisoon. 2001. "Financial Policies and the Quality of Growth in South Korea." World Bank, World Bank Institute, Washington, D.C.

López, Ramón E. 2002. "Growth, Social Equity and Natural Capital: The Role of Public Subsidies in Latin America." World Bank, World Bank Institute, Washington, D.C.

López, Ramón E., Gustavo Anriquez, and Sumeet Gulati. 2001. "The Dynamics of Unbalanced and Sustainable Growth." World Bank, World Bank Institute, Washington, D.C.

Low Returns to Reforms in the Global Economy

This research is aimed at contributing to the ongoing effort to increase development effectiveness and understand why economies perform poorly after a round of reforms such as trade liberalization. In the first phase the research is exploring cross-sectional data to find statistical regularities explaining why countries are "trapped" in low-growth equilibriums despite greater trade flows. The analytic approach involves first building a database that makes it possible to cross-reference the characteristics of countries that experience low returns to reform, then using both cross-sectional and panel regressions to test hypotheses on the reasons for these low returns. The sample is corrected for time lags.

Early findings show that precisely measuring economic reform variables is key in determining the significance of regression coefficients. The outcome of reform is not the same as policy action.

In a later phase the study will investigate low returns to reform through country studies.

A workshop to discuss the research with academics and policymakers is planned for October 2004.

Responsibility: Development Economics, Office of the Senior Vice President and Chief Economist—Luiz Pereira da Silva (lpereiradasilva@worldbank.org).

Report

de Castro, Alexandre Samy, Ian Goldin, and Luiz A. Pereira da Silva. 2002. "Relative Returns to Policy Reform: Evidence from Controlled Cross-Country Regressions." Policy Research Working Paper 2898. World Bank, Development Economics, Office of the Senior Vice President and Chief Economist, Washington, D.C.

The Political Economy of Fiscal Decentralization

Fiscal decentralization raises an important policy concern—a concern that it might create "soft" budget constraints at subnational levels and consequent macroeconomic instability. The design of intergovernmental resource transfers and the incentives it creates for subnational fiscal policy thus need scrutiny. How can intergovernmental transfers be designed so as to avoid unintended or perverse effects on state fiscal behavior? What is the role of political affiliations in determining transfers and subnational fiscal behavior? Are these political effects powerful enough to constrain the effectiveness of rules-based designs?

This study addressed these policy questions by examining the fiscal policies of state governments in India, where a rules-based system of transfers has been in place for the past 50 years. During that period the political environment has changed drastically, with India moving from one political party dominating the national and state legislatures to unstable coalition politics at the center and different regional parties controlling the states. The resulting political and fiscal variation across states and over time allows rigorous empirical research. The study developed empirically testable hypotheses from the theoretical literature on public finance and political economy, then tested them using regression analysis on a panel data set of political and fiscal indicators, compiled from different published sources, for 15 major states of India in 1972–95.

The results show that electoral party politics matter for the regional distribution of public resources and for fiscal discipline in a federation—and in a way not previously addressed in the literature on fiscal federalism. When a state government is controlled by the political party that also controls the national government, the state receives higher than average federal transfers and has a higher than average fiscal deficit. This pattern is consistent with a model in which decisionmaking authority lies with political parties that aim to maximize their representation in the national legislature.

Contrary to conventional wisdom in India and existing models of political bargaining between the center and provincial governments, the study finds no statistical evidence that the design of intergovernmental transfers provides perverse incentives to state governments to run higher deficits.

The findings suggest that formal rules regulating fiscal relations in federations will have limited impact if

deficits are determined by the nature of electoral competition between political parties. The study finds evidence, however, that delegating certain fiscal policies—such as the setting of public debt ceilings—to an independent agency makes a difference for the distribution of national resource transfers across regional governments. By contrasting the impact of partisan politics on two types of fiscal transfers to Indian states, it finds that while the transfers determined by political agents are indeed distributed to serve political objectives, having an independent agency distribute the transfers curbs political influence and is consistent with promoting equity.

The results will be presented at a seminar in New Delhi for scholars and policymakers working in India. They also have been disseminated within the World Bank through seminar presentations; used in a World Bank Institute course on fiscal decentralization and intergovernmental transfers for World Bank staff; and used in a World Bank Institute learning event for a visiting delegation from the Finance Commission of India, the agency with primary responsibility for determining intergovernmental transfers in the country.

The panel data used in the analysis are available on request.

Responsibility: Development Research Group, Public Services—Stuti Khemani (skhemani@worldbank.org).

Reports

Khemani, Stuti. 2002. "Federal Politics and Budget Deficits: Evidence from the States of India." Policy Research Working Paper 2915. World Bank, Development Research Group, Washington, D.C.

———. 2003. "Partisan Politics and Intergovernmental Transfers in India." Policy Research Working Paper 3016. World Bank, Development Research Group, Washington, D.C.

Subnational Capital Markets in Theory and Practice

With increasing decentralization, local governments face a growing need to access capital markets. As urbanization expands, local authorities need to provide more services with fewer resources from the central government. Subnational borrowing, leveraging on reliable cash flows and prudent fiscal management, may be an alternative way to fund such investments, especially when the useful life of the service is long (such as schools, roads, and public utilities) and an adequate legal framework is in place to ensure fiscal and financial stability.

Drawing on the Global Program on Subnational Capital Market Development managed by the World Bank in 1998–2000, along with recent experiences in accessing subnational credit markets, this study examined subnational governments as borrowers and the array of credit markets in which they may operate. Case studies documented the recent experience of 18 countries in developing markets for subnational borrowers, assessing what has worked and what has not and identifying the reasons for the successes and failures. The case studies offer lessons about fostering responsible credit market access within a framework of fiscal and financial discipline.

The research was aimed at assisting local governments in working as strategic partners in developing and strengthening the capital markets in emerging economies. The results provide a simple "blueprint" of the major flaws to be avoided and the conditions that need to be present for successful entry into subnational credit markets.

Dissemination plans include seminars organized in client countries in collaboration with the World Bank Institute.

Responsibility: Latin America and the Caribbean Region, Urban Cluster Sector Unit—Mila Freire (mfreire@worldbank.org) and Miguel Valadez. With John Petersen, George Mason University; and Marcela Huertas, Metropolis Consulting.

Report

Freire, Mila, and John Petersen, with Marcela Huertas and Miguel Valadez, eds. 2004. *Subnational Capital Markets in Developing Countries: From Theory to Practice.* New York: Oxford University Press.

International Economics

Accessing International Equity Markets

This study analyzes which firms participate in international markets by issuing depository receipts, cross-listing, or raising new capital in international financial centers. Through econometric analysis of data for a large sample of firms from 53 countries—capturing both firms that internationalize and those that list only domestically—the study compares firms across countries, within countries, and over time to address three questions:

- What are the characteristics of firms that become international?
- What country and firm characteristics determine the probability of becoming international?
- And how are firm-specific characteristics affected by the internationalization?

The study finds that firm characteristics—size, growth, valuation, performance, and foreign activity—are important determinants of accessing international equity markets for firms from industrial countries, but less so for firms from developing countries. Evidence shows that, conditional on the country already being internationalized, firms from developing countries use cross-listing to bond to higher legal and other standards. Listing abroad is associated with an increase in sales growth, higher valuation and return on assets, and lower leverage, though these effects diminish following listing.

Responsibility: Financial Sector Vice Presidency, Financial Sector Strategy and Policy—Daniela Klingebiel (dklingebiel@worldbank.org); and Development Research Group, Macroeconomics and Growth—Sergio Schmukler. With Stijn Claessens, University of Amsterdam.

Report

Claessens, Stijn, Daniela Klingebiel, and Sergio Schmukler. "Accessing International Equity Markets: Which Firms from Which Countries Go Abroad?"

Africa Trade Standards Project

This research project examined "behind the border" barriers to trade in Africa, investigating the links between standards, regulations, and export success through case studies in five countries—Kenya, Mozambique, Nigeria, South Africa, and Uganda. With a view to promoting efforts to strengthen the region's export capacity, the project also examined the opportunities and challenges facing African firms and farmers in meeting standards.

The research identified standards-related policy, infrastructure, and capacity needs in the region, including public and private sector capabilities at the national and sectoral levels. The work also reviewed laws, regulations, institutional capacities, and programs relating to developing, implementing, and enforcing standards.

Local research teams, working with the World Bank and the African Economic Research Consortium, carried out the country and industry assessments, an arrangement helping to strengthen research capacity in the region. The teams drew on existing studies, used firm and industry surveys to generate new primary data, and incorporated results from a World Bank survey on technical barriers to trade (this survey included firms active in testing and certification or in major food, agricultural, and light manufacturing industries). In addition, the researchers gathered input from key private and public sector stakeholders through national workshops, focus group sessions, and one-on-one interviews. And they obtained key documents from regulatory officials to gain insights into standard setting processes.

The case studies led to common findings, including these:

- African exporters face myriad problems relating to standards, including a lack of timely and accurate information, a need to simultaneously meet multiple standards and regulations, costly and difficult testing and verification procedures, and rapidly changing requirements in overseas markets.

• For small and medium-size farmers in Africa, standards impose cost structures and investment requirements that make it difficult to access industrial country markets.

• African firms and farmers are generally "standard takers" (as with horticulture in Kenya and fisheries products in Uganda), which can result in excessive restrictions and lower product prices.

• Foreign lobbying groups and associations can pose challenges for African firms. In 2001, for example, human rights associations, arguing that Del Monte's operations in Kenya failed to apply adequate worker safety and environmental health standards, launched a boycott of Del Monte's products in supermarkets in the European Union.

• Costs of compliance can be prohibitive for African governments, and foreign direct investment is not forthcoming.

• African countries—even middle-income countries like South Africa—have little capacity to undertake food safety risk assessments, creating potential avenues for trade restrictive practices.

• Sanitary and phytosanitary standards and environmental requirements can be moving targets, often becoming more stringent once producers achieve compliance. Moreover, awareness of food safety and sanitary and phytosanitary standards is generally low, and the mechanisms for consultations between national authorities in this area and other stakeholders appear to be inadequate.

• In many African countries essential facilities such as testing laboratories are inadequately staffed and scientific equipment is outdated. Moreover, data are not systematically collected or stored, and local certification agencies lack an international reputation. And this situation is worsening in many countries as public spending declines.

• Failure to raise standards to international levels will have enormous costs in lost exports for Africa.

Based on these and other findings, the project identified areas needing priority attention and highlighted key steps for governments, private organizations, and international development agencies to strengthen capacity in standards monitoring, certification, and enforcement.

Results have been shared through workshops, consultations with key stakeholders and decisionmakers in each of the five countries, and dissemination activities relating to the report produced by the project. In addition, seminars for government and private sector representatives have been held in Midrand, South Africa (June 10, 2003); at the European Policy Center in Brussels (July 31, 2003); at the U.K. Department for International Development in London (August 4, 2003); in Accra, Ghana (November 11, 2003); in Nairobi, Kenya (November 14, 2003); and in Washington, D.C. (December 11, 2003). Seminars have also been conducted at the World Bank.

The project team has provided analytic and advisory support to World Bank operations, including the Africa Trade Facilitation Project, Trade Integration Studies in Kenya, and the Uganda Private Sector Export Competitiveness Project II.

Responsibility: Development Research Group, Trade—John S. Wilson (jswilson@worldbank.org) and Victor O. Abiola; and Poverty Reduction and Economic Management Network, International Trade Department—Steve Jaffee. With Andre Jooste, Erik Kruger, and Flip Kotzé, Center for International Agricultural Marketing and Development, South Africa; J. Adeboye Adeyemo and Abiodun S. Bankole, University of Ibadan, Nigeria; Gabriela Rebello da Silva, Instituto Nacional de Normalização e Qualidade, Mozambique; Lara da Silva Carrilho, Universidade Eduardo Mondlane, Mozambique; Hezron Omare Nyangito, Kenya Institute for Public Policy Research and Analysis; Tom Olielo, Kenya Bureau of Standards; David Magwaro, Ministry of Trade and Industry, Kenya; Nichodemus Rudaheranwa and Fred Matovu, Makerere University, Uganda; and Willy Musinguzi, Uganda National Bureau of Standards. The African Economic Research Consortium contributed staff time to the research.

Report

Wilson, John S., and Victor Abiola, eds. 2003. *Standards and Global Trade: A Voice for Africa.* Washington, D.C.: World Bank.

Does Regionalism Help or Hinder Multilateralism?

This research project will examine the implications of continuing regional trade integration for multilateral trade liberalization. It will investigate how discriminatory liberalization has affected countries' attitudes toward multilateral liberalization. It will explore differences between customs unions and free trade areas, the efficiency of current World Trade Organization policies on the formation of preferential trade arrangements, and the empirical adequacy of existing theoretical analyses of the relationship between regionalism and multilateralism. It may also explore the implications of the research results for the welfare consequences of regionalism. The study, by improving the understanding of the interaction between multilateral and regional integration, should help policymakers better manage trade liberalization.

To estimate how the formation of regional trade arrangements has affected multilateral tariff reduction, the study is compiling preferential and most-favored-nation tariffs by industry over a number of years for countries in these trade arrangements. Preliminary results for Latin America indicate that regionalism has not been a stumbling block to liberalization.

The data, including detailed information on the extent of trade concessions and phase-in schedules of preferential trade agreements, will be made available on the Web at http://www.worldbank.org/research/trade/.

The project will result in a policy report explaining the results in nontechnical terms and several academic papers, with the main paper including a detailed description of the data, methodology, and results.

Dissemination plans include presentations at the World Trade Organization, the Brazilian Economic Association (ANPEC) and Brazilian Econometric (SBE) Congress, and the European Commission's Directorates General for Development and for External Affairs, and presentations to the group of African, Pacific, and Caribbean countries (in Ghana) and members of the Central European Free Trade Agreement (in Prague).

Responsibility: Development Research Group, Trade—Caroline Louise Freund (cfreund@worldbank.org). With Emanuel Ornelas, University of Georgia.

The Effects of American Depository Receipt Trading on Local Markets

This project analyzes how the internationalization of capital markets has affected the domestic stock markets of developing countries. In particular, it addresses this question: How do firms that participate in international stock markets affect the trading activity and liquidity of the firms remaining in the domestic market? The question is important because countries with more developed capital markets tend to grow faster and because capital markets help to mobilize savings throughout the economy.

To study the effects of internationalization, the project assembled trading and liquidity information on more than 3,000 firms across 55 emerging market economies for the years 1989–2000. To measure trading activity, the study uses turnover (the value of a firm's transactions in a market divided by its market capitalization). To measure liquidity, it uses an illiquidity index (the ratio of a stock's absolute returns to its value traded).

Through regression analysis using annual firm-level data, the study finds that as more firms become international, this lowers the turnover of domestic firms. And it finds that as internationalization rises, the liquidity of domestic firms falls. But what are the mechanisms through which internationalization hurts the trading activity and liquidity of domestic firms?

The study identifies two channels through which internationalization hurts domestic firms: the migration and spillovers channel and the domestic trade diversion channel. Trading migrates to international financial markets, having negative spillover effects on the trading and liquidity of domestic firms in domestic markets. These spillover results indicate that an individual equity's trading activity and liquidity depend importantly on the market's overall activity and liquidity. Moreover, there is trade diversion in domestic markets as trading shifts from domestic to international stocks within the local market.

The research has provided input into a study on Latin American capital markets and the World Bank's *Global Development Finance* (Washington, D.C., various years). Findings have been presented at seminars at the

University of Minnesota and the University of Zurich and at the 2004 annual meeting of the Global Development Network in New Delhi. They will also be presented at a seminar for Latin American policymakers at the Federal Reserve Bank of Atlanta (jointly organized with the Inter-American Development Bank) and at a Brazilian newspaper.

Responsibility: Development Research Group, Macroeconomics and Growth—Sergio Schmukler (sschmukler@worldbank.org) and Latin America and the Caribbean Region, Office of the Chief Economist—Juan Carlos Gozzi Valdez. With Ross Levine, University of Minnesota; and Tatiana Brandao Didier, Massachusetts Institute of Technology.

Report

Levine, Ross, and Sergio L. Schmukler. 2003. "Migration, Spillovers, and Trade Diversion: The Impact of Internationalization on Stock Market Liquidity." Policy Research Working Paper 3046. World Bank, Development Research Group, Washington, D.C. (Also published as NBER Working Paper 9614, Cambridge, Mass.: National Bureau of Economic Research, 2003.)

Foreign Direct Investment, Financial Markets, and Growth

In recent years foreign direct investment has increasingly dominated capital inflows in Latin America, raising new concerns about its desirability and effects. This study examines that recent boom from three perspectives: the macroeconomic dimension, the banking system, and corporate sector financing.

Using data on foreign direct investment inflows and their determinants for a large number of industrial and developing countries over the past three decades, the macroeconomic analysis assesses the role of global and country-specific factors in attracting foreign direct investment and looks for systematic differences across world regions. It finds robust evidence that the trends in foreign direct investment flows to both industrial and developing countries in recent years reflect an increasing role of factors affecting global financial markets—world interest rates, world growth, term premiums, and credit spreads. While global factors still play a greater role in foreign direct investment in industrial countries, their role in developing countries has grown dramatically over the past 20 years. This development appears to be tightly linked to the financial liberalization and opening up of developing countries in the 1980s and early 1990s.

Using time-series and cross-country data, the macroeconomic analysis also examines the effects of the changing composition of foreign direct investment in developing countries over the past decade, when mergers and acquisitions have grown in importance relative to greenfield investments, particularly in the context of privatization programs. It finds that an increase in mergers and acquisitions is typically followed by higher greenfield investment—so the conclusion of privatization programs need not result in a drop in overall foreign direct investment. And it finds that the effects of the two kinds of foreign direct investment on investment and growth are roughly similar qualitatively: both tend to lead domestic investment, and both tend to follow growth.

These findings suggest that countries' foreign direct investment prospects and macroeconomic benefits are not much affected by whether the investments take the form of mergers and acquisitions or new projects. Those prospects depend increasingly on global risk and return conditions—thus changes in world growth or interest rates can have a powerful effect on foreign direct investment flows to developing countries. Yet local profitability and risk conditions—productivity growth, macroeconomic stability, institutional quality—remain robust fundamental attractors of foreign direct investment even in an increasingly globalized financial environment.

A second analysis assesses the impact of foreign bank entry on lending practices. Analysis of bank-level credit data for major Latin American economies finds that in countries allowing foreign bank participation, small businesses are more likely to obtain credit from foreign banks when these have a significant local presence. But small foreign banks lend more to small and medium-size enterprises than do large ones. Moreover, analysis of firm survey data from a large number of developing countries shows that foreign bank participation improves firms' access to credit. The survey results confirm that the

benefits of high levels of foreign bank participation do not appear to accrue only to large enterprises. Nonetheless, the findings suggest that countries concerned about foreign banks lending to small businesses should pursue policies that encourage them to develop a significant local presence.

A third analysis examines the effect of foreign investment on capital markets. The foreign investment boom in Latin America has been accompanied by delistings of stocks and migration from domestic to international capital markets. Using individual firm data for a large number of countries from 1983 to the present, the analysis investigates the factors responsible for this process and its consequences for both migrating local companies and those remaining in the local markets.

The analysis finds that there are a small number of fundamental factors that affect in a similar way both the development of the local market and the degree to which countries participate in international markets. As countries improve their fundamentals, stock exchange activity increases, but so does the share of activity taking place abroad. This suggests that the two are complementary processes: as better fundamentals allow local markets to develop, firms will have a greater tendency to access global exchanges. But there will be limits to the extent to which local market development is associated with greater offshore activity. Migration of a major share of market capitalization and value traded may have adverse effects on the liquidity of the remaining companies. Large-scale migration may also make it more difficult to sustain a fully fledged local stock exchange.

These findings suggest that countries need to continue to improve fundamental factors, such as shareholder protection and the quality of local legal systems, to make it more attractive for any investor to buy shares and thus to make it easier for firms to list and trade in public markets. But countries do not face a choice between local and international exchanges: improving fundamentals will lead to more activity, but most of this activity will go abroad as better fundamentals also accelerate migration. Thus countries will be best off facilitating as much as possible their firms' access to liquid international exchanges—by removing regulatory barriers and harmonizing standards. Moreover, tighter links or even mergers with global exchanges may be necessary to prevent an almost sure decline of the local market. This does not mean that there is no role for local exchanges—they may still play an important part in allowing firms to access markets for the first time.

The research findings have been disseminated through many academic and professional events, including an invited lecture at Universidad de El Escorial (2001), the annual meetings of the Latin American and Caribbean Economic Association and the Latin American Econometric Society (2002), and a major conference jointly organized with the Inter-American Development Bank in Washington, D.C. (October 2002).

Responsibility: Latin America and the Caribbean Region, Office of the Chief Economist—Luis Servén (lserven@worldbank.org), and Finance Cluster—Susana M. Sánchez; Development Research Group, Macroeconomics and Growth—Norman Loayza, Sergio Schmukler, and George R. G. Clarke, and Finance—Maria Soledad Martinez Peria and Robert Cull; and Pension Investments Department—Daniela Klingebiel. With Rui Albuquerque, University of Rochester; Ross Levine, University of Minnesota; César Calderón, Central Bank of Chile; and Stijn Claessens, University of Amsterdam.

Reports

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Geography, Trade, and Growth

This project has two purposes: First, to develop and implement a rigorous methodology to estimate how the elasticity of trade with respect to distance has changed. And second, to distinguish the primary causes for this change. The analytic approach involves using trade growth equations on bilateral trade between 130 countries to estimate how the effect of distance on trade flows has changed over time. It also involves estimating trade growth equations for more than 100 exporters in more than 700 product categories to examine proximity and trade growth within country groupings and industries, so as to develop a better understanding of the changing role of geography in globalization. This approach allows disaggregation of the change in the effect of distance on trade into the sources of the change.

Using highly disaggregated bilateral trade data, the study decomposes the change in the elasticity of trade with respect to distance into the part due to a shift in the composition of trade and the part due to increasing distance sensitivity among industries. It finds that adjustment in the composition of trade has had no effect on the change in the elasticity of distance. In contrast, for more than 25 percent of industries, distance has become more important. This implies that the increased distance sensitivity of trade is a result of a change in relative trade costs that affects many industries, rather than a shift to more distance-sensitive products. The analysis shows that the increasing importance of distance can be explained by faster trade growth within regions over the past 20 years. The regional effect is robust and is not a function of a distance-interval effect, trade preferences, borders, or the sharing of a common language.

The project will result in a policy report explaining the results in nontechnical terms and detailing their implications for feasible gains from trade liberalization in different locations. It will also produce several academic papers exploring questions on the importance of biased technological change and the implications of the results for regional trade agreements.

Findings have been presented at the World Bank, the Federal Reserve Board, the University of Delaware, the Empirical Investigations in International Trade Conference, and the American Economic Association meetings in January 2004. Future dissemination plans, recognizing the implications of the effects of distance on trade for unilateral, regional, and multilateral liberalization, center on institutions dealing with these matters: the World Trade Organization, the European Union, the Regional Integration Network in Latin America, and members of the Economic Community of West African States (ECOWAS).

Responsibility: Development Research Group, Trade—Caroline Louise Freund (cfreund@worldbank.org). With David Hummels, Purdue University; and Matias Berthelon, Pontificia Universidad Católica de Valparaíso, Chile.

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Intellectual Property Rights and U.S. Multinationals

In multilateral trade negotiations a significant point of contention between developing and industrial countries

involves the global standards for intellectual property rights required under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Many developing country policymakers continue to believe that the mandated strengthening of patent and other intellectual property rights systems now under way will work against their national economic interests, transferring rents to multinational corporate patentholders headquartered in the world's most advanced countries, especially the United States. Advocates of strong intellectual property rights counter that strengthening such rights will induce more innovation worldwide—and thus more rapid economic growth—and accelerate the transfer of technology from the industrial to the developing world, ensuring a relatively equal distribution of gains from this policy change.

This study investigates these issues by looking at how multinational enterprises respond to different kinds of patent reform in different countries. The analysis uses firm-level data on exports, licensing, affiliate sales, and patenting abroad from the survey of U.S. multinational activity by the U.S. Department of Commerce's Bureau of Economic Analysis.

The empirical results thus far show that U.S. multinationals do respond to changes in intellectual property rights regimes abroad. In the wake of legal reforms strengthening patent rights, royalty payments from overseas affiliates to U.S. parent companies with large patent portfolios increase substantially, even when the analysis controls for changes in the sales of U.S. affiliates. These findings are consistent with either an increase in the volume of technology being transferred or an increase in the degree to which U.S. multinationals are able to extract higher rents from technologies already deployed in these countries. But subsidiary evidence on affiliates' research and development spending and foreign patenting in the countries that reformed intellectual property rights systems considerably strengthens the interpretation that at least part of the measured increase in technology licensing reflects a real increase in the deployment of new technology to foreign affiliates in those countries. If further research substantiates these results, this may help allay some of the concerns of developing countries about implementing the TRIPS Agreement.

This study provides direct input into World Bank advisory work relating to questions about intellectual property rights reforms and technology transfer.

Findings have been presented in seminars at Harvard Business School, Stanford University, the University of Michigan, Columbia University, Yale University, the Summer Institute of the National Bureau of Economic Research, the Academy of International Business Conference (Monterey, California), Hitotsubashi University (Japan), Yokohama National University (Japan), and the Development Research Group's trade series at the World Bank.

Responsibility: Development Research Group, Trade—Carsten Fink (cfink@worldbank.org). With Lee G. Branstetter and Raymond Fisman, Columbia Business School and National Bureau of Economic Research; and C. Fritz Foley, University of Michigan.

Report

Branstetter, Lee G., Raymond Fisman, and C. Fritz Foley. Forthcoming. "Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from U.S. Firm-Level Panel Data." Policy Research Working Paper. World Bank, Development Research Group, Washington, D.C.

International Technology Diffusion: Impact of Trade and Regional Integration

This research extended work relating to trade-related technology diffusion in several new directions: South-South technology diffusion, the dynamics of regional integration, and the effect of the North American Free Trade Agreement (NAFTA) on Mexico. The study investigated several questions:

- How is technological knowledge obtained from the North further diffused in the South through trade between developing countries?
- How does the effect of foreign research and development (R&D) in the South and the North vary with the R&D intensity of industries?
- What are the implications of different trade policies for industry-specific productivity?
- How do North-South free trade agreements affect total factor productivity in the South? And how do the

effects on total factor productivity differ between industries with high and low R&D intensity?

The study focused on countries in Central and Eastern Europe, Latin America, and North America. It constructed a data set on North-South technology flows and used it to estimate the effect of trade, education, and governance on technology diffusion and growth. These data also allowed the study to examine the effect of trade-related foreign R&D, education, and governance on total factor productivity.

The results show that openness has a positive effect on productivity, an important dynamic benefit of trade. North-South trade raises total factor productivity mainly in industries with high R&D intensity, while South-South trade raises total factor productivity mainly in those with low R&D intensity. There is a virtuous cycle between education and openness: greater openness enhances the effect of education on total factor productivity in R&D-intensive industries, which increases the return to education, which then leads to more education, which further increases total factor productivity. A similar virtuous cycle exists between governance and openness.

The research sheds light on developing countries' optimal choice of partner for regional integration based on dynamic criteria. It also adds to the understanding of the effects of discriminatory trade policies. And it will help inform the work of the World Trade Organization in the next round of multilateral trade negotiations.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org).

Reports

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Managing Globalization

This project addressed a number of questions relating to globalization: What is the impact of globalization on poor countries and poor people? Why are some developing countries participating more in international trade and capital flows than others? What policies and institutions will enhance the benefits of globalization for poor countries? What is the effect of globalization on such issues as health, culture, child labor, human rights, and the environment? While the word *globalization* conveys a range of changes in the way countries and peoples interact, the study focused primarily on openness to foreign trade and investment, with some attention to other forms of openness (migration, the Internet, students abroad).

The project both conducted new research, through case studies and statistical analysis, and drew on existing research done at the World Bank and elsewhere. The work yielded three main findings that bear on current policy debates about globalization.

First, poor countries with around 3 billion people have broken into the global market for manufactures and services. While 20 years ago most exports from developing countries were primary commodities, now manufactures and services predominate. The "new globalizers" have experienced large-scale poverty reduction.

Second, in one of the most disturbing global trends of the past two decades, countries with around 2 billion people are in danger of becoming marginal to the world economy. Incomes in these countries have been falling, poverty has been rising, and these countries participate less in trade today than they did 20 years ago.

Third, while opinion polls in diverse countries reveal an anxiety that economic integration will lead to cultural or institutional homogenization, societies fully integrated into the global economy differ enormously. Among the richest countries, Denmark, Japan, and the United States differ in culture, institutions, social policies, and inequality. Among the developing country globalizers, such countries as China, India, Malaysia, and Mexico have

taken diverse routes toward integration and retain quite distinctive cultures and institutions. Nonetheless, some recent developments in the global trading and investment regime are pushing countries toward an undesired standardization.

The study highlights many actions that could help make globalization more beneficial, with seven particularly important for making globalization work for the poor:

- *Undertaking a "development round" of trade negotiations,* focusing first and foremost on market access.
- *Improving the investment climate in developing countries.* A sound investment climate means good economic governance, control of corruption, well-functioning bureaucracies and regulation, contract enforcement, and protection of property rights. Also key to a good investment climate is transport and telecommunications infrastructure providing links to other markets within a country and globally.
- *Improving delivery of education and health services.* With poor social services, globalization can easily lead to mounting inequality within a country and persistence of extreme poverty.
- *Providing social protection to a changing labor market.* Tailoring social protection to the needs of a changing economy helps workers adjust to the challenges of a more open economy—and enables workers and entrepreneurs to take more risks and respond to new opportunities.
- *Providing more and better managed foreign aid.* Evidence shows that private investment is slow to respond when low-income countries improve their investment climate and social services. It is precisely in this environment that large-scale aid can have a great impact on growth and poverty reduction.
- *Supporting debt relief for reformers.* Reducing the debt of the most marginalized countries, especially in Africa, will enable them to participate more in globalization and the benefits it can bring.
- *Tackling greenhouse gases.* There is broad agreement among scientists that human activity is leading to potentially disastrous global warming and that these changes will be especially burdensome for poor countries and poor people.

The research results have been disseminated in workshops and seminars in all the World Bank's regions and in OECD countries. Findings were published in the World Bank Policy Research Report *Globalization, Growth, and Poverty: Building an Inclusive World Economy* (Paul Collier and David Dollar, New York: Oxford University Press, 2002), which has been translated into a number of languages (Arabic, Chinese, French, Italian, Japanese, Portuguese, Russian, Spanish, and Vietnamese).

Measuring the impact of any research is difficult. But since the report was published, the tone of the globalization debate has changed considerably, from a "pro and con" debate to a more nuanced discussion of the changes at global and national levels that would make global economic integration proceed more smoothly and provide more benefits to developing countries and the poor people living in them.

Responsibility: Development Research Group, Office of the Director—Paul Collier (pcollier@worldbank.org), Investment Climate—Ximena Clark, Mary Hallward-Driemeier, and Sergio Schmukler, Trade—Will Martin, Infrastructure and Environment—Zmarak Shalizi, and Poverty Team—Michael Woolcock; Development Economics Senior Vice Presidency, Development Policy—David Dollar; Africa Technical Families, Poverty Reduction and Economic Management 2—Christiane Kraus; and East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Department—Martín Rama. With Pablo Zoido-Lobatón; Richard Freeman, Harvard University and National Bureau of Economic Research; Jean O. Lanjouw, Yale University, Brookings Institution, and National Bureau of Economic Research; Peter Lindert, University of California at Davis; Remco Oostendorp, Vrije University; John Sutton, London School of Economics; Anthony Venables, London School of Economics and Centre for Economic Policy Research; and Jeff Williamson, Harvard University.

Report

Collier, Paul, and David Dollar. 2002. *Globalization, Growth, and Poverty: Building an Inclusive World Economy.* World Bank Policy Research Report. New York: Oxford University Press.

Preshipment Inspection and Customs Corruption

First introduced in 1963 in Zaire (now the Democratic Republic of Congo) and since then adopted by more than 50 countries, preshipment inspection requires that imports be inspected by a private company at embarkation ports or airports or at the exporters' premises—rather than just at the importing country's customs. It was originally intended to fight the use of overinvoiced imports to evade capital controls. As capital controls were phased out, attention shifted to fighting evasion of import tariffs and, starting with Indonesia's program in 1985, to curbing underinvoicing. This study provides a new approach to evaluating preshipment inspection as a tool for improving tariff collection and reducing fraud when customs administrations are corrupt.

The study uses a simple information production framework to study the effect that introducing preshipment inspection may have on incentives to bribe and to accept bribes. The basic idea is that customs must spend costly resources assessing the value of shipments and that the outcome of their effort is stochastic—that is, greater effort only reduces the likelihood of errors. In this context preshipment inspection provides additional information on shipment value. In a perfect world this information would only be used by governments to control fraud. Alternatively, as the model highlights, if government authorities fail to use the information through audits and reconciliation, it simply generates information rents for corrupt customs officers that they will share with importers through bribery arrangements.

The study tests this hypothesis using trade data, providing nonparametric evidence for 16 developing countries. It then tests the hypothesis using parametric techniques in three of these countries (because of data constraints).

Theoretically, introducing preshipment inspection has an ambiguous effect on the level of customs fraud. This is confirmed by the nonparametric evidence for the 16 countries in the sample, where ambiguous effects are found. The parametric estimates suggest that preshipment inspection reduced fraud in the Philippines, increased it in Argentina, and had no significant effect in Indonesia.

The findings have been presented at several seminars, including 3eme Cycle Romand in Crans-Montana, Switzerland, and a trade workshop at the Centre for Economic Policy Research in London, and at the World Bank, George Washington University, and the University of Lausanne. Seminar presentations in Morocco and Uruguay are also planned.

Responsibility: Development Research Group, Trade—Marcelo Olarreaga (molarreaga@worldbank.org). With Jose Anson and Olivier Cadot, University of Lausanne.

Report

Anson, Jose, Olivier Cadot, and Marcelo Olarreaga. 2003. "Tariff Evasion and Customs Corruption: Does Preshipment Inspection Help?" Policy Research Working Paper 3156. World Bank, Development Research Group, Washington, D.C.

The Regional Impact of China's Accession to the World Trade Organization

This research attempts to analyze and quantify in a consistent way—taking into account the complex interregional and intersectoral links—the impact of China's accession to the World Trade Organization (WTO) on countries in East Asia and large developing countries in the rest of the world. The analysis uses a modified version of a global dynamic applied general equilibrium model (GTAP-Dyn) that differs from other models in its detailed coverage of individual East Asian economies and its global coverage featuring the major industrial and developing countries in the rest of the world. The model is solved to determine the endogenous changes in output and trade flows resulting from the proposed trade policy changes.

Results show that China will be the biggest beneficiary of its accession to the WTO. The industrial and newly industrialized economies in East Asia will be the next biggest beneficiaries, but their benefits will be small relative to the size of their economies and to the vigorous growth projected in the region over the next 10 years. By contrast, developing countries in East Asia are expected to incur small declines in real GDP and welfare as a result of China's accession. The main reason is that with the elimination of quotas on Chinese textile and

apparel exports to industrial countries, China will become a formidable competitor in areas where these countries have comparative advantage.

With accession to the WTO China will increase its demand for petrochemicals, electronics, machinery, and equipment from Japan and the newly industrialized economies—and for farm, timber, and energy products and other manufactures from East Asian developing countries. New foreign investment is likely to flow into these expanding sectors. The overall impact on foreign investment is likely to be positive for the newly industrialized economies, but negative for the less developed East Asian countries as a result of the contraction of their textile and apparel sector. As China becomes a more efficient supplier of services or a more efficient producer of high-end manufactures, its comparative advantage will shift into higher-end products. That will be good news for poor developing economies in East Asia, but it may mean greater competition in global markets for the newly industrialized economies.

Findings have been disseminated to World Bank staff and client countries through policy notes and presentations at the Fourth Asia Development Forum, an East Asia and Pacific Region workshop on trade and poverty in Tokyo, and seminars in East Asia. Key findings were also presented at conferences on global economic modeling in The Hague and Istanbul.

Responsibility: Poverty Reduction and Economic Management Network, Economic Policy Division—Elena Ianchovichina (eianchovichina@worldbank.org). With Terrie Walmsley, Purdue University and Sheffield University.

Reports

Ianchovichina, Elena, and Terrie Walmsley. 2003. "The Impact of China's WTO Accession on East Asia." Policy Research Working Paper 3109. World Bank, Poverty Reduction and Economic Management Network, Economic Policy Division, Washington, D.C.

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Regional Integration and Development

With most countries belonging to at least one regional integration arrangement and many considering joining or forming new ones, it was deemed important that the World Bank undertake a research project on the topic to help advise countries contemplating regional trade liberalization. This project examined issues relevant for regional integration arrangements in general. It analyzed the political benefits from regional integration in terms of security and democracy as well as conditions for failure in these areas. It examined the dynamic effects of regional integration through foreign direct investment, location choices, technology diffusion, and growth. And it examined the effects of different types of regional integration arrangements—South-South and North-South—in the areas of politics, trade policy, foreign direct investment, credibility, deep integration, technology, and growth.

The research used a variety of methodologies, depending on the questions examined, including computable general equilibrium models, theoretical models, and econometric analysis.

The main findings are as follows:

- Regional integration arrangements are created to attain political benefits (such as security or democracy) or as the result of political economy forces (pressure groups).
- Regional integration arrangements can improve security and governance if these are part of the initial motivation, but they can worsen security otherwise.
- North-South regional integration arrangements are more beneficial than South-South ones (Mercosur and other regional integration arrangements with middle-income countries may not fit the profile of South-South arrangements).
- To minimize the risks of harmful trade diversion and of transfer of revenues to partner countries, member countries should lower their most-favored-nation tariffs and liberalize unilaterally when they join regional integration arrangements.

The research has been brought together in a book (Maurice Schiff and L. Alan Winters, *Regional Integration and Development*, New York: Oxford University Press,

2003), intended for trade specialists and analysts, that covers the topics in depth, providing the analytic framework, case studies, empirical work, and background data. Designed to serve as a tool for teaching and technical advice, the book has been presented in developing and transition economies at conferences, to research institutions, and to policy researchers and analysts working on these issues. It has been or is being translated into Arabic, Chinese, French, Russian, and Spanish.

The findings have also been widely shared through trade seminars and dissemination missions to such organizations as Mercosur, the Regional Integration Network, the Organisation for Economic Co-operation and Development, the European Commission, and the Central Bank of Chile.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org) and Bernard Hoekman. With L. Alan Winters, University of Sussex; Soamiely Andriamananjara, Office of the U.S. Trade Representative; Dani Ben-David, Tel Aviv University; Magnus Blomström, University of Stockholm; Eric Bond, Pennsylvania State University; Won Chang; D. de Rosa, ADR International; Valerie de Bonis, Sapienza University, Rome; Raquel Fernandez, New York University; Anju Gupta; J. Hayden; Bartlomiej Kaminski, University of Maryland; Ari Kokko, Stockholm School of Economics; Patrick Messerlin; Marcelo Olarreaga, World Trade Organization; J. F. Ruhashyankiko; Isidro Soloaga; and Anthony Venables and Diego Puga, London School of Economics.

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Regional Trade Patterns

This project involves continuing research on regional trade integration and its dynamic implications, based on empirical models and econometric analysis. It examines the effect of regional trade agreements on prices and welfare in member countries, reviews existing regional integration policies in the Middle East and North Africa and suggests further reforms, and examines trade and regional integration policies in the African, Caribbean, and Pacific countries and in Latin American countries.

Results show that the evolution of patterns of trade, including distance, is affected by new technologies (such as just-in-time production), the evolution of transport costs (dwell costs relative to distance-related costs), and other factors—and that these factors in turn affect technology absorption and productivity growth. The results provide insights into the evolution of trade patterns and productivity growth for developing countries.

Results have been presented at the World Bank and at seminars and conferences.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org) and Bernard Hoekman. With Won Chang, U.S. Department of the Treasury; and L. Alan Winters, University of Sussex.

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Technology Diffusion and Growth in Latin America: Impact of Trade, Education, and Governance

This research, part of the body of work on the effect of trade policy on growth, estimated stocks of trade-related foreign knowledge and their effect—as well as the effects of education and governance—on total factor productivity. Openness has a positive impact on productivity through the transfer of technology, an important dynamic benefit of trade. The research examined this effect empirically for Latin America, including the interaction between technology diffusion, education, and governance.

Results show that greater openness and higher levels of education and governance raise total factor productivity. The findings, expected to inform World Bank operations, help clarify which factors matter for productivity growth and what their relative importance is.

Findings are being disseminated through working papers, journal articles, and conference presentations.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org) and Marcelo Olarreaga. With Yanling Wang, Carleton University.

Reports

Lumenga-Neso, Olivier, Marcelo Olarreaga, and Maurice Schiff. 2003. "On 'Indirect' Trade-Related R&D Spillovers." CEPR Discussion Paper 2871. Centre for Economic Policy Research, London.

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Schiff, Maurice, Yanling Wang, and Marcelo Olarreaga. 2003. "Trade-Related Technology Diffusion and the Dynamics of North-South and South-South Integration." Policy Research Working Paper 2861. World Bank, Development Research Group, Washington, D.C.

Trade and Technical Change

This research examined the effect of trade and education policies on North-North, North-South, and South-South technology spillovers. The broader objective was to shed light on the dynamic effect of openness and education on growth.

The research involved constructing stocks of research and development (R&D) in OECD countries, then using regression analysis to examine how trade affected total factor productivity in developing countries.

The results show that openness and higher education increase both technology spillovers and total factor productivity. North-South trade affects productivity mainly in industries with high R&D intensity, while South-South trade affects productivity mainly in those with low R&D intensity.

The research has helped clarify the effect of trade as a channel for technology diffusion and provided dynamic arguments for the benefits of openness. The results show the importance of education not only for those obtaining it but also for the economy as a whole, through the additional growth effects. Education enhances the growth effect of openness—and openness enhances the growth effect of education.

The results will be disseminated through workshops, conferences, papers, and journal articles.

Responsibility: Development Research Group, Trade—Maurice Schiff (mschiff@worldbank.org). With Yanling Wang, Carleton University.

Report

Schiff, Maurice, and Yanling Wang. 2003. "North-South and South-South Trade-Related Technology Diffusion: An Industry-Level Analysis." World Bank, Development Research Group, Washington, D.C.

Trade and Trade Policy Data System

Developing country policymakers need first-rate, flexible data analysis tools to evaluate offers made in trade negotiations. And the World Bank and its partner institutions need analytic tools to help them summarize the myriad trade data supplied by countries.

To help meet these needs, the World Bank's Development Data Group is developing the World Integrated Trade Solution (WITS), a system for accessing and retrieving trade and tariff data compiled by various international organizations. This project is building into the WITS system the capabilities for trade policy analysis and support to trade negotiators.

The work includes identification of users' needs, remote dissemination of portable versions of the software, and training of users in developing countries.

Responsibility: Development Research Group, Trade—Will Martin (wmartin1@worldbank.org); Development Data Group—Jerzy T. Rozanski; and World Bank Institute, Poverty Reduction and Economic Management Division—Marc Bacchetta.

Trade Facilitation and Asia-Pacific Economic Cooperation

Most developing countries have been undertaking first-generation trade reforms, mainly easing border restrictions on merchandise trade and liberalizing foreign exchange markets. As they have done so, it has become obvious that their successful integration into the world economy increasingly depends on complex, behind-the-border measures that fall under the heading of trade facilitation.

This research project has investigated how capacity building in trade facilitation could increase trade flows among member economies of Asia-Pacific Economic Cooperation (APEC) and worldwide. Using an econometric approach based on cross-country data on bilateral trade flows between developing and transition economies and OECD countries, the research has analyzed the potential effects on trade of improvements in the efficiency of customs, ports, and institutions.

The analysis shows that improving port efficiency has a large and positive effect on trade flows, as does easing regulatory barriers to trade. Improvements in customs and greater use of e-business significantly expand trade, but less so than improvements in ports or regulations. Estimates show that if APEC members with below-average indicators in these four areas improved their capacity to half the average for all APEC members,

annual intra-APEC trade could increase by $254 billion, or 21 percent. About half the increase would come from improvements in port efficiency. If the reform took place on a global scale (represented by 75 countries), the gains in annual trade would amount to $377 billion.

Findings have been disseminated through workshops and seminars for donor and government officials and trade and development economists and practitioners, including in Panama City (June 27–29, 2000); in Singapore (September 13–14, 2000); at the Japan Bank for International Cooperation (March 5, 2002); and at the World Trade Organization (July 2, 2003).

The project has constructed a database on trade facilitation for 75 countries, including APEC members, from multiple sources of survey data. The indicators of trade facilitation were developed to be of immediate use for policymaking.

The project has provided analytic support for World Bank country economic memorandums for Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua as well as for a trade facilitation grant to the Conference of Ministers of Agriculture of West and Central Africa and operational projects relating to trade facilitation and export competitiveness in Honduras and Peru. It has also fed into World Bank courses on trade facilitation (June 25, 2003, and March 31, 2004).

Results from the study are available on the Web at http://www.worldbank.org/trade/standards.

Responsibility: Development Research Group, Trade—John S. Wilson (jswilson@worldbank.org) and Tsunehiro Otsuki. With Denis Sosyura, Vanderbilt University; Catherine Mann, Institute of International Economics; Baishali Majumdar; and Yuen Pau Woo.

Reports

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Trade Facilitation and Development in East Asia

This study was designed to provide guidance to World Bank staff in formulating their policy research agenda and in advising East Asian policymakers on trade facilitation, an important aspect of the World Trade Organization's (WTO) Doha Development Agenda round of trade talks.

The study reviewed the literature and data on trade facilitation, comparing performance in East Asian countries with that in comparator countries in other regions. It also reviewed ongoing technical assistance activities and international collaborative agreements, including the World Customs Organization and WTO discussions. And it identified further research needed to answer questions developing countries may have about WTO negotiations on trade facilitation.

The study reviewed the activities of 19 agencies and organizations to identify key roles of each in promoting trade facilitation. And it identified customs valuation and management procedures conducive to rapid trade processing. The study found that clearance times in Western countries were much faster than those in East Asia, in large part because of cumbersome procedures and outdated technology used in East Asian developing countries. Among the worst performers for sea cargo were the Russian Federation, China, India, and Indonesia.

This study, along with other World Bank studies, contributed to the Bank's decision to launch a new trade facilitation lending program. It also helped shape the Bank's position on trade facilitation issues in the WTO.

Findings were presented to a high-level conference of experts in Cairo on May 20–21, 2002. In addition, World Bank studies incorporating some of the findings were presented to a Pacific Economic Cooperation Council conference in Brunei and to audiences in Africa, China, India, Pakistan, and Sri Lanka.

The study fed into several World Bank analyses, including those for the World Bank's *Global Economic Prospects 2002* (Washington, D.C., 2001) and *Global Economic Prospects 2003* (Washington, D.C., 2002), as well as the regional study *East Asia Integrates: A Trade Policy Agenda for Shared Growth* (Kathie Krumm and Homi Kharas, eds., Washington, D.C.: World Bank, 2004).

Responsibility: Development Prospects Group—Richard Newfarmer (rnewfarmer@worldbank.org). With Janet Tay, Janet Tay Consultants, Singapore.

Report

Janet Tay Consultants. 2002. "Facilitating Trade: The East Asian Experience in a Comparative Context." Paper presented at the roundtable Informing the Doha Process: New Trade Research for Developing Countries, Cairo, May 20–21.

Trade Modeling Project

This project has aimed to provide quantitative estimates of the effects of trade and related policy reforms on developing countries, particularly poor people within these countries. The work has involved a mix of applied studies providing direct estimates of the effects of particular reforms and methodology-focused studies developing better measures of the effects of trade reforms.

The project sponsored a set of papers, and a panel session on the World Trade Organization's (WTO) Millennium Round, at the Second Annual Conference on Global General Economic Modeling (Funen, Denmark, June 1999). The aim was to stimulate thinking and inform modelers about the issues posed by the Millennium Round for developing countries. The papers, covering the main sectors of liberalization, introduced several new approaches, including a dynamic approach to assessing trade liberalization and a stochastic protection approach to evaluating liberalization offers. The project has also undertaken several other activities.

Global trade modeling. A detailed global modeling exercise has provided the main empirical support for proposals on global trade reform. The results provided the basis for comparisons of the costs of industrial country protection with the costs of aid transfers, comparisons that have featured prominently in the debates on multilateral trade reform.

Tariff preferences. Applied modeling has provided inadequate treatment of tariff preferences, reducing the accuracy of the results and, often, making them completely misleading. This study introduced data on protection patterns—including preferences constructed from the UNCTAD Trade Analysis and Information System (TRAINS) data—into the Global Trade Analysis Project (GTAP) model. The resulting protection data were then compared with those developed by the International Trade Centre and Centre d'Etudes Prospectives et d'Informations Internationales (CEPII).

Formula approaches to tariff negotiations. Perhaps the greatest successes in trade liberalization under the General Agreement on Tariffs and Trade (GATT) and in regional trade arrangements have occurred when negotiators focused on formulas for reducing trade barriers, as in the Kennedy and Tokyo Rounds, rather than on request-and-offer approaches. The formula approach used in the Uruguay Round agreement on agriculture, however, which emphasized average cuts in tariffs rather than cuts in the average tariff, highlighted the need for

care in specifying the formula. A study has identified a new approach to tariff cutting formulas that provides much more flexibility than earlier approaches, and analyzed its implications for tariff levels in key industrial and developing countries.

Link between trade and poverty. Another activity is developing a large-scale modeling approach to take into account the effects of global trade reform on the welfare of the poor. Virtually all analyses of global trade reform have provided estimates of its effect only at a national aggregate level. This study aims to develop a modeling framework able to provide estimates of the effects of different trade reforms on poor people in a wide range of countries. The analysis covers 14 countries and incorporates key distinctions between short- and long-run effects of trade reform on the poor. The work has shown that the short-run effects of policies such as agricultural trade reform often differ markedly from the long-run effects. A clear policy implication is that agricultural protection is likely to be much less effective in reducing rural poverty in the long term than in the short term.

Quantitative analysis undertaken or underpinned by this project has provided quantitative estimates providing support for particular reforms, particularly the inclusion of industrial products in the negotiations.

Extensions of the work on tariff preferences were presented at a WTO technical seminar on tariff preferences and their utilization on March 31, 2004. And results on the short- and long-run effects of trade reform on poverty were presented at the summer meetings of the American Agricultural Economics Association in 2003.

Responsibility: Development Research Group, Trade—Will Martin (wmartin1@worldbank.org) and Bernard Hoekman. With Warwick McKibbin, Australian National University; Joseph François, Erasmus University; and Thomas W. Hertel, Purdue University.

Reports

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Hoekman, Bernard, and Will Martin, eds. 2001. *Developing Countries and the WTO: A Pro-Active Agenda.* Oxford: Blackwell.

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Ingco, Merlinda, and L. Alan Winters. 2004. *Agriculture and the New Trade Agenda.* Cambridge: Cambridge University Press.

Markusen, James R., Thomas F. Rutherford, and David Tarr. 1999. "Foreign Direct Investment in Services and the Domestic Market for Expertise." Paper presented at the Second Annual Conference on Global General Economic Modeling, Panel Session on the WTO's Millennium Round, Funen, Denmark, June.

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Martin, Will, and Mari Pangestu, eds. 2003. *Options for Global Trade Reform: A View from the Asia-Pacific.* Cambridge: Cambridge University Press.

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Robinson, Sherman, and Zhi Wang. 1999. "Capturing the Implications of Services Trade Liberalization." Paper presented at the Second Annual Conference on Global General Economic Modeling, Panel Session on the WTO's Millennium Round, Funen, Denmark, June.

Warren, Anthony, and C. Findlay. 1999. "Measuring Impediments to Trade in Services." Paper presented at the Second Annual Conference on Global General Economic Modeling, Panel Session on the WTO's Millennium Round, Funen, Denmark, June.

Trade Policy and Development

This study investigates how product variety in the exports of a country affects aggregate growth in that country through its impact on productivity. The study has constructed product variety indexes, then related the indexes to the GDP of 40 countries in a GDP function framework. The final analysis involves estimating a system of equations with nonlinear cross-equation restrictions. The main data sources are the World Bank's *World Development Indicators 2003* (Washington, D.C., 2003) and U.S. customs statistics.

The study is still exploring the empirical relationship between product variety in exports and productivity growth. The findings are expected to deepen the understanding of how trade leads to growth in an economy in ways beyond the known channels such as economies of scale or specialization.

The project will produce a policy-oriented summary paper reporting its results, to be presented at the 2004 meetings of the American Economic Association in San Diego.

Responsibility: Development Research Group, Trade—Bernard Hoekman (bhoekman@worldbank.org) and Hiau Looi Kee. With Robert Feenstra, University of California at Davis and National Bureau of Economic Research.

Trade Research Relating to the Doha Development Round

As the World Trade Organization's (WTO) ministerial meeting in Cancún approached, a growing demand emerged for a better understanding—and for a better quantification—of the likely effect of Doha Development Round proposals on developing countries, particularly low-income countries. This research initiative was intended to help fill that gap and to provide developing countries with negotiation strategies consistent with their development objectives.

The initiative launched a series of related analytic and empirical studies, undertaken by World Bank staff in close collaboration with academics in developing and industrial countries. Analytic studies helped in understanding what was at stake, while empirical studies helped in understanding how much was at stake.

The research led to the conclusion that a more flexible WTO system is needed, one that can accommodate the specific needs of each member country. A rethinking of WTO's special and differential treatment is crucial. The same is true for market access.

There is no area in which developing countries will either all benefit or all lose from a move toward liberalization. Measures of the effects of liberalization need to be country specific. But a WTO agreement that would reduce border barriers to trade in agriculture (not necessarily subsidies) is likely to benefit developing countries as a group (though Mauritania, for example, would lose given its import and export bundle). In services, binding commitments in mode 4 (allowing people to move temporarily into a country for the purpose of providing services) are likely to benefit many developing countries (such as India).

The research has assisted developing countries in identifying their interests in the context of the Doha Development Agenda and exploring the development implications of alternative options for multilateral rules on Doha issues. The main instruments for disseminating results to policymakers were the World Bank's *Global Economic Prospects 2003* (Washington, D.C., 2002) and *Global Economic Prospects 2004* (Washington, D.C., 2003). These were accompanied by a series of conferences,

seminar presentations, and high-level meetings with policymakers in developing and industrial countries. The research also provided input into several videoconferences organized by the World Bank Institute for developing country delegations that were to participate in the Cancún ministerial meeting.

The initiative has created databases that are now publicly available, including databases on bilateral trademark registration, domestic agricultural support, and export subsidies. The databases are available on request and will be posted on the Web at http://worldbank.org/trade.

Responsibility: Development Research Group, Trade—Bernard Hoekman (bhoekman@worldbank.org), Will Martin, and David Tarr; and World Bank Institute, Poverty Reduction and Economic Management Division—Philip English. With Keith Maskus; Edward Chisanga, Zambia representative to the World Trade Organization; Moctar Fall, International Federation for Alternative Trade, Senegal; Alan Deardorff, University of Michigan; Anirudh Shingal, Simon Evenett, and Savita Narasimham, World Trade Institute; Binyam Taddesse and Kishore Gawande, Texas A&M University; Constantine Michalopoulos; Kamal Saggi, Southern Methodist University; L. Alan Winters, University of Sussex; Philip Schuler; Randeep Rathindran, Utsav Kumar, and Oleksandr Shepotylo, University of Maryland; Robert Staiger, University of Wisconsin; Vlad Manole; Celine Carrere, CERDI-CNRS; Ileana Cristina Neagu; JoAnne Feeney, University of Albany; Krista Lucenti, University of Berne; Yanling Wang, Georgetown University; Ditry Manakov, Infomost, Moscow; Grishankov Dmitry Eduardovitch, Center of Insurance Information, Moscow; Sergey Makarevich and Thomas Rutherford, University of Colorado at Boulder; Tamara Novikova, Central Marine Research and Design Institute, Moscow; Nadezhda Ivanova, International Center for Monetary and Banking Studies, Geneva; Vladimir Klimushin, Central Science Research Institute on Telecommunication, Moscow; and Copenhagen Economics ApS.

Reports

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Baffes, John. 2003. "Cotton Market Setting Policies, Issues, and Facts." Policy Research Working Paper 3218. World Bank, Development Prospects Group, Washington, D.C.

Baffes, John, and Harry de Gorter. 2003. "Decoupling Support to Agriculture: An Economic Analysis and the Review of Experience." Paper presented at the Annual World Bank Conference on Development Economics, Paris, May 15–16.

Bagwell, Kyle, Petros Mavroidis, and Robert Staiger. Forthcoming. *The Case for Tradable Remedies in WTO Dispute Settlement.* World Bank Working Paper. Washington, D.C.

Beghin, John, and Ataman Aksoy. 2003. "Agricultural Trade and the Doha Round: Preliminary Lessons from Commodity Studies." Paper presented at the Annual World Bank Conference on Development Economics, Paris, May 15–16.

Bhattasali, Deepak, Shantong Li, and Will Martin, eds. 2004. *China and the WTO: Accession, Policy Reform, and Poverty Reduction Strategies.* New York: Oxford University Press.

Brenton, Paul. 2003. "Integrating the Least Developed Countries into the World Trading System: The Current Impact of EU Preferences under Everything but Arms." Policy Research Working Paper 3018. World Bank, Poverty Reduction and Economic Management Network, Washington, D.C.

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Trade, Standards, and Regulatory Reforms

At the forefront of research and policy discussions on trade is the relationship between trade, technical regulations, and voluntary standards. Such issues as the appropriate levels of protection for food safety and the costs of testing and certification regulations are becoming increasingly critical for developing countries as tariffs decline and as these countries seek to strengthen their industrial performance, increase their agricultural production, and expand their export opportunities. This project explores how standards and technical regulations can affect exports from developing countries and how multilateral policies should be formulated in reference to the international standards. It also aims to help build the capacity of developing countries in research and policymaking to facilitate trade.

The research quantifies the impact of standards on trade and development, focusing on developing countries. The analysis is based on an econometric approach using cross-country data covering bilateral trade flows between developing and OECD countries and cross-firm data covering 690 firms in 17 developing countries.

Several studies compare the impact of different food safety standards, estimating the potential gains to African exporting countries if the importing countries followed the Codex standards rather than the more stringent standards followed by most European countries. A study on aflatoxin standards and trade in nuts, cereals, and dried and preserved fruits estimated the potential gains for nine African exporting countries at $670 million annually. A study on chlorpyrifos pesticide standards and banana trade estimated the potential gains for four African

exporting countries at $410 million. And a study on veterinary drug standards and beef trade estimated the potential gains for African exporting countries at $160 million. Another study is empirically estimating the cost to developing country firms of complying with foreign standards and the effect of standards on export ability.

The project has provided advisory services to developing countries through World Bank missions. And it has contributed to a policy-based loan in the Arab Republic of Egypt, a public policy technical assistance loan in Panama, and private sector and export competitiveness projects in Honduras, Mozambique, Peru, and Uganda.

Results have been presented at seminars and conferences for donor and government officials and trade and development economists and practitioners. These include presentations at a meeting of the World Trade Organization Committee on Technical Barriers to Trade (February 2000), a meeting of the World Trade Organization Committee on Sanitary and Phytosanitary Standards (June 2000), an Asia-Pacific Economic Cooperation (APEC) seminar on trade facilitation in Singapore (September 2000), an Asian Development Bank Institute seminar (February 2002), and a trade training seminar at the U.S. Agency for International Development (June 2003). They also include presentations in Panama City (June 2000), Nairobi (July 2001), and Tokyo (March 2002) and at Georgetown University (June 2002) and the World Trade Organization (July 2003).

Research findings have been used in several World Bank training courses, including a course on standards and agricultural trade (May 2002) and two courses on trade facilitation (June 2003 and March 2004).

The project has developed a database on standards and trade based on a firm-level survey in 17 countries and will make the database available on the Web in 2004. Results from the study are available at http://www.worldbank.org/trade/standards.

Responsibility: Development Research Group, Trade—John S. Wilson (jswilson@worldbank.org) and Tsunehiro Otsuki. With Keith Maskus and Xiaoyang Chen, University of Colorado at Boulder.

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Trade, Trademarks, and Reputation

Reputation in foreign markets is widely recognized as a major determinant of a country's export performance. For developing country firms, rarely able to offer a historical record of reliable trade performance, the use of trademarks becomes a crucial mechanism for establishing their reputation and thus protecting their products and business practices from free riding by competitors.

A potential problem with trademark protection is that it may be subject to political capture. Allowing some firms but not others to register their trademarks—or applying different standards in enforcing trademark law—can confer an important commercial advantage. Discrimination in trademark registration against foreign firms exporting to the local market can thus become

another tool of trade protection—a "behind the border" barrier to trade.

This project explores the extent to which discrimination in trademark registration has been used to hinder exports from other countries, focusing the empirical application on China, Hong Kong (China), India, and South Africa. The study combines a data set of cross-country trademark registrations and applications, drawn from the World Intellectual Property Organization database, with trade, production, and tariff data for more than 100 country pairs and 30 industries. Using a model of asymmetric information between buyers and sellers, it then explores the extent to which governments (or trademark offices) have incentives to discriminate against foreign firms. Finally, it tests the implications of the model using data for the four developing economies.

The study has found several patterns in the bilateral registration of trademarks. For example, OECD countries dominate the global market of trademark registration. But in low-income countries non-OECD countries represent as much as 20 percent of all foreign trademark registrations.

In addition, the study has found prima facie and more structural evidence that in China trademark registration does not seem to be used as a "behind the border" barrier to discriminate against foreign firms.

Responsibility: Development Research Group, Trade—Marcelo Olarreaga (molarreaga@worldbank.org), Carsten Fink, Beata Smarzynska, and Ekaterina Krivonos. With Eugenia Baroncelli, University of Bologna.

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Understanding Country and Currency Risk

This research studies the behavior and determinants of currency risk and country risk in emerging market economies. Currency risk is measured by the currency premium, using currency forwards and spot rates. Country risk is measured by the spread of foreign currency sovereign bonds over bonds issued by Germany and the United States.

The study addresses two main policy questions: What is the credibility of exchange rate regimes? And why do countries borrow short term despite its risks?

The work on currency risk explores major dimensions of the currency premium and characterizes the behavior of this premium in two currency boards—those of Argentina and Hong Kong (China)—able to maintain a hard peg to the U.S. dollar for a long time. The research shows that no matter how hard exchange rates are pegged, they are not fully credible. Moreover, their credibility declines significantly at times of turmoil and with certain policy actions.

The work on country risk proposes a new explanation of why countries rely on short-term debt and expose themselves to liquidity crises, arguing that borrowing short term is cheaper than borrowing long term. To do so, it presents a model that describes the optimal risk sharing between the debtor country and bondholders. In addition, it estimates the relative cost of borrowing at different maturities by constructing a new database on bond prices for eight emerging market economies (Argentina, Brazil, Colombia, Mexico, the Russian Federation, Turkey, Uruguay, and República Bolivariana de Venezuela) and two reference countries (Germany and the United States), from the early 1990s until the present.

The analysis shows that the cost of issuing long-term debt is higher than the cost of issuing short-term debt on average, and that this difference is greater during periods of financial turmoil than during tranquil times. Moreover, it shows that there is a negative correlation between the relative cost of long-term borrowing and the maturity of new debt issues. Emerging market economies issue relatively more short-term debt during periods of financial turmoil and wait for tranquil times to issue long-term debt.

The research has been presented at the 2002 annual meetings of the American Economic Association in Washington, D.C.; the National Bureau of Economic Research (NBER) Inter-American Seminar on Economics in

Cambridge, Massachusetts, in 2001; the NBER Summer Institute in 2002; the Latin American Meeting of the Econometric Society in Buenos Aires; meetings of the Latin American and Caribbean Economic Association in Madrid, Montevideo, and Puebla (Mexico); the World Bank–International Monetary Fund Joint Research Seminar; New York University; the Federal Reserve Bank of Dallas; and Universitat Pompeu Fabra in Barcelona.

The project produced two databases, one containing various measures of currency risk at different maturities and the other containing information on bond spreads at different maturities.

Responsibility: Latin America and the Caribbean Region, Office of the Chief Economist—Luis Servén (lserven@worldbank.org) and Marina Halac; and Development Research Group, Macroeconomics and Growth—Sergio Schmukler. With Leonor Coutinho Gouveia; Fernando Broner, University of Maryland; Guido Lorenzoni, Princeton University; Andrea Bubula, Columbia University; Tatiana Didier, Massachusetts Institute of Technology; and Yaye Sakho, University of Pennsylvania.

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The World Trade Organization and the Russian Federation

The Russian Federation is the last large economy remaining outside the World Trade Organization (WTO). Its accession to the WTO is considered important for the country's economic growth and stability (and thus for world stability) as well as for the global trading system. To help Russia recognize where further reform and WTO commitments can be useful to its growth, development, and poverty reduction, this study explores potential effects of WTO accession for the Russian economy.

To carry out the study, a comparative static model of the Russian economy was developed. The model includes both competitive and imperfectly competitive sectors. One innovative aspect of the model is that it assesses the impact of foreign direct investment with Dixit-Stiglitz productivity effects in the service sectors in an applied setting. In addition, the project produced estimates of the ad valorem equivalents of barriers to foreign direct investment in several Russian service sectors—banking, insurance, telecommunications, and maritime and air transport services—based on a survey of Russian research institutes on the regulatory environment in each sector. International cross-country regressions were then used to determine the effect of WTO commitments to liberalize foreign direct investment in these key areas.

Analysis of the effect of WTO accession suggests that Russia would gain through better access to export markets, better resource allocation, better access to modern technologies resulting from greater competition in goods markets, and, most important, better access to high-quality business services as a result of lowering barriers to foreign direct investment in services. Estimates show that WTO accession would lead to gains equal to about 7.4 percent of consumption in the medium run and up to 24 percent in the long run, taking into account the potential positive effect on the investment climate. Export-intensive sectors would expand the most, while sectors that do little exporting and are relatively protected would lose in the short to medium run. Foreign direct investment in the business service sectors would be likely to increase the demand for labor in these sectors and present opportunities for Russian firms to form joint ventures with multinationals, but also induce a decline in wholly owned Russian firms that do not form joint ventures with multinationals.

Given the importance of telecommunications services, a separate analysis assessed the effect of telecommunications reform within the WTO. The analysis estimates that lowering barriers to foreign direct invest-

ment in telecommunications would lead to substantial gains for the Russian economy, equal to almost 1 percent of consumption, with potentially much greater gains in the long run.

Since the pricing of natural gas presents a major issue for the accession discussions, another analysis assessed the costs and benefits for those affected. This analysis finds that Russia has market power in the European market and is optimizing the price and quantity it sells there. In the domestic market, where Gazprom retains a near monopoly, the analysis suggests that allowing Gazprom to raise its natural gas prices to the full long-run marginal costs would produce benefits to Russia of about $1.24 billion a year.

The analysis also reveals that, from Russia's perspective, there is no economic rationale for unifying its domestic and export prices of natural gas. If Russia were to sell natural gas to Europe at the full long-run marginal cost plus transport costs, it would lose $5 billion–7.5 billion a year—while European consumers would gain even more ($7.5 billion–10 billion a year). If Russia instead were to raise its domestic prices to those it charges in Europe, Russian industry would incur large adjustment costs. Absorbing the cost increases would induce Russian industry to switch to alternative fuels and produce less gas-intensive products that cannot be justified on the basis of Russia's comparative advantage. If Gazprom were to adopt its optimal "two-part tariff," the efficient world price would be achieved and Gazprom would increase its profits, but this involves significant long-term risks of lost market share.

The general equilibrium analysis is the first to show clear and substantial gains from the endogenous productivity effects of liberalizing foreign direct investment in the service sector. Thus it provides intellectual background for the "behind the border" agenda that the World Bank's Trade Group is emphasizing in its dialogue with client countries and operations staff. The gas pricing analysis has been persuasive in changing the debate in Washington, D.C.; while many had assumed that a unified domestic and export price was optimal for Russia, dual pricing of natural gas is now generally acknowledged to be in Russia's interest.

Results have been discussed with the Russian government. In addition, the general equilibrium work has been presented at two conferences organized by the Center for Economic and Financial Research in Moscow; a conference organized by the Russian Ministry of Economic Development and Trade and the International Labour Organization in St. Petersburg; the U.S.-Russia Business Council in Washington, D.C.; the U.S. Chamber of Commerce in Moscow; and a World Bank Institute seminar in Moscow. Several more presentations are planned, including at the Global Trade Analysis Project conference in Washington, D.C., in June 2004.

Data and papers from the project are available on the Web at http://www.worldbank.org/trade.

Responsibility: Development Research Group, Trade—David Tarr (dtarr@worldbank.org), Ekaterina Krivonos, and Oleksandr Shepotylo; and Europe and Central Asia Region, Infrastructure and Energy Services Department —Peter Thomson. With Thomas Rutherford, University of Colorado; Jesper Jensen, Copenhagen Economics, Denmark; Fukunari Kimura and Mitsuyo Ando, Keio University, Japan; and Takamune Fujii, Aichi University, Japan.

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Domestic Finance

Bank Concentration and Competition

Competition policies in banking may involve difficult tradeoffs. While greater competition may enhance the efficiency of banks, with positive implications for economic growth, it may also destabilize banks, with costly repercussions for the economy. Similarly, while greater competition may produce banks that enable small firms to exercise their entrepreneurial energies, it may also yield less stable banks prone to devastating crises.

This research project explores these issues by assessing the effect of bank concentration, regulations, ownership, and institutional development on efficiency, financial stability, and firms' access to finance. The research is both theoretical and empirical, with the empirical work using cross-country macroeconomic, firm-level, and bank-level data. The project includes regional studies—on Africa, Europe, and Latin America—exploring the impact of bank concentration. The aim is to better understand the elements that contribute to the level of banking competition, benchmark bank competition and concentration around the world, and investigate the tradeoffs involved in decisions on regulatory interventions to alter market structure.

There is no single, accepted measure of bank competition. For lack of a better measure, bank concentration is often used as an indicator of bank competition. The competitive environment is also influenced by bank regulations, such as restrictions on entry, exit, and bank activities, and by national institutions that govern economic freedom in general. The ownership structure of banks, such as the extent of state or foreign ownership in banking, and macroeconomic and financial conditions may also play an important part. The research uses all these measures.

Results make it clear that, contrary to conventional wisdom, there are no difficult tradeoffs when it comes to bank competition. Greater competition—as captured by lower entry barriers, fewer regulatory restrictions on bank activities, greater banking freedom, and better overall institutional development—is good for efficiency, good for stability, and good for firms' access to finance. Another important finding is that concentration is not a good proxy for the overall competitive environment, and its impact often depends on the regulatory and institutional framework. Thus policymakers would do better to focus on improving the regulatory and institutional environment and ownership structure than to try to reduce concentration in banking.

The findings have been disseminated to policy audiences through training programs, operational support activities, and presentations to the World Bank's Finance Sector Board (November 2003). They were also presented at the World Bank Conference on Bank Concentration and Competition, held April 3–4, 2003, in Washington, D.C., and attended by academics, World Bank and International Monetary Fund staff, and policymakers from more than 30 developing countries. The conference papers are forthcoming in a special issue of the *Journal of Money, Credit, and Banking* and are available on the Web, along with a database on bank concentration around the world, at http://www.worldbank.org/research/interest/confs/bank_concentration.htm.

Responsibility: Development Research Group, Finance—Aslı Demirgüç-Kunt (ademirguckunt@worldbank.org) and Thorsten Beck, and Trade—Maria Soledad Martinez Peria; and Financial Sector Operations and Policy Department—Luc Laeven. With Ross Levine and John Boyd, University of Minnesota; Vojislav Maksimovic, University of Maryland; Franklin Allen, Wharton School; Douglas Gale, New York University; Allen Berger, Joe Haubrich, and Nicola Cetorelli, Federal Reserve System; Charles Okeahalam, University of Witwatersrand; Stijn Claessens, University of Amsterdam; and Ashoka Mody and Gianni de Nicoló, International Monetary Fund.

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Bank Privatization in Developing Countries

Countries have used a variety of methods in selling state-owned banks to the private sector. Because the World Bank is often asked for advice on how to design successful bank privatizations to ensure strong postprivatization performance and improve sector stability, this project summarized those experiences, analyzed the political economy factors that affected the choice of privatization method, and studied how postprivatization performance differed under alternative methods. The research used a variety of approaches, designed to provide useful information about when it is most fruitful to pursue bank privatization, how alternative transaction designs affect outcomes, and how to avoid common obstacles.

The project conducted detailed country case studies and careful econometric analyses of bank-level panel data in 12 countries—Argentina, Brazil, Bulgaria, Croatia, the Czech Republic, the Arab Republic of Egypt, Hungary, Mexico, Nigeria, Pakistan, Poland, and Romania. These 12 countries were chosen because they had high levels of state ownership of banks at some point in the 1990s and undertook a relatively large number of privatizations.

The country case studies were complemented by cross-country analyses. By examining cross-country variation in bank privatization, one study directly tested the political and economic factors that lead governments to relinquish control of banks. Others yielded policy conclusions about popular methods of bank privatization. These studies used event study methodology, benchmarking the share price of the acquired or acquiring bank against share prices for the market as a whole and for a control group of banks that were not privatized.

The case studies and cross-country analyses support the conclusion that privatization, even of relatively poorly performing banks, improves performance over continued state ownership. But several policies reduce the benefits of privatization. Continued state ownership, even of minority shares, harms the performance of privatized banks. In weak institutional environments share offerings produce smaller performance gains than direct sales to strategic investors. And prohibiting foreigners from participating reduces the gains from both direct sales and share issue privatization.

The research was presented at the World Bank Conference on Bank Privatization, held in Washington, D.C., on November 20–21, 2003. The conference papers will be published in a special issue of the *Journal of Banking and Finance.* In addition, the conference findings were

presented at a World Bank workshop designed to inform banking regulators and supervisors from developing countries about current research.

The conference papers are available on the Web at http://www.worldbank.org/research/projects/bank_privatization_conference.htm.

Responsibility: Development Research Group, Finance—Gerard Caprio Jr. (gcaprio@worldbank.org), Trade—Robert Cull, and Investment Climate—George R. G. Clarke. With Emilia Bonaccorsi di Patti, Bank of Italy; John P. Bonin, Wesleyan University; Kimberly Gleason, Florida Atlantic University; Stephen Haber, Stanford University; Iftekhar Hasan, Rensselaer Polytechnic Institute; Afeikhena Jerome, University of Ibadan; Shawn Kantor, University of Arizona; William Megginson, Oklahoma University; Fariborz Moshirian, University of New South Wales; Marcio Nakane, University of São Paulo; Robert Nash, Wake Forest University; Mohammed Omran, Arab Monetary Fund; Isaac Otchere, University of Melbourne; Mary Shirley, Ronald Coase Institute; William Summerhill, University of California at Los Angeles; Paul Wachtel, New York University; and Jonathan Williams, University of Wales.

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Changes in African Financial Systems during the 1990s

Many African countries experienced widespread financial sector problems in the 1980s and 1990s. Reforms started in the 1990s. This study assessed their impact by comparing the status of African financial systems between the early 1990s and the early 2000s, over the period of early reforms.

The study used cross-country information from the International Monetary Fund's International Financial Statistics database and the World Bank's World Development Indicators database to develop indicators of financial sector performance. It supplemented data from Bankscope with data from annual reports and other primary sources to develop indicators of bank performance.

This midterm evaluation of African reforms shows that the results have been mixed. State banks were privatized, laws updated, and inflation brought under control. Foreign banks gained a much larger market share, while state banks saw their role decline. Financial systems generally improved by some measures; for example, many insolvent banks were closed, bank accounting and auditing generally improved, and banking supervisors were given more authority, at least on paper. But many African financial systems grew less rapidly than the economy. The banks now hold more foreign assets, partly in response to the increase in foreign currency deposits. Only a few financial systems appear to have increased lending to the private sector. Thus while the systems may be more stable, the availability of lending and depository services has not yet increased.

The results of the research have been used for development assessments in financial sector adjustment programs in Africa.

Responsibility: Financial Sector Operations and Policy Department—Jo Ann Paulson (jpaulson@worldbank.org).

Credit Fluctuations in Latin America

The Latin American financial history of the 1990s was characterized by wide fluctuations in bank credit to the private sector. These fluctuations were relatively synchronized across countries, suggesting common region-wide factors at work. Moreover, a significant stagnation or contraction of credit was observed after 1998 in many Latin American countries. This research investigates factors behind these observations and their policy implications. It quantifies the importance of different determinants of credit supply and demand, applying a pooled mean group estimation technique to quarterly panel data covering 10 Latin American countries in 1991–2001.

The research finds that lending capacity and economic activity have been the main drivers of credit growth in the longer run, but that the adjustment to the long-run equilibrium has been slow. In the shorter run important factors have been crowding out by the government, macroeconomic uncertainty, changes in lending rates, and, especially during downturns, banks' unwillingness to lend and pressures on firms to delever-

age. The study also finds evidence of a growing phenomenon, particularly after 1998, of "liquid banks that do not lend"—reflecting a slower adjustment in lending capacity during downturns.

The findings suggest that the right policies depend on the stage of the credit cycle and the specific circumstances. In particular, a loosening of monetary policy intended to reactivate credit can backfire during a downturn in which risk perceptions are high and liquid banks unwilling to lend. In these circumstances cleaning up banks' balance sheets and adjusting corporate balance sheets are a precondition for a resumption of prudent credit flows.

Insights from the research have been incorporated into World Bank analytic and advisory activities and operations, including in Bolivia and Costa Rica. The initial research concept was presented at the Colombian Banking Association Conference in late 2000, and findings have been presented at the Latin American and Caribbean Economic Association meetings in October 2001 and at conferences in Cartagena, Colombia, in August 2002 and Santa Cruz, Bolivia, in September 2002.

Responsibility: Latin America and the Caribbean Region, Office of the Chief Economist—Augusto de la Torre (adelatorre@worldbank.org), and Finance, Private Sector, and Infrastructure Unit—Danny Leipziger. With Giancarlo Gasha and César Orosco.

Report

Leipziger, Danny, and Augusto de la Torre, with Giancarlo Gasha and César Orosco. "Behind Bank Credit Fluctuations in Latin America during the 1990s: Old and New Suspects." World Bank, Latin America and the Caribbean Region, Office of the Chief Economist, Washington, D.C.

Firm-Level Finance for Small and Medium-Size Enterprises

The World Bank Group has a substantial portfolio of activities relating to small and medium-size enterprises (SMEs). But despite the strong interest among developing country policymakers in developing the SME sector, and the World Bank's frequent involvement in helping to design strategies for doing so, there has been relatively little systematic research in this area. As a result, the rationale for these efforts remains vague.

This project aims to help improve World Bank operations and government policies relating to small and medium-size enterprises by:

- Studying how firm size is determined and whether small and medium-size enterprises have an important impact on growth and poverty reduction.
- Examining to what extent small and medium-size enterprises face greater constraints to their growth and which policies and future trends are likely to affect these constraints.
- Exploring creative ways within different country settings to make the existing lending to small and medium-size enterprises more effective.

The research will be based largely on empirical work, which will use cross-country macroeconomic, firm-level, and bank-level data to analyze determinants of firm size and entry, growth obstacles faced by firms of different sizes, and the impact of firm size distribution on economic development. The project will also include country case studies.

Responsibility: Development Research Group, Finance—Aslı Demirgüç-Kunt (ademirguckunt@worldbank.org) and Thorsten Beck.

Foreign Bank Entry in Developing Countries

The 1990s saw a big increase in foreign bank lending and presence in developing countries, part of the larger process of financial integration in recent decades. Through three studies, this research project analyzes several issues relating to foreign bank lending to developing countries, particularly in Latin America.

The first study analyzes changes in foreign bank claims on the Latin American private sector in 1985–2000, focusing on the importance of home and host country factors in driving those claims. The study finds that banks transmit shocks from their home countries and that portfolio adjustments spill over to host countries. Over time, however, foreign bank claims have become less responsive to external factors. Moreover, the sensitivity to host country factors diminishes as foreign banks' exposure increases. And evidence shows that foreign bank claims

respond more to positive than to negative host country shocks and are not significantly curtailed during crises.

The second study investigates whether bank origin affects the share and growth of lending to small businesses, using bank-level data for Argentina, Chile, Colombia, and Peru in the mid-1990s. It finds that although foreign banks generally lent less to small businesses (as a share of total lending) than private domestic banks, the difference is due primarily to the behavior of small foreign banks. Large foreign banks generally surpass large domestic banks in both the share and the growth of lending to small businesses.

The last study examines how foreign bank presence affects firms' access to bank credit, combining responses from a 1999 survey of about 3,000 firms in 36 developing and transition economies with cross-country data on the level of foreign bank presence. The results suggest that all enterprises, including small and medium-size ones, have better access to bank credit in countries with greater foreign bank presence.

The studies have been disseminated in seminars inside and outside the World Bank as well as at international conferences, including the Latin American and Caribbean Economic Association meetings in Madrid in October 2002.

Responsibility: Development Research Group, Trade—Maria Soledad Martinez Peria (mmartinezperia@worldbank.org) and Robert Cull, and Investment Climate—George R. G. Clarke; and Latin America and the Caribbean Region, Finance Cluster—Susana M. Sánchez. With Ivanna Vladkova Hollar, International Monetary Fund; and Andrew Powell, Universidad Torcuato Di Tella.

Reports

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Martinez Peria, Maria Soledad, Andrew Powell, and Ivanna Vladkova Hollar. 2002. "Banking on Foreigners: The Behavior of International Bank Lending to Latin America, 1985–2000." Policy Research Working Paper 2893. World Bank, Development Research Group, Washington, D.C.

Incentives in Banking

This research activity focused on how to make finance effective, how to prevent or minimize financial crises, what record the state has as an owner in the financial sector, and how globalization in finance is leading to a world of finance without frontiers. The research identified and synthesized key findings of an extensive new wave of empirical research, conducted at the World Bank and elsewhere and based largely on cross-country databases. It highlighted the policy choices that will maximize growth and restore the financial sector to its intended role as a key sector for helping to cope with—rather than amplify—volatility. The research produced the following main findings:

Finance contributes to long-term prosperity. It is obvious that advanced economies have sophisticated financial systems. What is not obvious, but is borne out by the evidence, is that the services delivered by these financial systems have contributed in an important way to the prosperity of those economies. Getting the financial systems of developing countries to function more effectively in providing the full range of financial services is a task that will be well rewarded with economic growth.

Governments are not good at providing financial services. Government ownership of banking continues to be remarkably widespread, despite clear evidence that the goals of such ownership are rarely achieved and that it weakens rather than strengthens the financial system. The desirability of reducing, even if not necessarily eliminating, state ownership in low- and middle-income countries (where it is most widespread) follows from this evidence. But privatization must be designed carefully to reap the benefits it offers and minimize the risks of an early collapse.

Not even when a crisis hits. Even governments averse to an ownership role in banking may find it foisted on them

in a crisis. The authorities then must focus on getting out as quickly as possible, using the market—rather than government agencies—to identify winners and losers. Drawing on public funds to recapitalize some banks may be unavoidable in truly systemic crises, but they must be used sparingly, to leverage private funds and incentives. Procrastination and half measures—as reflected in lax policies involving regulatory forbearance, blanket guarantees, and their ilk—carry a large price tag that will affect the financial system and the economy for years to come.

But well-functioning markets need legal and regulatory underpinning. Creating an efficient and secure financial market environment requires an infrastructure of legal rules and practice and timely and accurate information, supported by regulatory and supervisory arrangements that help ensure constructive incentives for financial market participants. Success in this area will promote growth in a way that favors the poor and stabilizes the economy around the higher growth path. It will also expand direct access to finance for many now excluded from the market.

They also need a strategy based on harnessing incentives. Incentives are key to limiting undue risk taking and fraudulent behavior in the management and supervision of financial intermediaries—especially banks, which are prone to costly failure. Instability and crashes are endemic to financial markets, but need not be as costly as they have been in recent years. They reflect the results of risk taking that goes well beyond society's tolerance for risk. These costs represent a potentially persistent tax on growth. This can increase poverty in the near term, and have longer-term effects on the poor, through lower growth and through lower spending in such areas as health and education.

Diversity is good for stability. Banks, securities markets, and a range of other types of financial firms are all needed for balanced financial development. A radical preference for either markets or banks cannot be justified by the extensive evidence now available. Instead, the development of different segments of the financial system challenges the other segments to innovate, to improve quality and efficiency, and to lower prices.

Open markets can spur development. Most developing countries are too small to do without access to global finance, including financial services from foreign or foreign-owned financial firms. Reputable foreign financial firms should be welcomed into the local market. They bring competition, improve efficiency, and lift the quality of the financial infrastructure—and thus serve as an important catalyst for the kind of financial development that promotes growth. Governments need to remember that access to financial services is what matters for development, not who provides the services.

So can technology. The financial sector has long been an early adopter of innovations in information and communications technology. The internationalization of finance (despite efforts to block it) has been one consequence. This trend has helped to lower the cost of equity and loan capital on average, even if it has also heightened vulnerability to capital flows. The precise future role of e-finance in accelerating internationalization is not easy to predict, but it will surely be substantial. If volatility has increased, so too have risk management technologies and associated financial instruments. Some related credit information techniques, including scoring mechanisms, promise to expand access to credit for small borrowers.

The research has visibly shifted the positions of the World Bank and the International Monetary Fund on issues related to incentives in banking, notably deposit insurance. Underlying research projects (Financial Structure, Deposit Insurance, Bank Regulation and Supervision) have helped to increase the capacity for policy research in developing countries, especially by supplying them with new cross-country databases and new tools for analyzing these data. In addition, results from the research have been incorporated into World Bank Institute courses and distance learning events.

The research results have been widely shared with academics, the press, market specialists, and the policy community through dissemination events for the World Bank Policy Research Report produced by the project. These events, held May–July 2001, took place in London, Washington, D.C., Paris, Tokyo, Beijing, Shanghai, Sydney, Canberra, Adelaide, New Delhi, Mumbai, Cairo, Johannesburg, Hong Kong (China), and Vietnam. In addition, results were disseminated in African countries through a distance learning event in July 2001 and in Argentina, Chile, and Tunisia through conference presentations in 2003.

Responsibility: Development Research Group, Finance—Gerard Caprio Jr. (gcaprio@worldbank.org) and Patrick Honohan.

Report

World Bank. 2001. *Finance for Growth: Policy Choices in a Volatile World.* World Bank Policy Research Report. New York: Oxford University Press.

Pricing of Deposit Insurance

Many countries have recently implemented, or plan to implement, deposit insurance schemes. The design of these financial safety nets differs across countries, most importantly in the terms of coverage. Countries introducing explicit deposit insurance must decide which types of deposits to insure and up to what amount, which banks may participate, who should manage and own the deposit insurance fund, and at what levels to set the deposit insurance premiums. Given the potential contingent liabilities to the government of an underfunded deposit insurance system, it is important to set deposit insurance premiums so as to align banks' incentives with the government's objectives.

This study has developed several methodologies that can be used to set benchmarks for the pricing of deposit insurance in a country and quantify how specific design features affect the cost of such insurance. Applying these methodologies to a large sample of banks in different countries, it has assessed how country- and bank-specific characteristics contribute to the cost of deposit insurance. Results show that diversifying and differentiating risk within a deposit insurance system can reduce the price of deposit insurance. They also show that deposit insurance is underpriced in many countries.

Importantly, estimates suggest that many countries cannot afford deposit insurance. And deposit insurance is unlikely to be a viable option in a country with weak banks and institutions. The research shows that for countries that have decided to prefund deposit insurance, pricing it as accurately as possible is important.

The methods developed by the research have been used to assess the viability of the proposed pricing schemes in a number of countries, including Brazil, Namibia, and the Russian Federation.

Responsibility: Financial Sector Operations and Policy Department—Luc Laeven (llaeven@worldbank.org).

Report

Laeven, Luc. 2002. "Pricing of Deposit Insurance." Policy Research Working Paper 2871. World Bank, Financial Sector Strategy and Policy Department, Washington, D.C.

Securities Laws and Financial Development: Investor Protection at Acquisition Time across the World

Cross-country research on law and finance has established that laws have a tangible and important impact on markets, growth, and development. This study investigates the role of the regulation of acquisition activity, which has great policy relevance for emerging market economies. Corporate control transactions are among the chief sources of increases in corporate value as managers and owners seek efficiency gains and synergies. These gains are greater in emerging market economies, where markets are arguably less complete. At the same time the laws to ensure that newly created value is shared with minority investors are less strict (and less strictly enforced) in such economies. Poor protection of minority investor value, by lowering demand for listed shares by dispersed owners, can lead to less developed stock markets.

Through a comparative cross-country analysis of 30 countries with relatively developed securities markets, the study is examining the role of minority protection regulations in determining the breadth and depth of stock markets. It is exploring the effects of individual regulations, their substitutability and interplay, and the extent of protection of minority investor value. The study is also investigating the effects on firm value of corporate governance mechanisms such as mandatory tender offers and equal pricing provisions. Results should shed light on which regulations are "good" for investors and for private sector growth.

The study draws on existing data on countries' takeover regulations and national securities and corpo-

rate laws; stock market data from annual reports of stock exchanges and the World Bank's World Development Indicators database; and firm performance measures from Datastream, Moodys, and Worldscope.

After completion of the study, findings will be distributed to stock market regulators in all World Bank member countries. They will also be disseminated within the World Bank, where they will be useful in financial sector assessments.

Responsibility: Investment Climate Unit, World Bank—Tatiana Nenova (tnenova@worldbank.org).

Taxation of Financial Intermediation

The recent adoption in several countries of special financial transactions taxes, quickly yielding a substantial impact, refocused attention on financial sector taxation more generally. Many commentators have criticized financial sector taxes as arbitrary and distorting. But a basic framework for judging these issues has been lacking, hampering policy advice and allowing costly policy errors.

This research project set out to develop a framework for thinking about financial sector taxation with the aim of leading to guidelines for a good tax system—one that, so far as is possible, corrects known distortions, minimizes the distortions it imposes, and does not push tax collection from the financial sector beyond the point where marginal distorting costs exceed those elsewhere in the economy.

The study had three main parts. Two analytic papers set out the positive and normative theory of financial sector taxation. A fact-finding exercise described financial sector taxation in advanced economies. And six papers looked at the most important and controversial specific issues in financial sector taxation today.

The project's findings provide a framework for assessing the many proposals for tax policy reform affecting the financial sector. Such proposals are typically aimed either at simplification—usually some form of "flat tax" (including a value added tax on financial services, a universal transactions tax, or zero taxation on capital income)—or at subtle corrective taxation to offset market failures in the financial sector or to achieve other targeted objectives. The study concludes that neither of these reform approaches should be taken to an extreme. But while none of the three big flat tax reform ideas provides a complete and practical solution, each has lessons for a good system.

- Even if practicalities impede the introduction of a value added tax on financial services, the notion of such a tax represents a useful benchmark for comparing the burden and impact of existing and proposed indirect taxes.
- Significant financial transactions taxes are hard to justify on theoretical grounds and should be resorted to only as a transitory device when fiscal revenue is under particular pressure.
- Heavy emphasis on the taxation of capital income should be avoided.

Attempts at corrective taxation should be undertaken with extreme caution, as history suggests that unintended side-effects or deadweight losses may dominate the results. Both case studies and analytic research suggest that policymakers instead should focus on avoiding two traps into which financial sector taxation can fall: the sector's unique capacity for arbitrage and its sensitivity to inflation and thus to nonindexed taxes. All financial sector taxes need to be designed to be as arbitrage- and inflation-proof as possible.

Though technical, the recommendations of the study could make a significant development contribution given the importance of an effective financial sector to sustained growth. The messages from the research are beginning to be applied in the World Bank's financial sector adjustment programs.

The research findings were presented at a conference held at the Central Bank of Chile for policymakers and the research and financial community in December 2002. They were also presented in a World Bank Institute Global Dialogue session linking Ankara, Brasilia, Kiev, Mexico City, and Washington, D.C., in April 2003.

Responsibility: Development Research Group, Finance—Patrick Honohan (phonohan@worldbank.org) and Anqing Shi. With Michael Keen, Andrei Kirilenko, Victoria Summers, Karl Habermeier, and Emil Sunley, International Monetary Fund; Robin Boadway, Queens University, Kingston, Canada; Tullio Jappelli, Salerno

University, Italy; Philip Brock, University of Washington, Seattle; Ramon Caminal, Universitat Autònoma de Barcelona; Eliana Cardoso, Georgetown University; Brigitte Granville, Royal Institute for International Affairs, London; Mattias Levin and Peer Ritter, Centre for European Policy Studies, Brussels; and Satya Poddar, Ernst & Young, Canada. The International Monetary Fund contributed staff time to the research.

Reports

Honohan, Patrick. 2003. "Avoiding the Pitfalls in Taxing Financial Intermediation." Policy Research Working Paper 3056. World Bank, Development Research Group, Washington, D.C.

———. Forthcoming. "Alternative Approaches to Taxing the Finance Sector: Which Is Best and Where Does Chile Stand?" In J. Rodrigo Fuentes and Luis Antonio Ahumada, eds., *Banking Industry and Monetary Policy Transmission*. Series on Central Banking, Analysis, and Economic Policies. Santiago: Central Bank of Chile.

———, ed. 2003. *Taxation of Financial Intermediation: Theory and Practice for Emerging Economies*. New York: Oxford University Press.

Transaction Costs in Raising Capital

This study documents the transaction costs that developing country firms face when issuing debt and equity in domestic markets or abroad. It gathered cost data from the Web sites of stock exchanges and regulatory bodies, from Bloomberg and Bondware, and through questionnaire-based telephone interviews with regulators, securities lawyers, investment bankers, and company officers (typically chief financial officers). The study focuses on the transaction costs for firms in three countries—Brazil, Chile, and Mexico.

For Brazilian firms the cost of issuing debt locally or abroad is almost the same; while the legal costs of international issuance are much higher, the investment banking costs are much lower. Chilean firms can issue debt more cheaply abroad because of the 1.6 percent issuance tax at home. Domestically it is much cheaper to issue equity than debt, but few Chilean firms have done so in the past 10 years, and corporate debt issuance has continued to climb. Mexican firms can issue debt at a low cost domestically and abroad. As in the other two countries, corporations in Mexico have relied far more on debt than equity issuance in the past few years.

A comparison of fees across countries shows that investment banking fees clearly dominate the total costs. In Chile, however, the issuance tax is just as large as the investment banking fee. In all three countries companies pay investment banks more for their services in issuing equity than for their services in issuing debt.

The differences in cost across the three countries and across instruments suggest that cost should be a factor in firms' decisions about security issuance. But in Chile and Mexico at least, the nature of the investor base appears to be an overwhelming factor in determining which companies can access domestic capital markets. In these markets, where pension funds are typically the largest source of finance, the credit quality of the firm or issue is what matters most. This finding suggests a need for further investigation into the effect of investment restrictions for institutional investors on the development of local capital markets. In international capital markets size is more important in determining which firms can gain access to capital, for cost and liquidity reasons.

Findings will be presented at the World Bank and at universities and other institutions (such as the Federal Reserve Bank of Atlanta). The data collected by the study are already being used in World Bank operations, including a recent financial sector adjustment program in Chile. The project's methodology and questionnaire will be used in financial sector operations relating to capital markets, in collecting data to benchmark the costs of raising capital in a country and to offer international comparisons to country officials. They will also be used in a broader data collection effort to be undertaken jointly with the Development Economics Senior Vice Presidency, where the data will be used to further study the effect of costs on firms' issuance and access to capital.

Responsibility: Financial Sector Operations and Policy Department—Sara J. Zervos (szervos@worldbank.org).

Report

Zervos, Sara J. "The Transaction Costs of Primary Issuance: The Case of Brazil, Chile and Mexico." World Bank, Financial Sector Operations and Policy Department, Washington, D.C.

Twin Crises and Government Policy

In the post–Bretton Woods era exchange rate crises have often coincided with banking crises—as in Chile in 1982, Finland and Sweden in 1992, Mexico in 1994, and Southeast Asia in 1997. This research project investigated such twin banking and currency crises, examining the mechanisms by which banking crises cause and exacerbate currency crises and the channels through which currency crises cause banking crises. The research focused particularly on the role of foreign exchange exposure in these crises and on explaining the causes and consequences of this exposure.

The research found that government guarantees issued to bank creditors can explain the lack of hedging against currency risk that is seen in emerging markets despite the availability of hedging products. Models developed by the study show how this lack of hedging can lead to the possibility of self-fulfilling speculative attacks against managed exchange rate regimes. Even when the standard fundamentals in an economy are perfectly sound, lack of hedging driven by government guarantees exposes the economy to random shifts in investor sentiment.

The study developed a simple model that can be used to show how crises driven by agents' self-fulfilling expectations of future government deficits are consistent with low inflation—but rapid currency depreciation—in the wake of a twin banking and currency crisis. Moreover, preliminary analyses of the Republic of Korea and Mexico in their postcrisis periods found that neither has paid for as much as 50 percent of the fiscal costs associated with their banking sector bailouts. Both countries have relied on new borrowing for financing in the short run. The postcrisis outcomes for inflation in these countries can be rationalized by making assumptions about their future financing choices.

Results have been presented at a large number of seminars and conferences attended by academics, policymakers, and World Bank economists. These include seminars at many universities and the following events: National Bureau of Economic Research (NBER) Summer Institute (1999); Universidad Torcuato Di Tella Summer Camp in International Economics, Buenos Aires (1999 and 2000); World Bank–Universidad Torcuato Di Tella Conference on Integration and Contagion, Buenos Aires (1999); Banco de Portugal Conference on Monetary Economics, Guimarães, Portugal (2000); Centre for Economic Policy Research (CEPR) Conference on Exchange Rates and Prices in General Equilibrium, Barcelona (2000); NBER Conference on Management of Currency Crises, Cambridge, Massachusetts (2000), and Monterey, California (2001); NBER Economic Fluctuations and Growth Meeting (2000); NBER International Seminar on Macroeconomics, Bank of Finland, Helsinki (2000); Texas Monetary Conference (2000); CESifo Summer Institute, Venice (2001); Dubrovnik Economic Conference, Croatia (2001); and Middle East Technical University, Economic Research Center International Conference on Economics, Ankara (2001).

The research results form the basis for ongoing work in the Poverty Reduction and Economic Management Network's Economic Policy Division as well as part of a course the division provided for World Bank economists in fiscal 2002.

Responsibility: Poverty Reduction and Economic Management Network, Economic Policy Division—Craig Burnside. With Martin Eichenbaum, Sergio Rebelo, and Yuliya Mescheryakova, Northwestern University.

Reports

Burnside, Craig. 2001. "Currency Crises and Contingent Liabilities." World Bank, Poverty Reduction and Economic Management Network, Economic Policy Division, Washington, D.C.

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Burnside, Craig, Martin Eichenbaum, and Sergio Rebelo. 2001. "Hedging and Financial Fragility in Fixed Exchange Rate Regimes." *European Economic Review* 45: 1151–93.

———. 2001. *On the Fiscal Implications of Twin Crises.* NBER Working Paper 8277. Cambridge, Mass.: National Bureau of Economic Research. (Also published in Michael Dooley and Jeffrey A. Frankel, eds., *Managing Currency Crises in Emerging Markets*, Chicago: University of Chicago Press, 2003.)

———. 2002. "Government Guarantees and Self-Fulfilling Speculative Attacks." World Bank, Poverty Reduction and Economic Management Network, Economic Policy Division, Washington, D.C.

The study's analytic strategy is being used by World Bank staff to examine the growth potential of lagging regions in Brazil, the differentiated role of cities in national economic growth in India, and productivity differences between the lagging South in Mexico and the rest of the country.

Findings have been disseminated at the United Nations University, World Institute for Development Economics Research conference on spatial inequalities in Asia in March 2003 and at the Regional Science Association Meetings in Philadelphia in November 2003. Other dissemination activities are planned, including presentations at workshops in India with participation from other developing countries.

Responsibility: Development Research Group, Infrastructure and Environment—Somik V. Lall (slall@worldbank.org). With Sanjoy Chakravorty, Temple University; and Kyojun Koo, Cleveland State University.

Reports

Chakravorty, Sanjoy, Jun Koo, and Somik V. Lall. 2003. "Metropolitan Industrial Clusters: Patterns and Processes." Policy Research Working Paper 3073. World Bank, Development Research Group, Washington, D.C. (Also forthcoming in *Environment and Planning*.)

Lall, Somik V., and Sanjoy Chakravorty. Forthcoming. "Industrial Location and Spatial Inequality: Theory and Evidence from India." *Review of Development Economics*.

Lall, Somik V., Jun Koo, and Sanjoy Chakravorty. 2003. "Diversity Matters: The Economic Geography of Industry Location in India." Policy Research Working Paper 3072. World Bank, Development Research Group, Washington, D.C.

Evaluating Mexico's Small and Medium-Size Enterprise Programs

Many industrial and developing countries have introduced programs for small and medium-size enterprises (SMEs) aimed at enhancing productivity and wages, creating new jobs, and promoting exports. But few have rigorously evaluated the effectiveness of these programs. This study investigates this issue, focusing on programs in Mexico. It addresses several questions: How effective have Mexico's programs for small and medium-size enterprises been? Which program features matter? And how have the programs affected firms' performance in productivity growth, wages, and job creation?

To identify the effect of program participation, the study compares the performance of beneficiaries with that of a control group of nonbeneficiaries with otherwise similar attributes. It uses a variety of econometric methods —including propensity score matching and difference-in-differences methods—to address selection bias. The analysis draws on firm-level panel data from the 1992, 1995, 1999, and 2001 National Surveys of Employment, Salaries, Technology, and Training (ENESTYC) and annual industrial surveys for 1993–2000. It also uses firm-level data collected by the Ministry of Labor for evaluations in 1995 and 1997 of a program providing integrated training and support services for small and medium-size enterprises (the Program for Integral Quality and Modernization, or CIMO). These data follow samples of CIMO beneficiaries and a matched comparison group over time. The data are complemented by case studies, detailed field interviews, and collection of information relating to the programs.

Although the research is incomplete, preliminary findings show that heterogeneity in firms' underlying productivity attributes coupled with self-selection in program participation can severely bias program impact evaluations. For example, the CIMO program appears to attract weaker firms compared with similar nonparticipants. Thus while CIMO firms show positive treatment effects—more training, reduced labor turnover, adoption of quality control—postprogram productivity levels remain below those of the comparison group. Once the selection bias is recognized, the negative estimate of program impact becomes positive.

Macroeconomic shocks can also adversely affect program evaluations. For the CIMO program positive difference-in-differences estimates of program impact are found only when macroeconomic conditions were favorable, in 1991–93; they were not statistically significant in 1993–95 as a result of the 1994–95 recession in Mexico.

The research has also found that retrospective surveys coupled with purposive sampling of program partici-

pants are a potentially useful way of collecting panel data for evaluating programs.

The project involves working closely with government agencies responsible for SME programs in Mexico—the Ministries of Labor, Economy, Poverty, and Science and Technology—to disseminate good practices in program evaluation methods and to upgrade their evaluation capabilities.

The research is expected to contribute to the literature on impact evaluations of SME programs and to policy insights into which types of such programs are most effective in improving firm performance.

The research methods and preliminary findings have been presented in several forums for academics and policymakers, including a labor market conference organized by the University of Capetown's Development Policy Research Unit and the Friedrich Ebert Stiftung in Johannesburg (October 2002); a workshop on evaluating SME programs in Mexico City (November 2002); a World Bank Institute core course on labor market policies in Washington, D.C. (March 2003); an investment climate workshop in Sri Lanka (December 2003); an impact evaluation training workshop in Casablanca (January 2004, for government policymakers from Algeria, Morocco, and Tunisia); and an impact evaluation training workshop in Mexico City (April 2004, for government staff and academics from Mexico and Latin America). The research will also be incorporated into training courses for World Bank staff and client countries.

Responsibility: World Bank Institute, Human Development Division—Hong Tan (htan@worldbank.org); and Latin America and the Caribbean Region, Poverty Sector Unit—Gladys Lopez-Acevedo. With Roberto Flores-Lima; Marcela Rubio Sánchez; and Monica Tinajero, government of Mexico. The Mexican Ministries of Economy and Labor and the National Institute for Statistics, Geography, and Information Systems (INEGI) are collaborating in the research.

Report

Tan, Hong. 2002. "Evaluating SME Programs: A Case Study of Mexico's CIMO Program." WBI Working Paper. World Bank Institute, Washington, D.C.

Global Business School Network Capacity and Needs Assessment: Seven Sub-Saharan African Countries

A vibrant, competitive postsecondary education system is critical in building a workforce with the skills, knowledge, and attitudes to create and manage new businesses, to privatize and restructure existing enterprises, and to regulate business activity effectively—all elements of a robust private sector. In Sub-Saharan Africa, however, graduate management schools face myriad obstacles—a nascent private sector, far too few qualified faculty members, marginal primary and secondary preparation, and historical ambivalence or even antagonism between higher education and the private sector. With few exceptions, graduate management programs in Sub-Saharan Africa are unable to compete with institutions in the West and thus cannot attract the best local students or faculty.

To provide an understanding of the dynamic social, political, and economic environments in which graduate management schools in Sub-Saharan Africa must operate and compete, this project performed a baseline assessment of such schools in seven countries—Cameroon, Ghana, Nigeria, Senegal, South Africa, Tanzania, and Uganda. In each country the assessment gathered basic facts about the capacity of the business schools and established the country context in which they operate, their relationship with the local business community, and what might be done to move the institutions to self-sustainability and increase their academic capacity. The conceptual framework used was the input, environment, and outcome (I-E-O) model, which ensures the assessment of these three critical variables as well as the relationships between them.

The assessment collected qualitative and quantitative data to evaluate the functioning of each institution (matriculation rates, financial and other resources, faculty capabilities, course offerings, private sector links, and the like) and also considered broader reputational conceptions of performance. The assessment then compared these data against the stated goals and missions of the institution and the needs of the community it serves.

Across the 22 institutions surveyed, several sets of similarities emerge. Public business schools often face the same kinds of institutional constraints and pressures, including scarcity of funding, difficulty in attracting and retaining high-caliber faculty, and challenges in achieving the optimal level of autonomy. Private institutions also often cited the challenge (though less severe) of retaining high-quality instructors.

The study found a wide range among the schools—from those that can rank with top schools in Europe and the United States (mainly those in South Africa) to those with very few resources. The schools also differ in the types of students they enroll. The more advanced schools insist that students have prior business experience, while others accept relatively inexperienced students.

Some local businesses felt that the graduates lacked sufficient experience and training to be taken straight into management positions, although the same firms also indicated a clear need for well-trained managers in their country.

Reports on the assessment results were shared with the universities and distributed widely within the World Bank Group. The findings have assisted in developing the Global Business School Network's approach to capacity building of management education and initial pilot projects in Africa.

Responsibility: Global Business School Network—Guy P. Pfeffermann (gpfeffermann@ifc.org). With Azam Chaudhry; E. LaBrent Chrite, Jose Arredondo, Naresh Iyer, Matthieu Garnier, Kaluke Mawila, Priya Naik, and Robert Schneider, University of Michigan; and Richard America, Georgetown University.

Reports

Arredondo, Jose, Naresh Iyer, Matthieu Garnier, Kaluke Mawila, Priya Naik, and Robert Schneider. 2003. "Assessment of Graduate Management Education: Executive Summary." University of Michigan Business School, William Davidson Institute, Ann Arbor.

———. 2003. "Assessment of Graduate Management Education in Cameroon." University of Michigan Business School, William Davidson Institute, Ann Arbor.

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———. 2003. "Assessment of Graduate Management Education in Nigeria." University of Michigan Business School, William Davidson Institute, Ann Arbor.

———. 2003. "Assessment of Graduate Management Education in Senegal." University of Michigan Business School, William Davidson Institute, Ann Arbor.

———. 2003. "Assessment of Graduate Management Education in South Africa." University of Michigan Business School, William Davidson Institute, Ann Arbor.

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———. 2003. "Assessment of Graduate Management Education in Uganda." University of Michigan Business School, William Davidson Institute, Ann Arbor.

Investment Climate Research

This research program collects data from firms through investment climate surveys and then uses the data to examine a range of issues and hypotheses, including the impact of education on worker productivity, the impact of corruption on firm investment and productivity, and the sources of productivity differences more generally across firms and countries. By involving leading researchers in developing and implementing the surveys, the program ensures policy-relevant research. More than 30 surveys have been completed, and 20 more are under way or planned. The surveys have led to 16 investment climate assessments—in such countries as Cambodia, Ethiopia, India, Morocco, Pakistan, Serbia and Montenegro, and Tanzania—and 16 more are under way.

The research is rich and diverse, consistent with the range of issues covered in the surveys, and is expected to produce novel and policy-relevant findings for years. Some of the important findings that have emerged include the following:

- The data underscore the importance of local governance, revealing tremendous differences in investment climates not just across countries but within them. For example, improving the local investment climate to match that in Shanghai would boost firm productivity by an average 18 percent in Bangalore, 43 percent in Dhaka, 78 percent in Calcutta, and 81 percent in Karachi.

• Recognizing the important association between exporting and higher productivity, the surveys investigate how firms have been able to move from serving local markets to serving export markets. Among five East Asian countries, the more developed the country, the greater the number of firms making the transition and simultaneously serving domestic and export markets. But in the less developed countries firms gain access to export markets largely through entry. Few firms make the transition: most focus on either local or foreign markets.

• Firms are aware of and able to estimate the effects of the investment climate they face. Entrepreneurs in India, asked how much their costs would change if their business were located in other cities across the country, gave estimates very close to the actual productivity differentials.

• The data bring out firms' reliance on different sources of capital and the effects of changes in access to these sources. The usual presumption is that trade credit can substitute for more formal bank credit. But data from East Asia show that trade credit does not fully substitute for bank credit and cannot sustain the operations of firms constrained by banks.

Findings have been incorporated into country assistance strategies for Algeria, Cambodia, Ethiopia, Mozambique, Nepal, and Nigeria, and investment climate assessments and related surveys have informed 26 lending operations, mostly in Africa and Latin America. In most countries the investment climate work has received tremendous press attention.

The data are being made available to many scholars, by diskette and through a Web site. The development of a sophisticated new Web site (at http://iresearch.worldbank.org/ics/jsp/index.jsp) will substantially expand access to the data, especially in developing countries.

Responsibility: Development Research Group, Investment Climate—David Dollar (ddollar@worldbank.org), Ibrahim Elbadawi, Giuseppe Iarossi, Philip Keefer, Taye Mengistae, and Lixin Colin Xu; Investment Climate Unit, Office of the Director—Neil Roger, Foreign Investment 1—Geeta Batra, Monitoring, Analysis, and Policy—Simeon Djankov, and Investment Climate—John Nasir and Andrew Stone; Development Economics, World Development Report Office—Mary Hallward-Driemeier; Africa Region, Private Sector Family—Jean Michel Marchat and Vijaya Ramachandran; East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Department—Albert Zeufack; Latin America and the Caribbean Region, Private Sector Cluster—Luke Haggarty; and World Bank Institute, Global Governance Unit—Francesca Recanatini. With Scott Wallsten; Marcel Fafchamps, Oxford University; Raymond Fisman, Columbia Business School; Omkar Goswami, Confederation of Indian Industries; Ann Harrison, University of California at Berkeley; and John Sutton, London School of Economics.

Reports

Cull, Robert, and L. Colin Xu. 2003. "Contract Enforcement, Ownership, and Finance: Determinants of Investment in China." World Bank, Development Research Group, Washington, D.C.

Dollar, David, and Mary Hallward-Driemeier. 2000. "Crisis, Adjustment, and Reform in Thai Industry." *World Bank Research Observer* 15(1): 1–22.

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Dollar, David, Giuseppe Iarossi, and Taye Mengistae. 2002. "Investment Climate and Economic Performance: Some Firm-Level Evidence from India." Working Paper 143. Stanford University, Center for Research on Economic Development and Policy Reform, Stanford, Calif.

Dwor-Frecaut, Dominique, Mary Hallward-Driemeier, and Francis X. Colaço. 1999. "Corporate Credit Needs and Governance." Paper presented at the World Bank Conference on Asian Corporate Recovery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

Elbadawi, Ibrahim, Taye Mengistae, and Albert Zeufack. 2001. "Geography, Supplier Access, Foreign Market Potential, and Manufacturing Exports in Developing Countries: An Analysis of Firm-Level Data." World Bank, Washington, D.C.

Fafchamps, Marcel, Said El Hamine, and Albert Zeufack. 2001. "Learning to Export: Firm-Level Evidence from Morocco."

Paper presented at the conference on New Industrial Realities and Firm Behavior in Africa, St. Edmunds Hall, Oxford, September.

Goswami, Omkar, and David Dollar. 2001. "The Competitiveness of Indian Manufacturing: Results from a Firm-Level Survey." Confederation of Indian Industry, New Delhi.

Hallward-Driemeier, Mary. 2001. "Firm-Level Survey Provides Data on Asia's Corporate Crisis and Recovery." Policy Research Working Paper 2515. World Bank, Development Research Group, Washington, D.C.

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Hallward-Driemeier, Mary, Giuseppe Iarossi, and Kenneth Sokoloff. 2002. *Exports and Manufacturing Productivity in East Asia: A Comparative Analysis with Firm-Level Data.* NBER Working Paper 8894. Cambridge, Mass.: National Bureau of Economic Research.

Hallward-Driemeier, Mary, L. Colin Xu, and Scott Wallsten. 2003. "The Investment Climate and the Firm: Firm-Level Evidence from China." Policy Research Working Paper 3003. World Bank, Development Research Group, Washington, D.C.

Kawai, Masahiro, Hongjoo Hahm, and Giuseppe Iarossi. 1999. "Corporate Foreign Borrowing in East Asia: Too Much, Too Little?" Paper presented at the World Bank Conference on Asian Corporate Recovery: Corporate Governance, Government Policy, Bangkok, March 31–April 2.

Love, Inessa, and Rida Zaidi. 2003. "Trade Credit and Financing Constraints: Evidence from the East Asian Crisis." World Bank, Development Research Group, Washington, D.C.

The Roles of Foreign Contact and Firm Capability in Firms' Dynamic Productivity

This study investigates a firm's decision to invest in two sources of knowledge—participation in the export market and investments in capability measured by research and development (R&D) and worker training—and assesses the effects of these investments on the firm's future total factor productivity. The analysis uses microeconomic panel data for firms in key manufacturing industries in the Republic of Korea and Taiwan (China) for 1983–96.

The empirical model is a set of reduced-form equations based on a theoretical model that describes a firm's dynamic decisions to export, to invest in R&D or worker training (or both), and to exit. The study models the firm's joint decisions to export and invest in R&D or worker training with a multinomial logit model that recognizes the interdependence of the decisions. It then estimates how participation in these investment activities alters the firm's future productivity trajectory while controlling for the selection bias introduced by endogenous firm exit.

The findings show, for both Korea and Taiwan (China), that past experience in exporting increases the likelihood that a firm currently exports. In Korea past experience in R&D also has lasting effects on a firm's investment decisions. These results are consistent with the belief that contacts with foreign buyers through exporting and investments in capabilities are less costly for firms that have already incurred some necessary sunk costs. In addition, the results indicate that larger firms and more productive firms are more likely to participate in each activity.

The findings also suggest that, on average, Korean firms that either export or perform R&D have significantly higher future productivity than firms that do neither—and those that do both have significantly higher future productivity than firms that only export or only invest in R&D. (Results for Taiwanese firms are more mixed because of a five-year gap in the data series.) These findings are consistent with the hypothesis that export experience is an important source of productivity growth and that investing in R&D improves firms' ability to benefit from exposure to the export market.

Responsibility: Investment Climate Unit, Foreign Investment 1—Geeta Batra (gbatra@worldbank.org). With Bee Yan Aw and Mark J. Roberts, Pennsylvania State University.

Report

Aw, Bee Yan, Geeta Batra, and Mark J. Roberts. "The Roles of Foreign Contact and Firm Capability in Firms' Dynamic Productivity." World Bank, Investment Climate Unit, Washington, D.C.

Governance and Public Sector Management

Corporate Governance

Corporate governance has received much attention in recent years, especially for firms in emerging market economies. As firms in these economies have continued to attract foreign institutional investors, the protection of minority shareholders has become increasingly important. Many improvements to corporate governance frameworks have been proposed—and sometimes, with the support of international financial institutions, implemented. But our understanding of the implications of ownership and corporate governance frameworks—and of the unique corporate governance challenges—in emerging market economies remains limited.

This project will study the role of corporate governance in improving firms' performance and the cost of and access to financing. The analysis will be based on empirical data collected through surveys of firms in more than 40 developing and transition economies by private investment banks and World Bank consultants.

Responsibility: Development Research Group, Finance—Leora Klapper (lklapper@worldbank.org) and Inessa Love; and Financial Sector Operations and Policy Department—Luc Laeven. With Reena Aggarwal and Sandeep Dahiya, Georgetown University, McDonough School of Business; and Peter D. Wysocki, Massachusetts Institute of Technology, Sloan School of Management.

Corruption

Corruption has been shown to be a substantial impediment to development in poor countries. This ongoing project is analyzing the causes of corruption in order to identify effective policies to combat it. The work builds on existing theoretical models of corruption and uses state-of-the-art empirical estimation techniques to assess its determinants.

An analysis of social effects uses individual-level data for 35 countries to investigate the microeconomic determinants of attitudes toward corruption. It consistently finds that women, the employed, the less wealthy, and older people are more averse to corruption. It also provides evidence that social effects play an important part in determining individual attitudes toward corruption, as these are robustly and significantly associated with the average level of tolerance of corruption in a region. This finding lends empirical support to theoretical models in which corruption emerges in multiple equilibriums and suggests that "big push" policies might be particularly effective in combating corruption.

Another analysis looks at corruption and openness. It finds that when outlier countries such as Singapore are excluded from the sample, there is no conclusive evidence that open countries are less corrupt.

A third analysis examines the role of trade tariffs, explicitly accounting for the interaction between importers and corrupt customs officials. It argues that setting tariffs at a uniform level not only limits the ability of public officials to misclassify imported goods and thereby extract bribes from importers, but also can deliver higher government revenues and welfare than a Ramsey tariff structure when corruption is pervasive. The empirical evidence suggests that a highly diversified menu of trade tariffs might fuel corruption, as a significant and robust association between an appropriately computed measure of tariff diversification and corruption in customs emerges across countries.

Papers produced by the project have been presented at the World Bank, a Southeastern Economic Association conference in Washington, D.C., and a European Public Choice Society conference in Italy.

Responsibility: Development Research Group, Macroeconomics and Growth—Roberta Gatti (rgatti@worldbank.org); and Poverty Reduction and Economic Management Network, Poverty Reduction Group—Stefano Paternostro. With Jamele Rigolini, New York University.

Reports

Gatti, Roberta. 1999. "Corruption and Trade Tariffs, or a Case for Uniform Tariffs." Policy Research Working Paper 2216. World Bank, Development Research Group, Washington, D.C.

———. "Explaining Corruption: Are Open Countries More Corrupt?" World Bank, Development Research Group, Washington, D.C. Draft.

Gatti, Roberta, Stefano Paternostro, and Jamele Rigolini. 2003. "Individual Attitudes toward Corruption: Do Social Effects Matter?" Policy Research Working Paper 3122. World Bank, Development Research Group and Poverty Reduction and Economic Management Network, Washington, D.C.

Development, Democracy, and State Violence

The 20th century closed with many lamenting government killings of defenseless civilians as its greatest evil. By one estimate governments killed as many as 170 million civilians between 1900 and 1987—more than all the soldiers killed in the wars of the 20th century.

This project looks at the relationship between development, democracy, and state violence. It has surveyed a broad literature on state violence and collected data on both the incidence of events (a dummy variable for whether state violence took place in the country and year indicated) and estimates of numbers of victims. Using a newly assembled data set spanning 1820–1998, it has studied the relationship between the occurrence and cruelty of episodes of mass killing and the levels of development and democracy across countries and over time.

The research finds that massacres are more likely at intermediate levels of income and less likely at very high levels of democracy. Interestingly, discrete improvements in an index of democracy do not translate into a lower chance of massacres unless the countries move to the highest level of democracy. The study finds evidence that the number of victims is significantly lower in more democratic countries, especially in the 20th century.

This work complements other World Bank research on political violence, particularly the Development Research Group's project on the Economics of Political and Criminal Violence.

Newly collected data are being prepared for dissemination in Stata format.

Responsibility: Development Research Group, Macroeconomics and Growth—William Easterly and Roberta Gatti. With Sergio Kurlat.

Report

Easterly, William, Roberta Gatti, and Sergio Kurlat. 2002. "Development, Democracy, and Mass Killings." Paper presented at the annual meetings of the American Political Science Association, San Francisco, August 29–September 2.

Does Democracy Help the Poor? Comparing Democratic Decentralization and Community-Based Development in India and Indonesia

This project will compare the effectiveness of local governments in India and Indonesia in providing services that benefit the poor. India has pursued local-level democracy but a largely top-down approach to development planning. By contrast, Indonesia has been mainly autocratic at the local level, but its development planning has specifically incorporated community-based approaches since its independence five decades ago.

The comparative analysis will mix qualitative and quantitative methods in the context of evaluation designs and natural experiments. The data for India will be drawn from a qualitative and quantitative survey of *panchayats* (village governments) coupled with facilities surveys, household surveys, participatory rural appraisal discussions, focus group discussions, and in-depth interviews, along with transcripts from village-level meetings between leaders and constituents to discuss village development plans. The villages have been matched between culturally and historically similar regions that, through an accident of boundary drawing, ended up in different states.

The data for Indonesia will include panel data being collected in 166 villages in three provinces for an evaluation of a community-driven development project (the Second Urban Poverty Project). These data will be collected through a baseline and follow-up survey in treatment and matched control communities using methods similar to those for the *panchayat* survey in India. The data set will include qualitative data tracking changes in village government and collective action over three years. The study will also draw on additional panel data from 48 villages.

Another source of information will be a natural experiment. In India the election commission randomly selects

30 percent of *panchayats* to have their presidencies reserved for women. And in Indonesia the Second Urban Poverty Project involves randomly selecting 30 percent of the village committees formed for managing project funds to be headed by women. This will allow the study to test whether affirmative action helps ensure that women are included in village governance.

The project will produce tool kits for conducting mixed method evaluations, which will be used in World Bank Institute courses. Research results will feed directly into operational projects in the World Bank's South Asia and East Asia and Pacific Regions, improving work on community-driven development and decentralization.

The research project will be implemented by local consultants, who will receive extensive training in conducting mixed method evaluations and qualitative analysis.

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org); and East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Department—Vivi Alatas and Menno Pradhan. With Tim Besley, London School of Economics; and Rohini Pande, Yale University. The World Bank–Netherlands Partnership Program is providing funding for data collection.

Firm Ownership and Corporate Governance in China

This research project examines several questions relating to firm ownership and corporate governance in China: How did changes in ownership and corporate governance affect the performance of Chinese firms? What were the effects of the wave of privatization and corporatization in 1997? And how does corruption affect investment by private firms?

The study has assembled three data sets: data on around 1,000 publicly listed firms for 1992–2002, data on the ownership restructuring of around 1,000 firms in 1997–98, and data on 3,000 private firms for 2001. Using these data, the study has empirically tested hypotheses derived from existing theories. The analysis has led to six main findings:

- Public listing does not turn around the performance of state-owned enterprises.
- Listed firms performed better when they had a balance of power between top shareholders.
- Firms' performance can be improved by lessening political control, increasing their flexibility in deploying labor, and mitigating agency costs through the introduction of more effective corporate governance mechanisms such as one share, one vote and a board structure based on shareholding.
- Ownership structure affects firms' performance: compared with shareholding by the state, foreign ownership has a positive effect on firms' performance, individual (mostly employee) shareholding has a negative effect, and collective and legal person shareholding has an indistinguishable effect.
- Somewhat surprisingly, operating autonomy (excluding flexibility in deploying labor) has a negative effect on firms' performance, suggesting serious agency problems in the reformed enterprises.
- Investment by private firms is affected by endogenous harassment by government officials.

The research has assisted policymakers and World Bank staff in formulating transition policies in China and contributed to a 2003 World Bank country economic memorandum for China. It has also provided inputs into an investment climate report on China (David Dollar, Shuilin Wang, Lixin Colin Xu, and Anqing Shi, *Improving City Competitiveness through the Investment Climate: Ranking 23 Chinese Cities*, Beijing: Finance and Economics Publishing House, forthcoming) and a recently published book (Linqun Jin and Nicholas Stern, eds., *Economic Development: Theories and Practices*, Beijing: Economic Science Press, 2002).

Results have been presented at the annual meeting of the Chinese Economists Society in Hong Kong (China) in 2002; an American Economic Association meeting in Washington, D.C., in 2003; and at the Global Finance Meeting at Beijing University in 2003.

Responsibility: Development Research Group, Regulation and Competition Policy—Lixin Colin Xu (lxu1@worldbank.org). With Tian Zhu, Hong Kong University of Science and Technology; Xiaozu Wang, Fudan University, China; and Wei Li, University of Virginia.

Reports

Li, Wei, Ting Lu, and Lixin Colin Xu. 2003. "Does Bribe Grease Corrupt Bureaucrats?" World Bank, Development Research Group, Washington, D.C.

Wang, Xiaozu, Lixin Colin Xu, and Tian Zhu. Forthcoming. "State-Owned Enterprises Going Public? The Case of China." *Economics of Transition.*

Xu, Lixin Colin, Tian Zhu, and Yi-Min Lin. 2003. "Politician Control, Agency Problems, and Ownership Reform: Evidence from China." World Bank, Development Research Group, Washington, D.C.

The Impact of Institutions on Development

This ongoing, multiyear research effort investigates the effect of institutions on development. Early research asked, What is the relationship between institutions and the efficiency of public investment—and between institutions and fiscal policy? What is the relationship between institutions, social polarization, conflict, and economic development? More recent research has looked at imperfections in political markets—including social polarization, lack of citizen information, and the inability of political decisionmakers to make credible promises to citizens—and their effects on such issues as the rule of law and the provision of basic social services.

The work is heavily empirical, relying on cross-country statistical investigation that uses the World Bank's Database of Political Institutions. Theoretical advances are also being made, however, particularly in understanding how the preelectoral credibility of political competitors influences postelection behavior.

The research has yielded a wide array of findings, including results relating to these questions:

- Why is raw public investment so high in countries with insecure property rights, and why does it have a negligible or negative impact on growth? Research demonstrates theoretically and empirically that institutional settings in which property rights are insecure lead governments to underprovide high-quality public investment but to engage in excessive rent seeking that takes the form of unproductive public investment.
- Why do governments underprovide high-quality universal education and overprovide targeted public investments, even when they are desperate to be reelected and can provide more benefits to a larger number of citizens by allocating resources to the public good? Research shows that where voters are uninformed and politicians unable to make credible commitments before elections, government policy is skewed away from universalistic government services toward goods that are more easily targeted and observed.
- Political checks and balances create a long understood institutional dilemma: they make government promises (for example, not to expropriate) more credible, but they also make it more difficult for governments to respond flexibly and in a timely manner to crises. Which effect matters more for development? Research shows that the credibility benefits of checks and balances are more important in international financial markets than are the flexibility costs.

Work in each of these areas is expected to shed light on optimal policy choices in different institutional and social settings (including postconflict societies) and on tradeoffs in institution building.

The work has contributed to several of the World Bank's *World Development Reports*, to a World Bank course on governance and anticorruption, and to economic and sector work in the Dominican Republic, Indonesia, and Peru. In addition, the work is expected to influence the design of infrastructure projects, advice in postconflict societies, and macroeconomic advice to countries.

The work has been presented in many venues, including the American Political Science Association, the American Economic Association, Public Choice, and seminars at the European Central Bank, the Central Bank of Poland, the University of Washington, and the University of California at San Diego.

Responsibility: Development Research Group, Regulation and Competition Policy—Philip Keefer (pkeefer@worldbank.org).

Reports

Keefer, Philip. 2002. "Clientelism, Credibility, and Democracy." World Bank, Development Research Group, Washington, D.C.

———. 2003. "All Democracies Are Not the Same: Identifying the Institutions That Matter for Growth and Convergence." World Bank, Development Research Group, Washington, D.C.

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Keefer, Philip, and Stuti Khemani. 2003. "Democracy, Public Expenditures, and the Poor." Policy Research Working Paper 3164. World Bank, Development Research Group, Washington, D.C.

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Keefer, Philip, and Stephen Knack. 2002. "Boondoggles and Expropriation: Rent-Seeking and Policy Distortion When Property Rights Are Insecure." Policy Research Working Paper 2910. World Bank, Development Research Group, Washington, D.C.

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———. Forthcoming. "Social Capital, Social Norms, and the New Institutional Economics." In Claude Menard and Mary M. Shirley, eds., *Handbook of New Institutional Economics*. Norwell, Mass.: Kluwer Academic.

The Impact of Local Governance in India: An Empirical Investigation

This project will undertake an empirical analysis of the consequences of the recent decentralization of local government in India, centered on the *panchayati raj* institutions. It will study the effects of decentralization on political participation and collective action, the inclusion of disadvantaged groups in these processes and their access to public services, and the functioning of the public sector in service delivery. It will also investigate how local community characteristics such as ethnic diversity and income inequality affect such institutional reform. In addition, taking advantage of the diversity of local decentralization processes across India, it will undertake a rigorous microeconometric evaluation of the relative effectiveness of different models of decentralization.

The study will use a natural experiment to isolate the causal effect of decentralization by focusing on the border regions of four states in South India. This approach exploits the fact that villages on both sides of the borders are similar in a variety of ways—in their economies, languages spoken, climate and geography, and social structures and practices. To discriminate between the effect of decentralization reforms and that of other state policies and political processes, the study will exploit within-state variation in the implementation of different policies and control for as many other political processes as possible.

Data for the analysis will be collected through village and household surveys, interviews with *panchayat* members, and the collection of election records and financial statements of *panchayati raj* institutions.

The research is expected to contribute to the general understanding of the comparative advantages of different methods of decentralization and the effect of decentralization on public service delivery, social exclusion, and living standards in developing countries.

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org). With Tim Besley, London School of Economics; and Rohini Pande, Yale University.

Investment Climate in the Balkans: Regulatory Governance

This research is investigating regulatory governance and market performance in the infrastructure sectors of the Balkan countries and assessing the investment climate in the Balkans with a focus on regulatory governance issues. Using data on foreign direct investment and regulatory governance indicators, the study has estimated the extent to which cross-country differences in foreign direct investment can be explained by differences in the effectiveness of regulatory governance and a host of other country-specific characteristics (such as size, development of infrastructure, and rate of economic growth).

The empirical findings confirm what theory predicts: regulatory governance matters. Whether measured by composite indicators or on the basis of individual surveys or polls, governance seems to have a statistically significant and quantitatively important effect on foreign direct investment.

But while the study, using panel data, has identified significant correlations between foreign direct investment and measures of regulatory governance, the empirically established relationships break down after 1999. As the study collects additional data for later years, it will attempt to identify a potential structural shift in the implied relationship between regulatory governance and foreign direct investment.

Findings have been used in economic and sector work in Bulgaria and incorporated into a World Bank Policy Research Report (Ioannis Kessides, *Reforming Infrastructure: Privatization, Regulation, and Competition*, New York: Oxford University Press, forthcoming). A presentation on the broader issues of regulatory governance and its effect on investment in infrastructure was made in a government seminar in Sofia.

Responsibility: Development Research Group, Regulation and Competition Policy—Ioannis Kessides (ikessides@worldbank.org). With Takis Papapanagiotou.

Migration, Decentralization, and Public Goods Provision to the Poor

In most developing countries with large informal sectors, redistribution occurs primarily through subsidized public services rather than through direct transfers. So to evaluate the welfare of the poor requires determining whether public services are allocated to areas that most need them. This research investigated what determines the allocation of public health services (clinics, hospital beds, health professionals) across Brazilian municipalities and whether the allocation of these services, along with underlying political and economic factors, has an impact on poor people's access to health care.

The study first investigated the effects of politics, decentralization, affluence, race, geography, and income inequality on the per capita allocation of public services across municipalities in 1998. Explanatory variables included political participation by constituents, intensity of political competition between parties, the identity and ideological bent of the party in power, the relative importance of federal (or state) and local governments in decisionmaking, the presence of ethnic and religious minorities and ethnic diversity, average incomes, a Gini coefficient of income inequality, and geographic controls. With recently developed spatial econometric techniques, the study also tested the effects of provision in neighboring municipalities and spatially autocorrelated errors. Using detailed survey data and probit models, the study then analyzed the impact of public service provision—in addition to political, socioeconomic, and geographic factors—on individuals' ease of access to health care.

The results show that greater levels of health services are provided in urban areas, richer areas, and areas with greater income inequality. Evidence suggests that citizens can attract better public services by going to the polls. Decentralized municipalities provide more services only if good governance accompanies decentralization. And there are strong neighborhood and spatial autocorrelation effects.

Households living in municipalities with better public health services are much more likely to report that they have access to health care (that is, were able to see a health professional when they needed to). Ethnic minorities, poorer households, and rural households are much less likely to have access. Households in municipalities with a higher voting rate and a mayor more politically connected to state legislators also report better access.

Responsibility: Development Research Group, Infrastructure and Environment—Maureen Cropper (mcropper@worldbank.org); and Latin America and the Caribbean Region, Brazil Anchor—Andrew Sunil Rajkumar. With Ahmed Mushfiq Mobarak, University of Colorado at Boulder.

Report

Mobarak, Ahmed Mushfiq, Andrew Sunil Rajkumar, and Maureen Cropper. 2003. "The Political Economy of Health Services Provision and Access in Brazil." Paper presented at the Northeast Universities Development Consortium Conference, Yale University, New Haven, Conn., September 22.

Operational Policy and Software Tool for Institutional Analysis

The World Bank has increasingly recognized the importance of the political and institutional setting in

determining the success or failure of the projects it finances. Moreover, in recent years there has been growing interest in the World Bank in ensuring that its projects have a sustainable institutional development impact. In response, this project developed a draft operational policy on institutional analysis—and an accompanying software tool—to provide World Bank staff with a guide to assessing the capacity, commitment, and incentives of key counterparts to implement a project. The aim is to increase the likelihood that projects will have a positive effect on countries' public institutions.

The draft operational policy and software tool guide staff members in conducting institutional analysis by raising questions, which require the users to collect data (largely quantitative). Pilot applications showed that these instruments added value to the project design process, leading to some useful revisions of project designs. But without strong management and budget support, task managers would generally find the analytic demands of the operational policy to be onerous. The impact of the instruments will depend on a policy decision on whether institutional analysis for project implementation and sustainability will be required (or expected) in designing World Bank projects.

Responsibility: Poverty Reduction and Economic Management Network, Public Sector Management Division—Poul Engberg-Pedersen (pengbergpedersen@worldbank.org).

Parliamentary Oversight in Africa

The World Bank is committed to strengthening state institutions of accountability in Sub-Saharan Africa and other regions. Yet legislative institutions in Africa have received little systematic examination despite their increasing visibility in some countries. This study assessed the evolving role of these institutions in several of the countries that have made the most progress in democratic reforms—Benin, Ghana, Kenya, and Senegal. Comparative analysis of the results of field interviews conducted in the summer of 2002 led to two principal findings.

First, the capacity and authority of legislative institutions vary considerably across African countries independent of whether these countries experienced significant democratization between 1990 and 2000. Thus while political liberalization and democratization are prerequisites for the emergence of a legislature, they do not by themselves explain why some democratic countries have emerging legislatures while others do not.

Second, the capacity and authority of a legislature as a corporate unit and thus its prominence in the policymaking process vary as a function of two sets of characteristics:

- Three structural characteristics affecting all members of the legislature—the agrarian nature of most African countries and the clientelist form of politics to which it gives rise, the formal rules specifying the powers of the legislature, and the terms of service for members.
- Individual characteristics that differentiate groups of legislators.

Before the late 1990s the structural characteristics served as disincentives for legislators to assert the corporate power of the institution to which they belonged. Rather than devoting their efforts to deliberating and amending laws, overseeing the executive, and implementing policy, legislators focused almost exclusively on serving their rural constituents. Following the second and especially the third round of multiparty elections in the late 1990s and early 2000s, the composition of the legislatures changed. Where the membership became younger and more educated, and especially where parity arose between the government and the opposition, coalitions formed to first change the terms of service for legislators and then enhance the powers of the legislatures.

Some legislatures, such as the Kenya National Assembly, have become players in policymaking. Others, such as the Ghana National Assembly, aspire to do so. But some, like the National Assembly in Senegal, remain weak. The World Bank will need to engage more systematically with legislatures where they are expanding their role in policy.

Responsibility: Africa Technical Families, Public Sector Reform and Capacity—Guenter Heidenhof (gheidenhof@worldbank.org).

Report

Barkan, Joel D., Ladipo Ademolekun, and Yongmei Zhou. Forthcoming. "Emerging Legislatures: Institutions of Horizontal Accountability." In Brian Levy, ed., *Governance and Public Sector Management in Africa*. Washington, D.C.: World Bank.

Political Economy in the Transition Economies

This study seeks to improve the understanding of the political economy of transition economies. It addresses a question that is central to transition economies (and many developing countries) as well as to the World Bank's agenda on governance and corruption: Will those who obtained assets at large discounts (or stole them) at the beginning of the transition become the new vanguard of the rule of law, or will they be indifferent to or try to frustrate the establishment of the rule of law?

To investigate this question, the study is developing a series of models and assembling data on political developments and inequality from the Russian Federation and other transition economies. The aim is to shed light on the obstacles to the emergence of the rule of law in transition economies and on policies that could be adopted to influence the political will to establish the rule of law. Findings will relate to the endogenous formation of political coalitions for and against a rule-of-law state and will clarify how macroeconomic policy and the method of privatization matter for the emergence of demand for the rule of law.

The project is organizing a conference on the political economy of transition economies, to be held at the Center for Economic Research and Graduate Education (CERGE) in Prague on September 10–11, 2004.

Responsibility: Development Research Group, Macroeconomics and Growth—Karla R. Hoff (khoff@worldbank.org). With Joseph E. Stiglitz, Columbia University.

Reports

Hoff, Karla R. 2003. "Can Privatization Come Too Soon? Politics after the Big Bang in Postcommunist Societies." In Richard Arnott, Bruce Greenward, Ravi Kanbur, and Barry Nalebuff, eds., *Economics for an Imperfect World*. Cambridge, Mass.: MIT Press.

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Public Policy toward Nongovernmental Organizations in Developing and Transition Economies

Over the past decade nongovernmental organizations (NGOs) have become progressively more important in developing countries. In many, they now outnumber firms and account for growing shares of economic activity. Yet there has been little economic research on NGO activity, and what there has been has focused on activity in industrial countries. This research project investigates fundamental questions about NGO activity in developing and transition economies: Should governments and donors subsidize or favor NGO activity? And if so, how much so, and through what mechanisms?

Drawing on existing research in the social sciences, the project has developed a theoretical framework to explain NGO activity and assess whether subsidizing or favoring NGOs is appropriate for reasons of economic efficiency or equity. It has also designed and carried out country studies analyzing NGO activities in Bangladesh and Uganda. The country studies surveyed a random sample of NGOs and collected data on uses and sources of funds, activities, staffing, grants received, and community satisfaction with NGOs.

The research has found that NGOs in Uganda tend to be small, underfunded (a few NGOs attract most donor funds), and involved primarily in consciousness raising. By contrast, NGOs in Bangladesh are larger, financed with internally generated funds, and almost universally involved in microfinance. Surveys show that

while satisfaction with NGOs is generally high, NGOs are less accessible to people in poorer communities.

The findings have been discussed with World Bank staff, representatives of NGOs and the two governments, and the broader donor communities in Dhaka and Kampala. The findings in Uganda are assisting the government in designing new policies for NGO sector governance. Those in Bangladesh were incorporated into the World Bank's *World Development Report 2004: Making Services Work for Poor People* (New York: Oxford University Press, 2003).

Responsibility: Development Research Group, Public Services—Varun Gauri (vgauri@worldbank.org). With Marcel Fafchamps, Abigail Barr, and Trudi Owens, Oxford University; Ray Fisman and Julia Galef, Columbia University; Anna Fruttero, New York University; and William Jack, Georgetown University.

Reports

Barr, Abigail, and Marcel Fafchamps. "A Client-Community Assessment of the NGO Sector in Uganda."

Barr, Abigail, Marcel Fafchamps, and Trudi Owens. "The Resources and Governance of Nongovernmental Organizations in Uganda."

Fruttero, Anna, and Varun Gauri. "Location Decisions and NGO Motivation: Evidence from Rural Bangladesh."

Jack, William. "Public Policy toward NGOs in Developing Countries."

Bank Research Output

The documents listed below are the output of research and policy analysis at the World Bank in fiscal 2002 and 2003. To provide maximum coverage of such output, research is defined for the purposes of this list in a broader rather than a narrower sense. Generally, copies of Bank publications (categories A and E) can be purchased online at http://publications.worldbank.org/ecommerce, from the Bank's distributors (see list on last page of this volume), or from the Bank bookstore. Copies of working papers and background papers (categories F–H) can be obtained from the authors or listed Bank departments (at the address on this volume's title page). In addition, the full text of some working papers series can be found on the Bank's Web site (http://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 http://www.worldbank.org/research/journals/index.htm. Other published material can be purchased from the publishers (categories B and D). The following categories of 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 *World Development Indicators,* 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 research journals, the *World Bank Economic Review* and *World Bank Research Observer.*

D. Articles related to Bank research published in other professional journals.

E. World Bank Discussion Papers, Technical Papers, Working Papers, and other Bank series publications.

• *World Bank Discussion Papers.* This series provides detailed results of work on research topics or country studies that may be of interest to development practitioners.

• *World Bank Technical Papers.* This is an outlet for research and studies that are highly technical and aimed at a narrower audience.

• *World Bank Working Papers.* This series, which supersedes the World Bank Discussion Papers and World Bank Technical Papers series, includes papers presenting results of general research and country studies for a wide range of development practitioners as well as highly technical papers intended for specialists.

• *Other published series.* These series typically focus on a specialized topic (such as evaluation methods and results from the Operations Evaluation Department, or findings and training and learning courses from the World Bank Institute).

F. Policy Research Working Papers. These working papers are a vehicle for quick dissemination, often in an unpolished form, of findings of work under way in the Bank. Papers in this series are posted on the Web at http://econ.worldbank.org.

G. Other Bank working papers. These papers are produced and distributed by units throughout the Bank. They quickly disseminate findings of departmental research and are targeted primarily to specialists in the Bank.

H. Background papers to *World Development Report 2003: Sustainable Development in a Dynamic World—Transforming Institutions, Growth, and Quality of Life* and *World Development Report 2004: Making Services Work for Poor People.* 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

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Aidt, Toke, and Zafiris Tzannatos. 2002. *Unions and Collective Bargaining: Economic Effects in a Global Environment.* Directions in Development Series. Washington, D.C.: World Bank.

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Caprio, Gerard, Jr., Patrick Honohan, and Dimitri Vittas, eds. 2002. *Financial Sector Policy for Developing Countries: A Reader*. New York: Oxford University Press.

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