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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.
The World Bank’s research is intended to address critical issues and problems facing member governments in developing and transition economies: How can the governments of the poorest countries generate enough revenue to provide the education and health services essential to reducing poverty and promoting growth and development? How can poor countries attract investors to build the infrastructure their economies need? How can they develop systems to bring clean water to the 2 billion people without it today? How can they train teachers and bring to class the 115 million children who have not yet received any education? And how can rich countries be persuaded to lower market barriers, helping to reverse the decline in export prices for poor countries that has left them earning less from trade today than in the 1970s?

These are some of the questions that governments face and that Bank staff are asked to address in their work. And these are the kinds of questions that the Bank’s research—described in the annual Abstracts of Current Studies—is intended to answer.

Is Research Used in World Bank Lending—and Does It Help?

World Bank staff use the findings of research in assessing countries’ needs and in developing lending programs. And that use has improved the quality of the programs and projects that are implemented.

These were the findings of recent comprehensive analysis of the impact of Bank research on its lending programs. To investigate this issue, the World Bank’s Research Committee compiled data on analytic and advisory (AAA) work, the conceptual work underlying each Bank program or project. The exercise collected information on the budgets and reference materials of 226 AAA tasks from 1998 to 2002—about 15 percent of all AAA activities during that period. Expert review panels assigned by the Bank’s Quality Assurance Group assessed each AAA activity on a four-level scale from unsatisfactory to highly satisfactory.

The investigation found that these AAA tasks made intensive use of Bank research, with each report they produced citing an average of 12 research reports. Moreover, higher scores for AAA tasks were associated with greater use of research. The AAA tasks assessed as highly satisfactory and most likely to have a policy impact cited an average of 19 research reports, while those with unsatisfactory scores cited an average of less than one.

How has this analytic and advisory work affected country programs and projects? All studies on this question have found strong and positive links between the quality of this preparatory work and the outcomes of Bank lending. An initial investigation found a particularly strong link between AAA work and rates of return on lending.


A New Initiative Identifies Where New Research Is Most Needed

Prompted by this recent evidence that development projects are more successful when they incorporate the findings of research, the World Bank is establishing a coordinated program to identify gaps in knowledge about the most pressing issues faced by developing and transition economies. Regular consultations have been established between researchers, the Bank offices serving different regions of the world, and specialists who advise governments and Bank staff on programs focusing on particular sectors and ministries. These continuing consultations are under the aegis of the Bank’s Research Committee. The committee will identify the most important topics on which research is lacking and monitor the extent and
effectiveness of subsequent studies addressing them. The research funded under this new initiative will be highlighted in future editions of the Abstracts of Current Studies.

**Research on Which This Volume Reports**

This volume reports on research projects initiated, under way, or completed in fiscal 2004 (July 1, 2003, through June 30, 2004). The abstract for each project describes the questions addressed, the analytic methods used, the findings to date, policy implications, the research team, and any reports or publications produced. To make it easier for readers to obtain information and data, each abstract gives the email address for the research project’s supervisor.

The abstracts cover 151 research projects from throughout the Bank, grouped under 11 major headings:
- Poverty and social development.
- Health and population.
- Education, labor, and employment.
- Environment.
- Infrastructure and urban development.
- Agriculture and rural development.
- Macroeconomics and growth.
- International economics.
- Domestic finance and banking.
- Investment climate and private sector development.
- Governance and public sector management.

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

**How to Obtain More Information**

This volume is an annual compendium; more timely information on World Bank research and its findings is available in the monthly World Bank Research E-Newsletter, which reaches subscribers by email. A subscription link to the Research newsletter, as well as links to archived issues, can be found at http://econ.worldbank.org/research_newsletter. The Abstracts of Current Studies, Policy Research Working Papers, and many research reports are available at http://econ.worldbank.org/research.
## Poverty and Social Development

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Abstracts of Current Studies
The Geography of Poverty

This research project focused on producing finely disaggregated spatial profiles of poverty and inequality in developing countries, or poverty maps, a key input into policy aimed at reducing poverty. The project included 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. Alongside the research was an ongoing effort to provide technical assistance aimed at enabling developing country practitioners to apply poverty mapping techniques in their own country.

The methodology centered 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 grew, the research was able to extend the techniques to other areas, such as estimating nutritional status at local levels and predicting local impacts of policy changes.

The project produced 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. It also developed documentation providing a step-by-step description of the methodology.

The project emphasized disseminating results to peers, to ensure broad professional endorsement and thus avoid transferring to developing countries a methodology that was suspect. The project 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 occurred 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 project served as a useful vehicle for stimulating interest in making better use of existing data sources and for strengthening capacity within government statistical agencies, as in Kenya, for example. Moreover, the methodology led to downstream research investigating a range of questions. The Madagascar poverty map was 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. In Uganda poverty mapping produced the first-ever estimates of poverty among disabled people. The approach is being used by the World Bank’s Disability Group to obtain estimates in many more countries.

That the research has had broad impact is shown by the fact that some 30 countries have completed or launched poverty mapping activities. In most of these exercises the role of the project team was to provide advice and quality control.

An edited volume is being prepared to bring together the poverty mapping research. This volume will provide a detailed description of the basic methodology along with chapters outlining applications and pointing to extensions.

Major sessions on poverty mapping were presented at several conferences in 2003–04: the Global Poverty Mapping Conference at Columbia University in March 2003, organized with Columbia University’s Center for International Earth Science Information Network; the Conference on Poverty Mapping in East Asia, held in Bangkok in summer 2003; a Food and Agriculture Organization workshop on poverty among artisanal fishermen, held in Umbria, Italy, in summer 2003; and an ESRI-GIS conference on poverty mapping in San Diego in summer 2004. Presentations on poverty mapping were made in 2004 at seminars and conferences at the Indira Gandhi Institute of Development Research (Mumbai), the Instituto Brasileiro de Geografia e Estatística (Rio de Janeiro), the Morocco Department of Statistics, the National Council
Poverty mapping techniques were taught in two World Bank courses in 2003–04, a Development Research Group course on poverty measurement and a course on the impact of policy.

**Responsibility:** Development Research Group, Poverty Team—Peter Lanjouw (planjouw@worldbank.org), Berk Özler, and Qinghua Zhao; Development Data Group—Johan Mistaen; Human Development Network, Social Protection Team—Johannes Hoogeveen; and Africa Technical Families, Poverty Reduction and Economic Management 1—Oleksiy Ivaschenko. With Jean O. Lanjouw, University of California at Berkeley and Brookings Institution; Chris Elbers and Youdi Schipper, Free University of Amsterdam; Roy van der Weide, University of Amsterdam; Philippe Leite, DELTA, Paris; Yoko Kijima, Michigan State University; Gabriel Demombynes, Tomoki Fujii, Laura Schechter, and Maoyong Fan, University of California at Berkeley and Brookings Institution; Chris Elbers and Youdi Schipper, Free University of Amsterdam; Roy van der Weide, University of Amsterdam; Philippe Leite, DELTA, Paris; Yoko Kijima, Michigan State University; Gabriel Demombynes, Tomoki Fujii, Laura Schechter, and Maoyong Fan, University of California at Berkeley; Andrew Healy, Massachusetts Institute of Technology; Apichoke Kotikula, Johns Hopkins University; Hudson Du; and Gianni Betti, University of Siena.

**Reference:** PO74317.

**Completion date:** December 2003.

**Reports**


Albania Panel Data Entry: Supervision

The World Bank, in collaboration with the U.K. Department for International Development, is assisting the government of Albania in establishing a permanent poverty monitoring and policy evaluation system as part of the National Strategy for Socioeconomic Development. The aim is to create a sustainable system of household surveys capable of producing timely, reliable, and relevant statistical information to assist policymakers in designing, implementing, and evaluating social and economic programs.

As part of the household survey monitoring system, the Albanian Institute of Statistics, with technical assistance from the World Bank and the Institute for Social and Economic Research of the University of Essex, implemented a panel survey in 2003 in a subsample of households from the 2002 Living Standards Measurement Study survey. For the first time the Institute of Statistics also assumed significant responsibility in the preparation for the data entry in CSPro. Supervision was critical to ensure proper handling of the data, which will become an important input into World Bank research and operations.

This project provided that supervision. The project involved working closely with information technology experts from the Institute of Statistics to review the CSPro programs to be used for the data entry.

The data entry has been successfully completed. And the review of CSPro found that it is a suitable application for future work. The project led to the production of better-quality data and to better familiarity with data entry procedures in the Institute of Statistics.

A final longitudinal data set containing all the survey indicators is being prepared for dissemination. When finalized, the raw data set as well as related documentation will be posted on the World Bank’s Living Standards Measurement Study Web site (http://www.worldbank.org/lsms/).

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org) and Calogero Carletto. With Guido Pieraccini.

Reference: PO86431.
Completion date: June 2004.

Report

Linking Representative Household Models with Household Surveys: Implications for Quantifying Poverty Reduction Strategies

This study compared three approaches to linking macroeconomic models with representative households and microeconomic household income data, assessing their implications for measuring the poverty and distributional effects of policy shocks. The three approaches are a simple microeconomic accounting method, an extension of that method to account for changes in employment structure, and the beta distribution approach.

In the simulation exercises performed in the study the three methods did not lead to fundamentally different results in absolute terms. Nevertheless, results show that potential differences in the measurement of poverty and distributional effects of policy shocks can be very large. These results could have substantial influence on poverty and income distribution studies within the World Bank.

The research has been presented in the World Bank, at a seminar at the University of Manchester (June 2004), and at an international conference on policy modeling, EcoMod 2004, in Paris (July 2004).
Measuring the Impact of Remittances on Poverty in Developing Countries

Official international remittances sent by migrant workers to their home country represent the second biggest source of external finance in developing countries. Besides these official remittance flows, large unknown amounts of remittances are transmitted through unofficial and informal channels.

This research studied workers’ remittances to developing countries, applying various statistical and econometric techniques. One model examined the total international remittances to developing countries, using econometric techniques to predict or estimate unofficial remittances. A second used the “growth-poverty” regression of Martin Ravallion and Shaohua Chen (“What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?” World Bank Economic Review 11, no. 2 [1997]: 357–82) to estimate the effect of remittances (official and unofficial) on poverty in the developing world. A third model was designed to identify policy measures for increasing the flow of official international remittances to developing countries.

The study found that unofficial remittances are about 75 percent larger than official remittances ($159 billion a year compared with $91 billion). Official and unofficial remittances combined have a large and statistically significant effect on poverty in labor-sending countries. On average, a 10 percent increase in the share of remittances in a country’s GDP will lead to a 1.8 percent decline in the share of its people living on less than a dollar a day.


A Stata database is being prepared with poverty, migration, and remittance data from 71 developing countries for 1980–2000.


Reference: PO86037.

Completion date: June 2004.

Reports


Thematic Mapping of Nonincome Poverty in Albania

Based on data from the 2002 Albania Living Standards Measurement Study 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.

This research project extended and complemented 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. This database not only provided the basis for the thematic mapping in this project but also has served as an input into a spatial econometric analysis of poverty conducted separately by several research teams.

The results of the thematic mapping confirm the highly spatial nature of both income and nonincome poverty in Albania, bolstering the argument for geographic targeting of resources to the country’s more destitute areas.

The project was conducted in close collaboration with the Albanian Institute of Statistics, as part of a joint effort with the U.K. Department for International Development to strengthen the institute’s capabilities in poverty monitoring and policy analysis. In addition, several line ministries contributed to the project, including the Ministry of Labor and Social Affairs.

The database produced by the project is widely used in analysis by the World Bank and other institutions on a range of topics, including migration, infrastructure, and targeting of social programs. Available in both Excel and Access, the database contains income and nonincome indicators of poverty for 12 prefectures, 36 districts, and 374 municipalities or communes. Maps for the most important indicators also are available.

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org) and Calogero Carletto. With Byron Kotzamanis and Marie-Noelle Duquenne, University of Thessaly.

Reference: PO83458.

Completion date: June 2004.

Impact Evaluation of a Microfinance Program in Brazil

Measuring the economic impact of microfinance programs and institutions is fraught with methodological difficulties. To help address this problem, this project developed a rigorous evaluation design for the largest microfinance program in Brazil, CrediAmigo. The evaluation method was designed around three main objectives: to determine the impact that access to small loans by credit-constrained microentrepreneurs has on businesses and households; to learn more about what type of client joins (and does not join) the program, how large the microcredit market is, and how to improve the program’s outreach to the poor; and to evaluate the program’s targeting of poor households in Brazil’s northeast.

The proposed evaluation method, developed in close collaboration with CrediAmigo, is a randomized design that builds on a planned policy change in the way the program selects its clients. Under the present policy households appearing in the credit registry are ineligible for a new loan or a loan renewal, while under the new policy clients with minor credit restrictions are to be considered eligible.

At the core of the impact evaluation are two surveys: a baseline survey (conducted in early 2005) and a follow-up survey of the same entrepreneurs to be conducted one year later. The baseline survey collected information from loan applicants with minor credit restrictions before the determination of whether a loan was to be granted. Immediately after the survey households were randomly assigned to a treatment group (those deemed eligible for a loan under the new policy) or to a control group (those for whom the requirement of a clean credit history continues to be enforced). This randomization ensures that the comparison of the treatment and control groups will yield a credible estimate of the program’s impact.

The opportunity to evaluate the impact of a microfinance program through a randomized control experiment will yield lessons of vital interest to the World Bank, governments, donors, and other international agencies aiming to reduce poverty through microcredit initiatives.

The evaluation design has been circulated among staff and presented in a seminar at the World Bank to seek feedback.

**Responsibility:** Latin America and the Caribbean Region, Finance Cluster—Susana Sanchez (ssanchez@worldbank.org), and Poverty Sector Unit—Emmanuel Skoufias and Pedro Olinto. With Dean Karlan, Princeton University. CrediAmigo contributed staff time and funding for survey costs.

**Reference:** PO88196.

**Completion date:** August 2004.

### 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. Allowing for behavioral responses, it also estimated the counterfactual of what household consumption would have been without transfers.

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.

Results from the research project were incorporated into *Vietnam Development Report 2000: Attacking Poverty* (Hanoi: Government-Donor-NGO Working Group, 1999). In addition, results were presented to a conference bringing together government representatives, local nongovernmental organizations, and academics in Hanoi in May 2001. Presentations also were made at the World Bank.

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

**Reference:** PO53675.

**Completion date:** December 2004.

### Reports


Financial Sector Policy and the Poor

This project seeks to identify and clarify the major dimensions of financial sector policy as it affects the poor. The work bridges earlier extensive research on the financial sector’s impact on growth and stability and policy on the management of microfinance institutions. The overarching question is whether mainstream financial sector policy needs to be adapted to accommodate and best promote the goals of poverty reduction.

In addition to carefully reviewing and distilling lessons from the literature on finance and poverty from this new perspective, the research has assembled available cross-country data for a preliminary econometric assessment of the cross-country link between financial sector development and poverty; the determinants of microfinance growth; and the economies of scale in microfinance.

The work has already produced two striking findings. First, finance-intensive economic growth appears to be associated with lower poverty, even after conditioning on the mean income of the nonrich. This is a new finding and one that is in line with other new econometric findings—by other researchers in the World Bank’s Development Research Group—that focus on the changes in poverty and in the income of the poor. Second, there is a slight tendency for microfinance to be more developed in poor countries and in countries where mainstream finance has tight margins.

The research is linked with policy development work in the World Bank’s Financial Sector Operations and Policy Department and is serving as an input into financial sector policy advice. It is expected to help bring antipoverty issues into mainstream financial sector policy, including through its influence on the Financial Sector Assessment Program, a joint initiative of the World Bank and International Monetary Fund.

Responsibility: Development Research Group, Finance Team—Patrick Honohan (phonohan@worldbank.org).

Poverty Traps

This largely theoretical research explores the question whether entire economies or groups within an economy can be trapped in poverty. In the competitive market model individuals navigate a sea of opportunity and by effort can always improve their lot over time. Contrary to this conception based on perfect markets, this study explores three perspectives in which group-level influences on individuals can generate persistent poverty.

One perspective explains the divergent growth paths among countries by the existence of levels, or thresholds, for human capital such that if an economy is ever below such a threshold, it will stay below it, while a rise in human capital above the threshold can raise returns to investment and set in motion a chain of positive self-reinforcement.

The second perspective emphasizes the role of institutions in supporting growth and the processes that explain divergent paths of institutional development. In former European colonies characterized by high inequality, the elite creates (or leaves uncorrected) market imperfections in order to profit from them, which inhibits growth; in societies making the transition to a market economy, some traditional kin-based institutions may linger, inhibiting the transition.

The third perspective explains the persistence of pockets of poverty in rich countries through neighborhood effects: if poverty becomes spatially concentrated, peer group effects, role model influences, and processes that undermine community organization may reproduce concentrated poverty over time.

Responsibility: Development Research Group, Growth and Investment Team—Karla Hoff (khoff@worldbank.org)
and Tourya Tourougui. The Santa Fe Institute, Russell Sage Foundation, and MacArthur Foundation provided funding for the research.

**Reference:** PO72725.

**Completion date:** June 2005.

**Reports**


**Trade and Foreign Direct Investment Reform and Poverty**

Adequately assessing the effect on the poor of reform relating to trade and foreign direct investment requires better data. For example, one key data requirement of such 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 improve the data that go into models used by the World Bank to analyze 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 Team—David Tarr (dtarr@worldbank.org), With Space Design Bureau; and Junichi Goto, Kobe University.

**Reference:** PO87609.

**Completion date:** June 2005.

**Reports**


**How Does Globalization Affect Middle-Income Strata? Evidence from Household Budget Surveys**

This research tests how globalization, defined by either policies or outcomes, affects income distribution in developing countries, particularly the income share of the middle strata. A first analysis uses decile data from household surveys to estimate the effect of various policies and economic outcomes on the entire income distribution, which gives a better sense of the effects than an approach focusing on a summary statistic like the Gini coefficient.

The analysis uses new income distribution data (WORLDYD) derived directly from more than 300 household surveys for three benchmark years, 1988, 1993, and 1998 (the data for the first two years are available at http://www.worldbank.org/research/inequality/). The data cover about 80 countries and more than 90 percent of world population and income in any year.

Running cross-country and panel regressions over the 10 decile shares, the analysis produces strong evidence that at low average incomes the poor have a smaller share of income in countries more open to trade. As the income level rises, the relative incomes of the poor and the middle class rise.
A second analysis investigates what would happen to wage inequality if tariff rates are reduced. The analysis considers wage inequality between occupations (skills premium) and between industries. It uses a large World Bank data set of average tariff rates for 1980–2000 and two large databases of wage inequality, both covering more than 100 countries and more than two decades. One database, produced by the University of Texas Inequality Project, gives data on wage inequality across industrial sectors; the other, Occupational Wages around the World, provides annual data on wages across occupations. Results show that tariff reduction is associated with higher wage inequality between both industries and occupations in poorer countries (those below the world median income)—but lower inequality in richer countries.

The research points to the difficulties poorer countries face during globalization: for these countries greater openness is associated, most of the time, with greater wage and income inequality. The reason is that many of their people have low skills or practically no marketable skills, while globally produced goods and services tend to require laborers with at least minimal skill levels. These findings highlight the underlying need for educational and distributional equity for more equitable globalization.

Responsibility: Development Research Group, Poverty Team—Branko Milanovic (bmilanovic@worldbank.org). With Nancy Birdsall, Center for Global Development; and Lyn Squire, Global Development Network. The Global Development Network contributed funding for the research.

Reference: PO85725.
Completion date: July 2005.

Reports

Individual and Group Default Incentives in Microfinance

Since the advent of microfinance programs, researchers have been trying to find out what makes these programs successful in expanding outreach, recovering loans, reducing poverty, and the like. One issue that has drawn growing attention is the group phenomenon of these group-based programs, in which joint liability creates an incentive for members of a group to monitor and enforce one another’s loan obligations. A precise understanding of the mechanisms through which the group structure facilitates the performance of group-based lending is key to judging the sustainability and financial prospects of these programs.

This research addresses two central questions: Is it the group design or the program design that matters for the loan repayment rates of microcredit programs? And if the joint liability hypothesis is valid, how can the effect of the group on loan recovery be estimated? Using time-series information on loan repayment by members of 200 or so groups of Bangladesh’s Grameen Bank in the time since those members joined the groups, this research assesses how group dynamics (including group cohesion) affect the probabilities of default for group members and how big that effect is. Panel data analysis is used to resolve individual- or group-level heterogeneity and to identify any “group effect.”

The results will show which aspects of the group mechanism work, and which do not, in influencing loan default behavior. These findings should help group-based microcredit organizations focus their efforts in fostering loan repayment.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Shahidur Khandker (skhandker@worldbank.org).
Reference: PO79623.
Completion date: September 2005.

Rio Restudy: Intergenerational Poverty

Global population growth over the next 25 years is projected to be virtually all urban growth in developing countries, and primarily poor people. With efforts to
reduce urban poverty having met with only mixed success, deepening our knowledge of poverty dynamics within and across generations is imperative. This research project seeks to do that through a study in the favelas, public housing projects, and low-income neighborhoods of Rio de Janeiro that follows up on original research done in 1969.

The study has reinterviewed as many of the original interviewees as could be located (41 percent) along with a random sample of their children and grandchildren (a total of 2,182 people). Because basic data are available on the parents of the original interviewees, the study is able to seek patterns across four generations spanning the 20th century. This longitudinal panel study is complemented by interviews and life histories of newly selected random and leadership samples in the three communities studied.

This long-term perspective shows that while some policy and operational interventions in Brazil have been effective—such as improving the education of the poor—and while the country has made great strides in water and sanitation and, in some places, in shelter, social mobility remains low. Physical infrastructure has been widely introduced and in most of the surveyed communities is virtually universal. While these interventions undoubtedly improve standards of living, they cannot be fully exploited, for example, through conversion into liquid assets. The reason is that stigma and drug trade suppress property values. Moreover, while education levels among the poor have risen, education requirements in the labor market have risen even faster. As a result, the poor remain trapped despite great gains in years of completed education compared with previous generations. Above all, the poor face more daunting challenges—like drugs, violence, and racism—new dimensions of urban poverty that remain largely unaddressed by World Bank interventions.

The research shows great promise for deepening our understanding of the complexities of reducing poverty, in part because it provides a rare—if not the first—longitudinal perspective on the poor in a country where the World Bank has carried out multiple policy and lending interventions.

The project has involved many institutions and agencies in Brazil, including the Federal University of Rio de Janeiro and the state and municipality of Rio de Janeiro. Each has contributed money, staff time, and material resources to the study, and multiple presentations have been made to update researchers in Brazil on its methods and findings.

The research has been widely disseminated, with presentations most recently at the World Bank; Woodrow Wilson Center for International Scholars (September 2003); Inter-American Development Bank (October 2003); University of Connecticut at Storrs (October 2003); University of Massachusetts at Amherst (February 2004); State University of New York at Stony Brook (April 2004); United Nations Millennium Development Task Force on Improving the Lives of Slum Dwellers, New York (April 2004); Institute for Economic and Social Analysis (IBASE), Rio de Janeiro (July 2004); Institute for Work and Society, Rio de Janeiro (August 2004); Johns Hopkins School of Advanced International Studies (October 2004); and Columbia University (January 2005). Findings also were presented at the conference on Sustainability and Urban Growth in Developing Countries, Monte Verità, Ascona, Switzerland (November 2004).

Responsibility: World Bank Institute, Sector and Thematic Programs—Tim E. Campbell (tcampbell@worldbank.org). With Janice Perlman, Columbia University; and Ignacio Cano, State University of Rio de Janeiro. The Fulbright Commission, Tinker Foundation, Dutch Trust Fund, and U.K. Department for International Development contributed funding for the research.

Reference: PO85633.

Completion date: September 2005.

Reports


Equity in Human Development Outcomes

This research project aims to expand the body of knowledge on inequalities in human development outcomes through several means. By developing and refining tools to analyze these inequalities, the project adds to the tool kit for project appraisal and analytic work at the World Bank and beyond. By documenting the size and source of the inequalities, the project helps identify where more effort is needed. And by analyzing the determinants and correlates of the inequalities, it aids in developing programs to overcome gaps.

The project builds on earlier work that used data from Demographic and Health Surveys (DHS) and Living Standards Measurement Study (LSMS) surveys to establish approaches to ranking individual and household welfare within countries. The project is refining those techniques, testing their robustness, and expanding the number of countries covered by including other types of data sources—such as National Socioeconomic Surveys and UNICEF’s Multiple Indicator Cluster Surveys—as well as more recent DHS and LSMS surveys. The research is thereby building a comparable cross-country database and making the results of the work available as inputs into other research.

Analysis of the data has found large and consistent inequalities in human development outcomes in many countries. But while it has systematically found inequalities in household economic status, this is not always the case for some health and nutrition outcomes.

Although capacity building has not been an explicit part of the project, the methodologies used in the project have been implemented by researchers in developing countries with the assistance of the project team.

The results have been featured in training events, including two sessions on public expenditure analysis in education organized by the World Bank Institute in November 2003 and January 2004.

Responsibility: Development Research Group, Poverty Team—Deon Filmer (dfilmer@worldbank.org), and Public Services Team—Monica Das Gupta.

Reference: PO76766.

Completion date: June 2006.

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
both “high end” and “low end” use of Living Standards Measurement Study (LSMS) survey data. 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 Development Data Platform.

The program has also supported a major revision of the World Bank’s Global Poverty Monitoring database. In addition, it has supported work on a new Web site, PovcalNet (http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp), to enhance external access to the data sets being developed as part of the Global Poverty Monitoring task. This site allows 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 measures 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 ill health, larger family size, and exposure to risk 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 ante and 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 program 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.
Work has also been done to strengthen the collection and quality of qualitative data and determine how best to integrate qualitative and quantitative data in improving empirical work. This effort has been applied toward uncovering new questions—for example, relating to sex worker behavior and domestic and communitywide conflict—as well as in understanding process issues in program evaluation.

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 2003–04 results were presented at the annual meetings of the American Economic Association (Philadelphia), 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, the ESRI International User Conference in San Diego, a conference on global poverty at Columbia University, the 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), the Regional Workshop on Poverty organized by the African Economic Research Consortium and the World Bank’s Poverty Analysis and Data Initiative (Mombasa, Kenya), the UN-HABITAT World Urban Forum (Barcelona), the World Bank’s Latin American and Caribbean Growth Conference (Bogotá), and World Bank Institute workshops in Ethiopia, the Republic of Korea, and Mexico. Results were also presented at seminars and conferences at American University, Australian National University, Beijing University, Columbia University, Cornell University, the Delhi School of Economics, the European Economics Association (Stockholm), the European University Institute, the Fundação Getúlio Vargas (Rio de Janeiro), George Washington University, Georgetown University, the German Council of Foreign Relations (Berlin), Hanoi National Economic University, Harvard University, the Indira Gandhi Institute for Development Research (Mumbai), the Institute for Development Studies (Sussex), the Institute for Social and Economic Change (Bangalore), the Instituto Brasileiro de Geografia e Estatística (Rio de Janeiro), the International Monetary Fund, Johns Hopkins University’s School of Advanced International Studies, Kenya’s Central Bureau of Statistics, the Latin American and Caribbean Economic Association (Puebla, Mexico; and Costa Rica), Laval University, Manchester University, the Massachusetts Institute of Technology, the National Council for Applied Economic Research (Delhi), Pontificia Universidade Católica (Rio de Janeiro), Siena Summer School, Toronto University, Tunisia’s Institut National de la Statistique, the United Nations Development Programme’s Human Development Report Office, University College London, the University of California at Berkeley, the University of Maryland, the University of Montreal, the University of Pennsylvania, 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/.


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Reports


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 what role initial conditions (including initial inequalities) play and what drives the distributional changes seen in survey data. This research program addresses the 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 revealed 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 closely related line of inquiry has sought to understand the determinants of differences across income distributions. When looking at distributional change over time, this approach closely complements the study of pro-poor growth and sheds light on the contributions of labor force participation, changes in education, changes in family size, returns to individual characteristics, employment levels and structure, and the like. A volume compiling seven case studies of countries in East Asia and Latin America highlights common features and differences across those regions. Reductions in fertility, rising
returns to schooling, and greater female participation in the labor force feature prominently as determinants of changes in poverty and inequality in different countries.

Similar approaches have been used to compare income distributions across countries. A comparison of Brazil and the United States found that differences in the distribution of education and in returns to schooling accounted for two-thirds of the difference in inequality between the two countries. The rest was due almost entirely to the greater regressivity in the incidence of retirement pensions in Brazil.

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.

Another study combined computable general equilibrium and microsimulation methods to test a rapid-response predictive model for the poverty effects of macroeconomic crises in Brazil. Using only precrisis data, the model predicted employment and income changes across the income distribution for the 1998–99 devaluation of the real.

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 social and cultural factors in determining inequality and poverty and access to public services by the poor. Sociocultural factors have an important effect on the distribution of and access to public services. Symbolic public goods—cultural institutions that have widespread impacts—play an important part in this. In addition, 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 Culture and Public Action). 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—showed 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 found large variations in program performance at the local level. Using structural socioeconomic indicators to explain the heterogeneity, it found 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 is 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 H. G. 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 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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**Reports**


Social Custom and Women’s Status in Rural Pakistan

Marriage is an incomplete contract in the sense that its provisions are both difficult to specify in advance and difficult to enforce ex post. Where divorce or even separation carries intense stigma for a woman, as in rural Pakistan, there is great scope for “malfeasance” within a marriage by the husband. This reality may be reflected in a variety of outcomes for women, from economic autonomy (or lack thereof) to domestic abuse. At the same time, however, there are likely to be social mechanisms that constrain a husband’s bargaining power relative to his wife’s.

This research looks at the role of traditional marital practices in determining women’s well-being. Using data from a new survey in Pakistan, it will examine whether such practices as close-kin marriage, exchange marriages (in which one sibling pair is married to another sibling pair), and village endogamy are customs designed to improve the status of women in a context where legal protections are nearly absent. The survey, designed by the research team specifically for this and related studies, is a national survey covering around 3,000 households. Outcomes of interest range from mobility, nutritional status, and intrahousehold decisionmaking authority to domestic abuse and the incidence of depression and anxiety disorders.

Responsibility: Development Research Group, Rural Development Team—Ghazala Mansuri (gmansuri@worldbank.org) and Hanan Jacoby.

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and expectations of prejudicial treatment. Results suggest that expectations of prejudicial treatment, but not loss of self-confidence, explain the caste gap.

These results imply that “blind justice” may have a powerful effect on economic incentives. The expectation of unfair treatment hurts the performance both of the low caste (who expect to be discriminated against) and of the high caste (who expect to be rewarded on the basis of their status rather than their performance).

Additional work, based on a single village survey and the experimental work conducted by the project as well as a related large-scale survey in Uttar Pradesh, suggests that decentralization of power to the village level and mandated political reservations for traditionally oppressed groups are unlikely to be a corrective to a history of inequality, at least in the short and medium term. Field research provides convincing evidence that such a policy tends to lower the quality of local education (as measured by teacher absenteeism, teaching activity in the schools, and children’s performance). The village survey provides evidence that despite the democratic reforms, a large part of the population remains outside village decision-making and village government is not accountable.

Some of the research results are presented in the World Bank’s World Development Report 2006: Equity and Development (New York: Oxford University Press, forthcoming). They have been discussed with World Bank staff in Delhi and provided to India’s Ministry of Education.

Findings also have been presented at Boston University (April 2004), the Brookings Institution (April 2004), the World Bank (May and July 2004), and Princeton University (December 2004); at a joint development seminar of Harvard University and the Massachusetts Institute of Technology (April 2004); at the Conference on Behavioral Economics, Public Economics, and Development Economics, organized by Cornell University, the Massachusetts Institute of Technology, and the London School of Economics (May 2004); at the MacArthur Foundation’s Norms and Preferences Research Network in Philadelphia (January 2005); and at the Workshop on Social Dynamics and the Microeconomics of Poverty, organized by Cornell University (March 2005). The papers produced by the project are available on the Web at http://www.umass.edu/preferen/.

Once the series of planned experiments is completed, a conference will be organized in India for representatives of the government and of nongovernmental organizations and for academics within and outside India.

**Responsibility:** Development Research Group, Growth and Investment Team—Karla Hoff (khoff@worldbank.org), and Public Services Team—Monica Das Gupta. With Mayuresh Kshetramade and Priyanka Pandey. The World Bank–Netherlands Partnership Program, Santa Fe Institute, and MacArthur Foundation provided funding for the research.

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**Reports**


**Urban Poverty and Social Capital**

By examining the role of social networks, this research is aimed at improving 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 slum areas while modeling both economic and social behaviors.

The research 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 research finds that 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.

More recent work focuses on how identity choices affect aspirations among slum dwellers and how this in turn affects prospects for mobility.

The research has been presented at the World Bank, Cambridge University, the Institute for 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 Saumitra Jha, Stanford University.

Reference: PO68214.

Completion date: July 2007.

Reports


Culture and Public Action

This research centers on themes outlined in Culture and Public Action (Vijayendra Rao and Michael Walton, eds., Stanford, Calif.: Stanford University Press, 2004), an edited volume that explores the role of culture in different aspects of development.

A first strand of research reviews the literature on community-based development projects. While there is a dearth of well-designed evaluations of such projects, published studies provide enough quantitative and qualitative evidence to glean useful lessons. The research finds that projects that rely on community participation have not been particularly effective at targeting the poor. There is some evidence that such projects create effective community infrastructure, but no study establishes a causal relationship between any outcome and participatory elements of a project. Most community-based development projects are dominated by elites, and project quality tends to be markedly worse in more unequal communities. The evidence suggests that community-based development is best done in a context-specific manner, with a long time horizon and careful and well-designed monitoring and evaluation systems.

A second strand of research reexamines the influential hypothesis put forward by Tim Dyson and Mick Moore as to why women in South India enjoy relatively more agency than those in North India (“On Kinship Structure, Female Autonomy, and Demographic Behavior in India,” Population and Development Review 9, no. 1 [1983]: 35–60). This study conducted an econometric analysis of the determinants of women’s mobility and decisionmaking authority using 1995 household survey data from Karnataka and Uttar Pradesh. Reduced-form, multivariate regressions show that cultural factors affect women’s autonomy in ways not earlier predicted. The impact of village exogamy is mixed rather than negative, while that of consanguinity is strongly negative rather than positive—though the negative effect of purdah on female mobility was correctly identified by Dyson and Moore.

Consistent with economic theory, the data show that higher wages for women consistently increase their mobility and authority, while higher wages for men reduce them. Better public action—particularly the presence of streetlights and schools in the village—is associated with greater women’s agency. Thus the data suggest that economic factors, public action, and restrictions on mobility are more powerful than kinship structures as explanations of differences in female autonomy between North and South India.


Reference: PO73795.

Completion date: Ongoing.

Reports

The 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 health sector reform the government created a task force drawn from civil society to assess the changes needed. This research project, working with task force members and health service users in Karnataka, developed tools and information that would help improve the delivery of public health services.

The project adapted tools developed by the U.S. Centers for Disease Control and Prevention for assessing the quality of preventive health service delivery. These include three sets of questionnaires for use at national, state, and district levels, two focusing on core public health functions and the third on other governance-related issues. In addition, the project developed a case study of Karnataka’s efforts to reform delivery of preventive health services and engage local communities in the process. And it developed short case studies of experience in Asian economies—such as Malaysia and Taiwan (China)—that have reduced the burden of communicable diseases in recent years, to extract best practices in such areas as engaging civil society in implementing and monitoring public health activities.

The project used the questionnaires to survey officials and frontline health workers in Karnataka. The findings identified key constraints to the effective management of disease control in India—in misaligned incentives and in the institutional arrangements for service delivery. The study 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 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. They have also been presented at the World Bank, where they informed the preparation of a new health sector loan for Karnataka. The results prompted demand from West Bengal for related research to aid in preparing an upcoming World Bank health sector loan for that state.

Responsibility: Development Research Group, Public Services Team—Monica Das Gupta (mdasgupta@worldbank.org); and Europe and Central Asia Region, Human Development Sector Unit—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) and Institute for Social and Economic Change (Bangalore).

Reference: PO76797.

Completion date: December 2003.

Reports


Reproductive Health Needs of Women with Disabilities

Both disability and reproductive health are about access to information, services, and, finally, rights. In South Asia they are both fraught with stigma and taboo that prevent access to resources. This research project investigates the interface between disability and reproductive
health in India. Through a literature review, it synthesizes existing knowledge on issues of poverty, disability, gender, and access to reproductive health services for women with disabilities. The research also draws on data from a 1991 disability survey conducted by the Indian National Sample Survey Organization as well as other sources to understand disability and gender. And it analyzes the institutional framework for addressing disability and reproductive health in India.

The project’s great operational value lies in its work to develop a conceptual and operational model for integrating the issue of disability into reproductive and child health care. The model will be applied to mainstream disability into an ongoing project—the Reproductive and Child Health Project II in India—but could also be replicated in other countries addressing gender and disability.

The research finds that access to reproductive health care can be a critical avenue toward empowering women with disabilities—among the most vulnerable groups in India’s population. It shows that programs that view people with disabilities as agents of change rather than as victims in need of protection are more likely to succeed.

The research project, the first to address these issues in a World Bank client country, was initiated with the concurrence of India’s Ministry of Family Welfare. Its findings are to be presented in a dissemination workshop in India in 2005. The research also has been presented in the World Bank.

Responsibility: South Asia Region, Human Development Sector Unit—Sadia A. Chowdhury (schowdhury3@worldbank.org). With Maitreyi B. Das and Maj-lis Voss.

Reference: PO85211.

Completion date: March 2005.

Report

Das, Maitreyi B. 2004. “Integrating Disability into India’s Reproductive and Child Health Program.”

Analyzing the Effects of Quality of Health Care and Family Planning Services on Infant Mortality and Fertility in India

This research project investigates the effects of the quality of health care and family planning services on infant mortality and contraceptive use using survey data from the Indian state of Uttar Pradesh. The data come from two surveys, each consisting of a demographic survey and a survey of health care providers: the PERFORM survey, conducted in Uttar Pradesh in 1996 and sponsored by the U.S. Agency for International Development (USAID); and the Reproductive and Child Health (RCH) survey, a nationally representative survey sponsored by the World Bank and conducted in two phases (the first completed in 1999–2000 and the second now nearing completion).

Results of empirical analysis of the PERFORM data show the importance of improving the quality of health care services, especially as they relate to family planning methods, for increasing utilization. The presence of trained private doctors has positive and statistically significant effects on the uptake of contraceptive methods. And the number of doctors trained in family planning methods in public and private hospitals is a significant predictor of the use of contraceptive methods for birth spacing and of terminal family planning methods. A higher quality of health care also is associated with lower infant mortality.

The analysis finds that private agents such as private doctors are more likely to locate in well-off regions and that there is interdependence between the quality of care offered by private providers and that offered by public ones. Thus better-quality public and private health care services are more likely to be found in more developed urban regions, while nongovernmental organizations offer basic services in backward and remote regions of Uttar Pradesh.

The empirical results support the view that researchers need to work with a broader class of models than those emanating from the “endogenous facility placement” literature, in part because of the growing role of private providers and in part because of the interdependence in the quality of services offered in public and private facilities.

The results were presented at a seminar attended by such partners as UNICEF and USAID at the World Bank’s Regional Office in New Delhi in March 2003. Findings also have been presented at seminars at Cambridge University, the Indian Statistical Institute, the
Institute for International Economic Studies (Sweden), and the London School of Hygiene and Tropical Medicine. The PERFORM data set will be made available upon request on CD-ROM.

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

Reference: PO78242.

Completion date: June 2005.

Report


Health Care Providers and Markets in Delhi

The quality of medical care is a hotly debated topic, both in India and internationally. Yet little evidence exists on how quality of care differs by income group, by the sector in which a doctor practices, or by the incentives facing a doctor—and ultimately how this affects health outcomes. This research project aims to shed light on these issues through novel survey methods in Delhi.

The study first carried out a household survey, interviewing 300 households in seven neighborhoods of Delhi over two years for a total of 35 observations per household. Based on the results, the study compiled a census of all health care providers in the seven neighborhoods, then chose a sample of providers (based on probability proportional to visits). To measure clinical competence, these providers were administered “vignettes” (a battery of questions on standard hypothetical cases) and later observed in practice. Finally, the data were matched so that all household visits were matched to provider competence and practice, creating the first data set believed to do so.

The research has led to several main findings:

- Perceptions of the public and private sectors in India vary substantially, and the research finds grounds for prejudice against both. The quality distribution of private sector graduate doctors is strongly skewed to the left (many fairly good with a long bad tail), and that for private sector unqualified doctors strongly skewed to the right. In the public sector (with only graduate doctors) the distribution is wide and bimodal. Doctors in hospitals tend to be slightly less knowledgeable than their private sector counterparts. And public doctors in small clinics tend to be slightly more knowledgeable than their private sector counterparts (without a university medical degree) but not by much. Residents of higher-income neighborhoods receive reasonable care in either the public or the private sector, while poor people get bad care in both.

- What doctors do in practice (as measured by a day’s direct observation) is only very weakly related to how well they do on the vignettes. All do less than they know they should—but the difference is dramatic in the public sector, where each patient is accorded less than two minutes. In the private sector overprescription of medicines is the norm—that is, doctors do “too much.”

- There are large disparities between poor and rich neighborhoods in access to good-quality medical care. Private doctors in poor neighborhoods are much worse than those in rich neighborhoods, and the pattern is replicated for government doctors. Moreover, these differences are accentuated by what doctors do—those with low clinical competence also put in less effort.

- One repercussion of this poor medical care is poor diagnosis. Would better diagnosis help? The household survey shows that when households are given the correct diagnosis, they are able to respond appropriately, even when they are poor. This suggests that poor information has an important role in explaining poor health outcomes.

The method developed in the project is being used in ongoing and proposed World Bank projects in the health sector. The Water and Sanitation Program in Delhi has used one module (on diarrhea) for its analysis of the health effects of the Total Sanitation Campaign in Maharashtra state.

Results have been presented in seminars at the World Bank, the Delhi School of Economics, the Center for Policy Research (Delhi), and Johns Hopkins University.
Responsibility: Development Research Group, Public Services Team—Jeffrey Hammer (jhammer@worldbank.org) and Jishnu Das. With the Institute for Socio-Economic Research in Development and Democracy, Delhi.

Reference: PO75922.
Completion date: June 2005.

Reports

The Impact of Health on Household Income Capabilities in Rural China

This research project is studying the impact of health shocks on the income and consumption of rural households in China, their ability to handle the shocks, and the effectiveness of public intervention. The research addresses several questions: How well insured are rural households? What determines the consumption of insurance? Who has health insurance? And what effect does health insurance have on household welfare?

The research uses a panel data approach to identify the effects of health shocks and income shocks. The data come from a retrospective survey of major diseases in about 1,500 households in eight provinces over the period 1987–2002 and an existing panel data set covering the same period, with which the survey is matched.

The research, being done in collaboration with Beijing University’s China Center for Economic Research, will contribute to the World Bank’s health sector work on China.

Responsibility: Development Research Group, Growth and Investment Team—Lixin Colin Xu (lxu1@worldbank.org). With Yang Yao and Mengtao Gao, Beijing University; and Li Gan, University of Texas at Austin. Beijing University contributed funding for the data collection.

Reference: PO87657.
Completion date: June 2005.

The Interaction of Health, Education, and Employment in Western China

The World Bank and other development agencies continue to finance a large number of health and education projects in developing countries. Given resource constraints, a better understanding of how these investments affect health and education outcomes—and employment outcomes—is critical.

This research project will use panel data methods and instrumental variables to evaluate the relationships—in some cases causal relationships—between health and education, health and labor market outcomes, and education and labor market outcomes. For this analysis the project has collected a longitudinal data set on 2,000 adolescents in rural China, with detailed information on physical and psychosocial health outcomes, educational attainment, and labor market outcomes. In addition, a randomized intervention to provide eyeglasses to primary school students with poor vision will help identify a specific connection between health and education outcomes.

By providing insight into causal or correlative processes, the results can inform policymakers about the costs that poor health or poor educational attainment can have for labor productivity as well as for individual well-being. The research will also provide information helpful in prioritizing World Bank lending activities in health and education. And it can help inform policy priorities in China by identifying potential health risks and areas of educational underperformance in its poor areas.

Chinese researchers and policymakers in health, education, and other sectors have collaborated in the project, receiving valuable training and experience in survey design, data collection, and randomized evaluation design.

Information on the project is available on the Web at http://www.ssc.upenn.edu/china/gscf/mainGscf.htm. Data from the first round of the Gansu Survey of Children and Families (collected before the project) are available upon request.
Responsibility: East Asia and Pacific Region, Rural Development and Natural Resources Sector Department—Guo Li (gli@worldbank.org) and Alan Piazza. With Pengfei Ge, Gansu Center for Disease Control, China; Paul Glewwe, University of Minnesota; Emily Hannum, University of Pennsylvania; Albert Park, University of Michigan; Tiemin Tang, Gansu New Century Information Research Center, China; Jiayi Wang, Northwest Normal University, China; and Yuying Wang, China Center for Disease Control. The Fogharty Foundation, National Institutes of Health, and University of Michigan contributed funding for the research.

Reference: PO83112.

Completion date: June 2005.

Reports


Hsu, J. 2005. “Child Labor and Sibling Composition in Rural China.”


This research project investigates how health shocks due to HIV/AIDS affect individuals in the long run, drawing on a resurvey in 2004 of respondents originally surveyed in northwest Tanzania in 1991–94. The Kagera Health and Development Survey is among the few household surveys that can help to address questions relating to the long-term effects of such issues as orphanhood, disability, mortality, morbidity, and lack of education—and thus to assess who stayed in poverty and why, and who moved out of poverty and how.

The 2004 survey used the original household questionnaire as the foundation of the survey instrument, collecting a wide range of socioeconomic data from households. A community questionnaire collected data on the social, economic, and physical infrastructure of the baseline communities. A primary school questionnaire collected information on the amenities at schools, assistance to schools, and the composition of the student body. Finally, up to three price observations on commonly purchased food and nonfood items were collected in each community from local markets. Data collection was completed in October 2004.

The research agenda covers numerous topics, including these: Does AIDS increase poverty, and does it create a poverty trap for future generations? What coping strategies do households use, and which do best in mitigating the impact of economic shocks? Do long-run coping mechanisms differ from short-run adjustments? Are some types of households buffered more from health and other economic shocks than others?
What role do formal and informal social networks play in assisting those affected by the death of prime-age adults? What is the relationship between an adult death and food security? The research will also examine the dynamics of intergenerational wealth and the role of migration as a strategy for coping with risk.

Although the analysis has yet to begin, the research project has been presented to several audiences in Bukoba and Dar es Salaam, Tanzania; and in Indianapolis, Indiana. Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org); and Human Development Network, Social Protection Team—Johannes Hoogeveen. With Joachim De Weerdt, Economic Development Initiatives, Tanzania; Stefan Dercon, Oxford University; Flora Kessy, Economic and Social Research Foundation, Tanzania; Godlike Koda, University of Dar es Salaam; and Gideon Kwesigabo, Phare Mujinja, and Innocent Semali, Institute of Public Health, Muhimbili University College of Health Sciences, Dar es Salaam. The Danish International Development Agency (Danida) contributed funding for the research.

Reference: PO82486.
Completion date: June 2005.

Mental Health and Economic Outcomes

What is the relationship between poor mental health and poverty? And is there an economic rationale for policy intervention in mental health? This research project aims to shed light on these questions by identifying correlates of poor mental health at the individual, household, and community levels.

Using observational data from several surveys, the research first determines the correlation of mental health status with individual, household, and community characteristics and then analyzes the patterns in each data set. It also attempts to compare results across countries. The surveys are the Living Standards Measurement Study (LSMS) survey in Bosnia and Herzegovina, the Indonesian Family Life Survey, and a physician and patient survey in India. Each includes a section dealing with mental health status.

Results show that mental health status is by and large positively correlated with socioeconomic variables such as income, physical health, and labor market participation. The study also finds that mental health status is correlated within households and within communities. Further research will attempt to disentangle the sources of such clustering. There are several possible explanations: mental health status is “contagious,” individuals with similar mental health status are matched together, or mental health status in households and communities has been determined by a common shock such as violent conflict or a financial crisis.

The research should raise awareness that mental health interventions can complement other types and are more important in populations suffering large shocks.


Responsibility: Development Research Group, Poverty Team—Quy-Toan Do (qdo@worldbank.org), and Public Services Team—Jishnu Das and Kinnon Scott; and East Asia and Pacific Region, Human Development Sector Department—Jed Friedman. With Eric Chaney, University of California at Berkeley.

Reference: PO89095.
Completion date: June 2005.

Reports

Valuing Mortality Risk Reductions

In most industrial countries the mortality benefits of environmental programs accrue primarily to older peo-
ple. In the case of air pollution controls the age distribution of statistical lives saved parallels the age distribution of deaths, implying that in many industrial countries 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, which reflect the risk preferences of workers who are on average much younger. An important question for policy is how the value of reduced risk of death varies with age—and also with health status.

Another issue relates to the timing of risk reductions: Are those delivered in the future (for example, at the end of a latency period) worth the same to people as an immediate reduction in risk of death? Theory suggests they should be worth less, but the empirical question is, how much less?

To answer these questions, this research project has developed a questionnaire 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. It also asks respondents whether they would pay a stated amount for a drug that, if taken today, would reduce their risk of dying beginning at age 70.

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. Delaying the time at which the risk reduction occurs by 10–30 years reduces the willingness to pay for the risk reduction by more than half for respondents ages 40–60 in both samples. The implicit discount rates are equal to 3–8.6 percent for Canada and 1.3–5.6 percent for the United States—both well within the range established in the literature.

The survey instrument also has been administered in France, Italy, Japan, the Republic of Korea, and the United Kingdom.

Choosing an appropriate value for a statistical life for cost-benefit analyses in developing countries is a continuing issue in World Bank economic and sector work, and the questionnaire already has been adapted for use in Brazil and Chile. In addition, 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.

Results have been presented most recently at the Universidad de los Andes, Bogotá (June 2003); the University of California at Santa Barbara (October 2003); York University (October 2004); and Rice University, Houston (October 2004).

Responsibility: Development Research Group, Infrastructure and Environment Team—Maureen L. Cropper (mccropper@worldbank.org). With Anna Alberini, University of Maryland; Alan Krupnick, Resources for the Future; and Nathalie Simon, U.S. Environmental Protection Agency.

Reference: PO87587.

Completion date: June 2005.

Reports


**Determinants of Success in Immunization Programs**

This research explores why some countries achieve successful immunization programs—and some achieve equity in the outcomes of such programs—while others do not. Through cross-country quantitative analysis the study has identified factors associated with high immunization coverage for measles and DPT-3 (diphtheria, pertussis, and tetanus) vaccines: the global policy environment, the quality of national institutions, the level of development, and contact with international agencies.
The research shows that, except in very poor countries, democracies have lower coverage rates than autocracies, perhaps because in autocracies bureaucratic elites have an affinity for immunization programs and are granted more autonomy and resources. There is no evidence that disease outbreaks or polio eradication campaigns affect immunization rates nor that, at the aggregate level, education and literacy are correlated with high coverage. In other words, in the current structure of immunization programs coverage rates respond more to supply-side than to demand-side effects.

Work on the factors relating to equity in immunization outcomes is ongoing.

**Responsibility:** Development Research Group, Public Services Team—Varun Gauri (vgauri@worldbank.org) and Peyvand Khaleghian. With Baya Benhassine and Santiago Cornejo.

**Reference:** PO74573.

**Completion date:** December 2005.

**Reports**


**Health and the Environment**

This research project seeks to aid efforts by the World Bank and client countries to improve health outcomes through better environmental management. The project will distill lessons from Malaysia in the management of vector control, food hygiene, and water quality monitoring—services essential for controlling malaria and gastrointestinal diseases, the main causes of child mortality and adult morbidity in poor developing countries. It will then design a pilot project for applying those lessons in India.

In India the public sector health services have focused on providing curative services, to the relative neglect of services aimed at reducing exposure to disease—for example, through vector control, health education, food safety and other health regulations, and the monitoring of waste disposal and water systems. This neglect has slowed the health transition in India as well as its progress toward the Millennium Development Goals.

Malaysia is a good comparator for India because it has achieved a rapid health transition and because its legal and administrative institutions share many similarities with those of India as a result of the countries’ common colonial heritage—though Malaysia has reshaped those institutions to increase their development orientation.

The study will collect information in Malaysia through open-ended interviews structured around questions relating to planning and implementation mechanisms and the working arrangements of frontline staff involved in delivering services. The methodological and analytic approach is modeled on Robert Wade’s comparison of the organization of canal irrigation in the Republic of Korea and the Indian state of Andhra Pradesh. That research was based on extensive qualitative fieldwork to obtain detailed information on how the irrigation systems were designed and implemented.

Some of the work under this project is amalgamated with that for the Governance of Public Health (see the abstract in this volume).

**Responsibility:** Development Research Group, Public Services Team—Monica Das Gupta (mdasgupta@worldbank.org). With the Institute for Social and Economic Change, Bangalore; and the State Institute for Panchayats and Rural Development, Kalyani, West Bengal.

**Reference:** PO79785.

**Completion date:** February 2006.

**The Economics of AIDS**

This research project is exploring the economics of the HIV/AIDS epidemic in the developing world. During fiscal 2004 work focused primarily on projecting the costs and benefits of antiretroviral therapy in India and Thailand.

In the work on India, now complete, the project applied the tools of epidemiological projection models to predict the course of the HIV/AIDS epidemic until 2023. The projections include the rate of new infec-
tions, the number of years of orphanhood, and government financing requirements. They also include the implications of three alternative AIDS treatment financing policies for the health burden of AIDS and total health expenditures in India. Elements of all three of these options are contained in the Indian government’s 2004 treatment initiative.

The lower prices of antiretroviral therapy today, and the fact that therapy can reduce transmission by the treated patient, imply that such therapy could save healthy years of life at a cost of between $146 and $280 a year. This conclusion depends, however, on the assumption that treatment has no effect on risk behavior in key populations. Sensitivity analysis reveals that multiplier effects due to behavioral responses would overwhelm the direct biological effects of treatment. Careful monitoring of the population’s response to the availability of treatment should suggest how to maximize the beneficial effects of treatment on risk behavior and how to avoid potentially perverse effects.

The World Bank’s South Asia Region is following up on the work on India with an in-depth study of the costs of antiretroviral therapy. The work on Thailand is ongoing.

The research has been disseminated through presentations in the World Bank, at the International AIDS Conference in Bangkok (July 2004), and at a conference on the Health Crisis in South Asia at Yale University (February 2005).

**Responsibility:** Development Research Group, Public Services Team—Mead Over (meadover@worldbank.org) With Emiko Masaki, University of California at Berkeley; Joshua Zivin, Columbia University; Markus Goldstein, London School of Economics; and Harsha Thirumuthy, Yale University.

**Reference:** PO83321.
**Completion date:** June 2006.

**Report**

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**Community Nutrition and Evaluation of Impacts in Africa**

Community-based nutrition projects have been advocated as a cost-effective approach to addressing child health issues. But is that claim sound? This research project is investigating the claim by assessing the impact of community-based nutrition projects on malnutrition in Madagascar and Senegal and analyzing the determinants of any such impact.

The Madagascar research uses monitoring data from the nutrition project along with data on the nongovernmental organizations (NGOs) involved in implementation. A follow-up survey of households and NGO workers gathered data on knowledge about nutrition.

The Senegal research uses a randomized comparison of communities with and without the intervention. Primary data for the analysis have been collected by a local firm.

The Madagascar survey of nutritional knowledge was designed with the project implementation unit and the national statistical institute. The Senegal survey was designed in collaboration with the Centre de Recherche et de Développement Humain (CRDH), a consulting firm in Dakar.

Preliminary results for Madagascar were presented to staff of the project office, and later results were presented in Madagascar in April 2005. Results for Senegal will feed into consideration of whether to expand the community-based nutrition project.

**Responsibility:** Africa Technical Families, Regional Human Development—Harold Alderman (halderman@worldbank.org), and Human Development 2—Claudia Rokx; and Development Research Group, Poverty Team—Emanuela Galasso. With Jeffrey Yau, University of Pennsylvania; Hernan Gonzales, University of Maryland; Judith McGuire; and Guy Dejongh.

**Reference:** PO87558.
**Completion date:** December 2006.

**Poverty and Health**

This research develops and applies methods for addressing a broad range of policy and operational questions relat-
ing to inequalities in the health sector between poor and nonpoor, the factors that give rise to such inequalities, and the effects of health programs and policies, especially health insurance.

The research is based on data from the Vietnam Living Standards Survey and the China Health and Nutrition Survey. The study measures poor-nonpoor inequalities using the concentration index and explains them through decompositions of this index. It assesses the impact of programs such as health insurance through propensity score matching or regression analysis based on pre- and postintervention data. Its analysis of health shocks involves regression analysis of panel data.

Results for Vietnam show that poor-nonpoor inequalities in the incidence of health subsidies largely reflect the fact that richer provinces have more subsidy per capita than poorer provinces—rather than interpersonal inequalities in the amount of subsidy “captured” across the income distribution. In rural China poor-nonpoor inequalities in health insurance coverage largely reflect the fact that less poor villages have been more likely to keep their cooperative medical system in place—rather than that the better-off within villages are more likely to be enrolled in the scheme. Poor-nonpoor inequalities in child malnutrition and child survival in Vietnam reflect inequalities in many determinants, but most important are those in household income.

Health insurance in Vietnam, found mainly among better-off households, is estimated to have favorable effects on child and adult health, encouraging greater use of primary and hospital care. Health insurance is also estimated to reduce out-of-pocket spending on medical care and to increase spending on other items—including food—even more. But both food and nonfood consumption are found to be responsive to health shocks, indicating an inability to smooth nonmedical consumption in the face of such shocks. Households with health insurance come no closer to smoothing nonmedical consumption than those without.

New analytic methods developed by the project are typically explained in technical notes and posted on the Web at http://www.worldbank.org/povertyandhealth. The technical notes have formed the basis for World Bank Institute events, including training delivered to the Chinese Health Economic Network (January 2004).

The research results are feeding into several World Bank operational activities: an analytic and advisory activity on China’s rural health sector, a lending operation to strengthen Vietnam’s Health Fund for the Poor program, and a health sector note for Vietnam updating an earlier analytic and advisory activity. Two themes recurring throughout this work are expanding health insurance to the poor and improving the targeting of government subsidies to the poor.

Responsibility: Development Research Group, Public Services Team—Adam Wagstaff (awagstaff@worldbank.org); and East Asia and Pacific Region, Human Development Sector Department and Poverty Reduction and Economic Management Sector Department—Menno Pradhan. With Eddy van Doorslaer, Erasmus University, Rotterdam; and Owen O’Donnell, University of Macedonia.

Reference: PO70134. Completion date: Ongoing.

Reports


Labor Markets and Vulnerability under Trade Liberalization

This research examined the extent to which labor market outcomes have changed with trade liberalization in three East Asian countries—Indonesia, the Republic of Korea, and Thailand. It investigated whether trade liberalization transmits greater 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 formed 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 used labor force surveys; for Korea, labor force surveys and establishment surveys.

The analysis found 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 found no obvious link between trade and vulnerability, it confirmed 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 workers’ earnings.

In a continuation of this work the simulation model was applied to panel data for Korea. Findings show that the estimations from cohort analysis of repeated cross-sections are very similar to those from panel data. In particular, model parameters recovered from pseudo panels approximate reasonably well those estimated directly from a true panel. Thus the implications of the pseudo panel measures of vulnerability to poverty closely reflect those based on actual panel data.

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

Albanian Migration and Its Determinants

This research had two objectives: to analyze the evolution of different types of international migration from Albania since the fall of communism in 1990 and to understand what factors—at individual, household, and community levels—influence the current decision to migrate internationally. The aim was to provide insight into future trends in international migration and the relevance of policy interventions to manage and take advantage of that flow.

The research was based on multivariate statistical and econometric analysis and geographic information system (GIS) mapping. Data sources included the 1989 and 2001 Population and Housing Censuses of Albania,
the 2002 Living Standards Measurement Study (LSMS)
survey, the 2003 Albania Panel Survey (which includes
a special migration module), and a spatial database
prepared by the University of Thessaly in collaboration
with the World Bank and the Albanian Institute of
Statistics.

The research distinguished between temporary
and permanent migration and classified migration by
destination—neighboring Greece or Italy (and other,
farther countries). Results show that factors in the deci-
sion to migrate vary by type of migration and by desti-
nation. While family migration networks are a significant
factor in permanent migration, personal experience with
temporary migration—the more repeated and recent the
better—is the most important factor in temporary migra-
tion and also is important for permanent migration. More-
ever, job success and legality increase with repeated
experience. Family migration networks and personal
experience are location specific, aiding migration to the
countries involved and dissuading migration to the oth-
ers. The exception is previous personal migration to
Greece, which is a significant determinant of migration
to Italy and beyond as well.

The results have several important policy implications.
First, policies aimed at controlling migration are likely
to be less effective where networks have already devel-
oped or where patterns of repeat migration are estab-
lished. Second, despite increasing legality, migration
remains difficult, risky, and often illegal, particularly for
newcomers, fostering a climate of exploitation and abuse.
Third, that university-educated Albanians have a higher
propensity to permanently migrate constitutes a serious
potential risk of brain drain.

Findings were presented at an international confer-
ence, New Perspectives on Albanian Migration and
Development, organized by the University of Sussex in

Many indicators constructed by the project have been
shared with other researchers, in Albania and abroad. The
cleaned raw data from the 2002 and 2003 surveys are avail-

Responsibility: Development Research Group, Poverty
Team—Kathleen Beegle (kbeegle@worldbank.org) and
Calogero Carletto. With Marco Stampini.

Reference: PO86430.
Completion date: June 2004.

Reports
“A Country on the Move: Internal Mobility and International
Migration in Post-Communist Albania.”
Stampini, Marco, B. Davis, and Calogero Carletto. 2004. “Famil-
 iar Faces, Familiar Places: The Role of Family Networks and
Previous Experience for Albanian Migrants.”

Labor Market Policies, Unemployment, and Poverty
in Morocco: A Quantitative Analysis

This research analyzed the effects of two types of labor
market reform—reducing the minimum wage and reduc-
ning payroll taxation—on growth, unemployment, and
poverty in Morocco, taking into account the fiscal impli-
cations of the reform. The research developed a macro-
economic quantitative framework that captures many
specific features of the Moroccan labor market, includ-
ing its large public sector, high redundancy payments,
powerful trade unions, and international labor migra-
tion. This dynamic computable general equilibrium
model is based on a social accounting matrix built using
data from national sources.

Simulations suggest that a cut in the minimum wage
and a reduction in payroll taxation may have a significant
effect in the short term on open unskilled unemployment.
But they also show that, to be effective in the long run,
labor market reforms may need to be accompanied by off-
setting changes in the budget to avoid crowding-out
effects on private investment.

The research has stimulated policy debate in Morocco
and contributed to World Bank economic and sector
work and policy dialogue in the country. Results were
incorporated into the Middle East and North Africa
Region report Unlocking the Employment Potential in the Mid-
dle East and North Africa: Toward a New Social Contract

Findings were presented at a March 2004 seminar
attended by senior officials from Morocco’s Central Bank
and Ministries of Finance, Planning, and Labor and
Social Affairs. The research was also presented at an
international conference in Marrakech (March 2004) and at seminars at the University of Cairo (February 2003), University Hassan II in Casablanca (June 2003), the University of Nice (March 2004), the University of Paris X Nanterre, and the Center for Studies and Research on International Development (CERDI), Clermont-Ferrand, France.

The model has been transferred to the Ministry of Finance through training activities and is now regularly used by the staff as a tool for analyzing policy reforms. The social accounting matrix is available in Excel format on request.

Responsibility: Africa Technical Families, Poverty Reduction and Economic Management 2—Karim El Aynaoui (kelaynaoui@worldbank.org); and World Bank Institute, Poverty Reduction and Economic Management Division—Pierre-Richard Agénor. With Touhami Abdel-khalek, Institut National de Statistique et d’Economie Appliquée (INSEA), Morocco; Henning Tarp-Jensen, Institute of Economics, University of Copenhagen; Fouzi Mourji, University Hassan II, Casablanca; and Nizar Baraka and Mohammed Tawfik, Ministry of Finance, Morocco.

Reference: PO85862.
Completion date: June 2004.

Reports

Teacher Incentives and Local Accountability: Raising Service Quality in Decentralized Schools

This project assessed the impact of school-based management and teacher compensation reforms on teaching quality and student outcomes through case studies in Chile, El Salvador, and Nicaragua. The research used various econometric methods to identify the effect of reforms, including propensity score matching methods, quantile regression analysis, and instrumental variable techniques.

In Chile the study examined the effect of the National System of Performance Assessment (SNED), implemented in 1996, which offers monetary bonuses to schools with excellent performance in student achievement. Results provide some preliminary evidence that this incentive has had a cumulative, positive impact on student performance in the schools with a relatively good chance of winning the award.

El Salvador and Nicaragua implemented school-based management reforms aimed at strengthening the accountability relationship between teachers (and schools) and communities. The study found that these reforms result in less teacher absenteeism, more hours of work by teachers, more homework assigned, and closer parent-teacher relationships. But the reforms had more limited effect on teachers’ knowledge of the subject they teach and their ability to use effective teaching methods. To raise the quality of education, reforms are therefore needed that encourage teachers to keep their skills up to date and improve their teaching practices—and that ultimately reward those who are effective, as measured by their students’ learning.

Results of the research have been disseminated through presentations in the World Bank.

Responsibility: Latin America and the Caribbean Region, Education Sector Unit—Emiliana Vegas (evegas@worldbank.org). With Alejandra Mizala, University of Chile; Caroline Parker, Harvard University; Yasuyuki Sawada and Andrew Ragatz, University of Tokyo; and Ilana Umansky.

Reference: PO85855.
Completion date: June 2004.

Reports

Vegas, Emiliana, and Ilana Umansky. Forthcoming. Improving Teaching and Learning through Effective Incentives: What Can We
Innovations in the International Crafts Market and Artisans’ Empowerment

Earlier analysis of the Indian crafts market found that increasing export revenues from crafts were matched by declining incomes for the artisans because of the growing share commanded by buyers and exporters. This study, through evaluation of a pilot project, assessed how forging direct links between artisans’ groups and high-value external markets would affect artisans’ incomes, empowerment, and well-being.

The pilot project established links between artisans’ groups in three states (Gujarat, Madhya Pradesh, and Rajasthan) producing high-quality handicrafts and an external buyers’ group (the U.S. Museum Store Association) demanding such handicrafts. A crafts expert in India provided advice on production and marketing. Impediments to scaling up were addressed. And marketing efforts were undertaken at international trade fairs. Partway through the pilot, the initiative was expanded to four other states (Himachal Pradesh, Jammu and Kashmir, Orissa, and Uttaranchal).

To evaluate the effects of the pilot, the Panchanjuli Women Weavers project in Uttaranchal was selected for an in-depth sample case study. The study conducted a field survey of 425 women: weavers participating in the pilot project, weavers not participating, and nonweavers from low- and middle-income groups. A multilevel stratified sampling technique was used to ensure representative samples in terms of areal variation, type of activity, and years of experience. Methods included field observation, group discussion, and carefully structured questionnaires.

The study found the pilot to be highly successful in reviving traditional crafts and improving not only incomes but also social indicators. Participation in the pilot increased women’s skills in improving the quality and design of their products. The rise in self-generated income led to higher savings, better living conditions, greater empowerment in independent decisionmaking, and improvements in social and demographic indicators in the family (such as increases in girls’ literacy rate and in the age at marriage and first birth). Participation also created greater social awareness of entitlements from society and government, and increased self-esteem and socioeconomic empowerment among beneficiary households.

Responsibility: World Bank Institute, Environmentally and Socially Sustainable Development Division—Kreszentia M. Duer (kduer@worldbank.org), With Frank J. Penna, Policy Sciences Center, United States; Maureen Liebl; Tirthankar Roy, Economic Growth Center, Yale University; Mondira Dutta and Bupinder Zutshi, Jawaharlal Nehru University; and Martin Bernstein, Smithsonian Institution.

Reference: PO72976.

Completion date: October 2004.

Reports

Assessing Argentina’s Preparedness for the Knowledge Economy

This research assesses how well prepared Argentina is for the knowledge economy and lifelong learning. It investigates whether its students are able to analyze, reason, and communicate their ideas effectively. And it seeks to identify the factors that determine effective teaching and learning of skills and competencies for the knowledge economy in Argentina. The research is based on the results of an internationally standardized assessment administered to random samples of 4,500 or more 15-year-
old students in a large number of countries to evaluate their mastery of reading, mathematics, and science. The assessment was done in 2000 by the Organisation for Economic Co-operation and Development’s (OECD) Programme for International Student Assessment (PISA).

The research includes a descriptive analysis of the overall performance of students and relies on a microeconometric student-level estimation to investigate the factors associated with learning and performance in reading, science, and mathematics. An education production function is used to relate students’ performance to their learning environment. Generalized least squares are estimated to disentangle student effects from teacher, classroom, or school effects.

Results show that while the performance of Argentine students was similar to that of their peers in most other Latin American countries, more could be done to raise their performance to a level comparable with that of other countries participating in the PISA. Immediate action is needed to help students master reading, math, and science skills required for a knowledge economy. There is also a need to reduce the unusually high dispersion in performance among students.

The performance of Argentine students is associated most strongly with the school and learning climate; with the quality of teachers, their instruction, and their ability to use resources; and with the extent to which students are encouraged, guided, and oriented to be effective learners. The findings show evidence of significant relationships that need follow-up to investigate how each indicator is affecting performance.

The preliminary results were presented to officials in the Ministry of Education and discussed with officials in charge of testing and assessment. They also have been disseminated through presentations in the World Bank.

The research is being used in the development of World Bank sector work on skills in Argentina. The preliminary results justify compensatory education programs, which may be included in an upcoming operation.

**Responsibility:** Latin America and the Caribbean Region, Education Sector Unit—Harry Patrinos (hpatrinos@worldbank.org), and Human Development Sector Unit—Ariel Fiszbein and Sergio España. With Husein Abdul-Hamid, University of Maryland; Eric Hanushek, Stanford University; and Graciana Rucci, University of California at Los Angeles.

**Reference:** PO87890.

**Completion date:** December 2004.

**Reports**
España, Sergio. 2004. “Los resultados de las evaluaciones y las políticas educativas.”
Rucci, Graciana. 2004. “Student Achievement in Argentina: Regional Variation in Determinants of Basic Educational Learning.”

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

Despite an extensive literature on the determinants of child labor and many initiatives aimed at combating it, there is limited evidence on its causes and consequences. This project, using longitudinal household survey data, has investigated the factors associated with the incidence of child labor and the effects of child labor on subsequent socioeconomic outcomes for young adults, such as education, wages, and health.

A first study focused on Tanzania, using data from the Kagera Health and Development Survey of 1991–94. Its results suggest that credit constraints help explain child labor and thus that child labor is inefficient, though alternative interpretations are also explored. The research highlights important constraints to increasing schooling and reducing child labor, mainly economic shocks and difficult access to credit.

A second study, using data from the Vietnam Living Standards Survey of 1992/93 and 1997/98, provides evidence that child labor is prevalent among households that are likely to have higher borrowing costs, that are farther from schools, and whose adults experienced negative returns to their own education. This evidence suggests that reducing child labor will require both facilitating access to credit and persuading parents that their children will experience positive returns to education. The
findings of the Vietnam study also suggest that labor market outcomes as young adults influence decisions relating to child labor.

Research results have been presented at Columbia University (October 2003); New York University (February 2004 and November 2004); the Centre for the Study of African Economies, in Oxford (March 2004); Indiana University–Purdue University Indianapolis (April 2004); and the National Bureau of Economic Research Summer Institute, in Boston (August 2004). Presentations have also been made at Northeast Universities Development Consortium Conferences (October 2002 and October 2003), World Bank seminars (November 2002, April 2003, and February 2004), the World Bank Economists’ Forum (February 2003), and the Conference on 75 Years of Development Economics, at Cornell University (May 2004).

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

**Reference:** PO81465.

**Completion date:** December 2004.

### Education, Labor, and Employment

- **Reports**

### Morocco’s Gender Gap in Schooling:
A Qualitative Analysis of the Institutional, Sociocultural, and Economic Factors Underlying Regional Differences

Some regions in Morocco have made greater progress than others in narrowing the gap in education outcomes between boys and girls. As a complement to a separate, quantitative analysis, this qualitative study aimed to improve the understanding of the role of institutional and other factors in explaining these differences. In collaboration with Moroccan social scientists, the research explored this question through semistructured qualitative work in communities selected to provide useful comparisons: five communes showing large improvement in closing the gender gap and five showing negligible improvement or a worsening of the gap.

During the fieldwork it was discovered that there were few differences between the communes: all had done relatively poorly in closing gender gaps in enrollment, though some had higher percentages of children enrolling at the beginning of the school year. While no conclusions could therefore be drawn about the differences underlying the success or lack of success of communes, the comparative qualitative data were carefully analyzed to identify the factors that appear to matter most in reducing gender gaps in education and those that present the greatest handicap.

The findings underline the importance of dynamic local actors—local imams who encourage schooling, teachers who are well integrated into and trusted in the community, synergies between Ministry of Education delegates and local leaders and civil society—as well as locally active nongovernmental organizations and government programs. The qualitative and quantitative studies both point to the importance of the school feeding program and Morocco’s poor area development program (Social Priorities Program I, or BAJ1).

The results were presented to the government in a June 2004 workshop, and dissemination workshops for civil society were planned for January 2005 in response to the great interest expressed by the provincial governors and other participants. The research contributed to the World Bank’s 2004 Morocco Poverty Assessment, drawing lessons on how to design effective strategies to improve education outcomes for girls.

**Responsibility:** Development Research Group, Public Services Team—Dominique van de Walle (dvandewalle@worldbank.org), and Poverty Team—Vijayendra Rao. With Abdesselam Fazouane and Fatima Bakass, Institut National de Statistique et d’Economie Appliquée, Morocco.
Teachers, Incentives, and Student Performance

The behavior and performance of teachers are key to improving education outcomes. Thus for most governments the big challenge in education is figuring out how to attract qualified people into the teaching profession, retain those teachers, provide them with the necessary skills and knowledge, and motivate them to work hard. This research project is aimed at providing empirical evidence on the effect on student achievement of reforms to improve teachers’ incentives.

In Mexico the research is evaluating the impact of the Carrera Magisterial program, which allows teachers to earn promotions on the basis of assessments of their professional development and education, years of experience, a peer review, and, importantly, their students’ performance. The research is using econometric methods to analyze administrative data from the program, which include data on teachers, schools, and students.

In Brazil the study is examining the impact of the education finance reform called FUNDEF (Fund for Development of Primary Education and Improvement of the Teaching Profession). Using econometric methods, it is analyzing publicly available financial data from states and municipalities combined with nationwide school census data and student achievement data from standardized tests.

In Kenya the project is funding the pilot of a randomized experiment designed to assess the effectiveness of contract teachers (often thought to face stronger incentives) in improving service delivery in schools. The pilot involves offering funding to local school committees of 10 randomly chosen schools to hire teachers directly, with 10 additional schools serving as a comparison group. The data generated by the pilot are being used to assess the appropriateness of this methodology for a large-scale experiment.

In India the study is analyzing newly collected school survey data to identify econometrically the key correlates of teacher absenteeism, including such factors as school infrastructure, teacher characteristics, and monitoring and inspections.

The results of the research will provide evidence for policymakers and World Bank staff about the effectiveness of proposed reforms for improving teachers’ incentives.

Reports


Gordon, Nora, and Emiliana Vegas. Forthcoming. “Education Finance Equalization, Spending, Teacher Quality, and Student Outcomes: The Case of Brazil’s FUNDEF.” In Emiliana
What Drives Mass Education?
Economy, Policies, Institutions

This research has studied the expansion of education in developing countries in 1960–2000, relating it to economic and institutional factors. In particular, the research has attempted to identify the kinds of policies consistent with enhancing the demand for education.

The research is based on multivariate regression analysis with fixed effects using cross-country data from the World Bank's World Development Indicators database and provincial data on China from the China Statistical Yearbook.

Initial analysis found that educational attainment around the world has increased at a pace exceeding income growth. This finding prompted research into the causes of expansion in education, which led to consideration—both in the cross-country framework and across provinces in China—of the effect of economic openness. This analysis produced two main findings:

- Increase in educational attainment is related to an economy's degree of openness.
- Economic openness apparently enhances the demand for skilled labor as a result of technological spillovers, thus generating demand for education.

The findings suggest that improvements in trade policies and aspects of governance related to openness could be expected to lead to advances in schooling. The research contributes to the debate on how best to achieve the Millennium Development Goals in education.

Responsibility: Development Research Group, Public Services Team—Heng-fu Zou (hzou@worldbank.org). With Mark Gradstein, Ben Gurion University; Denis Nikitin, Binghamton University; and Wenbo Chen, Texas A&M University.

Reference: PO86648.
Completion date: December 2004.

Reports


Effects of Unemployment Insurance

This research project is aimed at providing insights into how best to design unemployment insurance systems in developing and transition economies. The study is based on experience in Slovenia and Estonia, each of which recently undertook dramatic reforms that make it possible to investigate the influence of changes in unemployment insurance rules on a system’s performance.

In 1998 Slovenia sharply reduced access to unemployment benefits while also improving employment services and the monitoring of recipients. Using administrative data sets, the research analyzes the effects of these changes on the duration of unemployment for recipients and on several characteristics of their post-unemployment job—wages, duration, and precariousness. The analysis relies on duration models and earnings functions.

In Estonia, which overhauled its unemployment benefits system in 2001, the benefits for some categories of workers are expected to increase by a multiple of five or more. Using labor force survey data, the research looks at the inflow into unemployment and employment under the new and old systems to assess the effects of the changes on labor force participation; it looks at exit from
unemployment to examine the effects on reemployment incentives. This analysis also uses duration models.

The analysis in Slovenia has identified sizable disincentive effects of the unemployment insurance system: the probability of finding a job increased sharply for recipients whose entitlement period was shortened while remaining virtually unchanged for those whose entitlement period did not change. The rates of escape from covered unemployment show clear spikes at the point where benefits are exhausted and in the following month. And the reform had a positive effect on the job-finding rate in the third month of unemployment, probably through the reduction in benefits that occurs in the fourth month of receiving benefits.

The reform did not affect the post-unemployment wages of recipients, suggesting that the higher job-finding rate following the reduction in benefits was produced not by a higher probability of accepting a job but by a higher probability of receiving a job offer—a sign of more effective job search activity.

For developing countries where monitoring capacity is weak, enforcement is costly, and a large informal sector provides abundant possibilities for undeclared work, the finding of large disincentives created by an unemployment insurance system underscores the desirability of providing modest benefits—with short duration and moderate replacement rates—so as not to jeopardize reemployment incentives and the fiscal balance of the system.

Findings from the analysis in Slovenia were presented at a December 2004 workshop in Beijing on simulating unemployment insurance systems.

**Responsibility:** South Asia Region, Human Development Sector Unit—Milan Vodopivec (mvodopivec@worldbank.org). With Jan van Ours, Tilburg University; and Jakob Tomse, University of Ljubljana, Slovenia.

**Reference:** PO87059.

**Completion date:** March 2005.

**Report**


**Migration, Poverty, and Income Strategies in Albania**

Migration has been a dominating fact of everyday life in postcommunist Albania for the past decade. Since 1990, according to some estimates, around a fifth of the population has left the country to live abroad, and there have been large-scale population movements from rural to urban areas. Understanding these migration flows is critical: policies, particularly rural policies, that do not properly account for the role played by migration and remittances in the livelihood strategies of Albanian households are bound to fail.

This research explores the dynamic links between migration and occupational choices in rural areas and their implications for the welfare of poor households in Albania. The research is based on statistical and econometric analysis of primary data from the 2002 Albania Living Standards Measurement Study (LSMS) survey and the 2003 Albania Panel Survey, conducted by the Albanian Institute of Statistics with technical assistance from the World Bank and the University of Essex. These data are being complemented by information from the 2001 Population and Housing Census and from a spatial database at the prefecture, district, and commune level produced by the University of Thessaly in collaboration with the World Bank.

Preliminary results highlight the importance of remittances in the livelihood strategies of households. There is substantial diversification of income sources, with migration part of a complex household-level strategy, often to complement insufficient agricultural resources. But income strategies vary widely in rural Albania, both across space and between socioeconomic groups.

The work has provided a basis for strong collaboration with the Albanian Institute of Statistics, promoting a constant exchange of information and data.

**Responsibility:** Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org). With Carlo Azzarri.

**Reference:** PO88182.

**Completion date:** June 2005.
Openness, Income Risk, and Welfare

This research project seeks to identify the effect of trade policy on the individual income risk faced by workers, making several methodological contributions in the process. The research uses longitudinal data from employment surveys to estimate measures of risk for different categories of workers, then employs these measures to identify any relationships with trade policy. It then develops a simple dynamic general equilibrium model with incomplete markets to assess the corresponding welfare costs. The research has two goals with operational relevance: First, to identify whether workers are more vulnerable to shocks in more open economies and, if so, which workers. And second, to determine whether trade liberalization dictates a simultaneous strengthening of safety nets and, if so, how they should be designed.

The analysis began with data for Mexico and will eventually move on to Argentina and Brazil. Results thus far show that in Mexico trade liberalization had a short-run effect on income risk, did not have a significant impact on mean risk, but did increase the degree to which macroeconomic shocks affect risk. Trade liberalization appeared to have no impact on either high- or low-skill workers; instead, the effect was concentrated on those with intermediate skills.

Results have been presented at research seminars at the Inter-American Development Bank, International Monetary Fund, University of Florida at Gainesville, and World Bank. In addition, the core methodological findings have been presented at Brown, Columbia, Georgetown, Harvard, New York, Princeton, Rutgers, and Syracuse Universities and at the University of Pennsylvania. The results will be integrated into a flagship report on poverty and growth by the World Bank’s Latin America and the Caribbean Region.

Reports

Responsibility: Latin America and the Caribbean Region, Office of the Chief Economist—William Maloney (wmaloney@worldbank.org). With Tom Krebs, Brown University; and Pravin Krishna, Brown University and Johns Hopkins University.
Reference: PO86299.
Completion date: June 2005.

Reports

Changing Gender Bias in a Fast-Developing Country: A Case Study of Malaysia, 1984–97

Several assumptions suggest that gender bias would tend to decline in fast-developing economies as they open to international markets and become exposed to stronger foreign competition: Rising demand for labor would eventually draw into the labor force a growing share of women and raise the opportunity cost of women staying at home in their traditional roles, leading to change in social attitudes. This process would entail broader education and higher educational achievement among women, undermining the basis for gender bias. And greater competition and openness make discrimination expensive—workers who, because of discrimination, are paid less than their productivity will tend to move elsewhere, reducing profits of “discriminating” employers and increasing those of “gender blind” employers.

This research project uses data from the Malaysian Household Income Surveys of 1984, 1989, and 1997 to study changes in gender bias. Analysis has found that between 1984 and 1997, as Malaysia’s real per capita GDP increased by about 70 percent, labor force participation rates for both men and women rose in all age groups. The rate of return to additional schooling increased for women while declining for men. Yet women’s wage “discrimination” amounted to 16–20
percent and has recently increased despite the fact that, uncorrected for other factors like education and experience, the earnings differential between men and women has shrunk.

These aggregate data on gender bias may conceal substantial differences across industries and states. In effect, Malaysian states have followed significantly different policies relating to women’s education and promotion of foreign investment. Ongoing work is exploring the relationship between the changes in observed gender wage discrimination and the size of foreign direct investment as well as political variables at the state level. This analysis combines the individual-level data needed to derive estimates of gender bias with macroeconomic data for 15 states for which the surveys yield representative data. The states differ in such characteristics as development level, growth rates, spread of tradition-based society, attractiveness to foreign investors, and type of main output, providing a good natural experiment for the study of evolving gender bias in development.

Responsibility: East Asia and Pacific Region, Human Development Sector Department—Elizabeth King (eking@worldbank.org). With Branko Milanovic.

Reference: PO75001.

Completion date: July 2005.

Report

Growth, Redistribution, and Human Development: A Decomposition Method with Applications to Schooling in Morocco and Vietnam

Understanding the links between economic growth and aggregate human development outcomes can help inform efforts to monitor and forecast progress in improving those outcomes. Much of the work examining these links has focused on cross-country empirical relationships between average incomes and aggregate human development indicators such as literacy, school enrollments, life expectancy, and infant mortality. In addition, a large body of work has explored these issues using microeconomic data at the household or individual level. But the specifications used and the analytics have not allowed effective exploration of the implications for the aggregate relationship between human development attainments in a country and economic growth, the distribution of income, and nonincome factors.

This project is aimed at developing a set of tools for consistently aggregating the empirical microeconomic relationships to throw light on the macroeconomics of human development. The intent is to develop and implement a microeconomics-based decomposition method for investigating the proximate determinants of aggregate human development outcomes and to measure the importance of growth in mean incomes relative to changes in the distribution of income and nonincome characteristics of the population. In essence, the aim is to develop a growth-redistribution decomposition method for human development indicators that is analogous to the widely used Datt-Ravallion decomposition for poverty measures. Nonparametric regression methods will be used to allow substantial flexibility in representing the underlying nonlinearity in the microeconomic relationship between human development attainments and household incomes.

To provide an empirical case study, the project will apply these methods to basic schooling over the 1990s in Morocco and Vietnam—countries chosen because of their striking differences in growth and human development performance in the 1990s and because of the availability of suitable survey data. The study will use the Morocco Living Standards Survey of 1990/91 and 1998/99 and the Vietnam Living Standards Survey of 1992/93 and 1997/98.


Reference: PO88694.

Completion date: June 2006.
Education Reform and the Gender Gap in Schooling in Rural Pakistan

The gender gap in school enrollment remains large in rural Pakistan despite a series of education sector reforms—including the provision of stipends to girls enrolled in middle school—and the emergence of private coeducational schools. Available data, from the Pakistan Rural Household Survey of 2001/02, suggest that differences in access to schools and in returns to education, while important, account for only part of the gender gap. The evidence seems to suggest that cultural factors related to female mobility may also be an important factor. If that is the case, the potential impact of policy initiatives such as providing school stipends could be significantly dampened.

This research project will investigate the factors underlying the gender gap in schooling in rural Pakistan, using data from a new national survey covering around 3,000 households. The survey was designed by the research team to study this and related issues. A key objective of the research is to inform education policy debate in Pakistan.

Responsibility: Development Research Group, Rural Development Team—Ghazala Mansuri (gmansuri@worldbank.org) and Hanan Jacoby.

Reference: PO84150.

Completion date: December 2006.

International Migration and Development

International migration has enormous implications for growth and welfare in both origin and destination countries. While some research exists on the impact of migration in receiving countries (such as on labor markets), little empirical research has been done on the impact in sending countries. This research seeks to fill that gap, identifying migration policies, regulations, and institutional reforms by industrial and developing countries that will lead to better development outcomes. The project focuses on seven topics identified as both important for development and requiring more research: the impact of remittances and the determinants of migration; the brain drain; the temporary movement of persons (including under mode IV of the General Agreement on Trade in Services); the links between trade, migration, and foreign direct investment; the links between remittances and financial sector development; social protection issues; and governance.

Analyses of the development impact of remittances and the determinants of migration will draw on household data already available or being developed through surveys under the project. The household data will be used to empirically assess the effect of remittances on poverty and inequality in sending countries as well as their effect on spending on health, housing, education, entrepreneurship, and the like.

In work relating to the brain drain the first effort is to improve data. By combining census and survey data from OECD countries, the research will provide robust measures of the brain drain to five receiving zones—Australia, Canada, the European Union, the United States, and the rest of the OECD. Building on recent developments in the theory of nonparametric density estimation, the research will also compute the underlying distribution of brain drain by using kernel estimation techniques. It will use regional stochastic densities to capture the dynamic properties of the brain drain between 1990 and 2000. This research will be complemented by a spatial exploratory analysis (based on local and global autocorrelation tests). Some case studies also will be conducted.

Empirical work on links between trade, migration, and foreign direct investment is hampered by lack of data. The project will therefore create a data set combining information on trade, mode IV flows, and foreign direct investment in services sectors as one element in the analysis of such links.

Work relating to financial sector development will look at the role of host country characteristics (such as growth, poverty, GDP per capita, education levels, migration, and crisis episodes) and world economic conditions in explaining remittance flows, using balance of payments data on remittance flows to more than 100 countries in 1980–2002. The project also will study whether remittances intermediated by the formal financial sector in the host countries help to develop this sector by increasing aggregate deposits or the credit intermediated by the local banking sector. Using a recently compiled
household-level database, including all Living Standards Measurement Study (LSMS) surveys containing questions on remittances, the project will study the characteristics of households and individuals receiving remittances and analyze whether remittances are correlated with greater use of or access to financial services.

Research on social protection will include an overview of bilateral social security agreements and their implementation and assess the situation of migrant workers in the absence of such agreements. It will identify gaps in the social protection of migrant workers originating in a lack of portability of social security benefits and propose new approaches to enhance portability. Country case studies in Mexico, Morocco, the Philippines, and Turkey will highlight the workings and practicability of the administrative processes for implementing portability.

The household surveys in migrant-sending countries are being undertaken in collaboration with governments, government agencies, and local institutions.

The policy recommendations that emerge from the research will be disseminated worldwide through World Bank publications and advocacy and directly to World Bank country teams. The G7 and G20 groups in particular have expressed strong interest in knowing more about migration and remittances.

Responsibility: Development Research Group, Trade Team—Maurice Schiff (mschiff@worldbank.org), Çağlar Özden, Vlad Manole, and Richard H. Adams Jr., Office of the Director—L. Alan Winters, and Finance Team—Maria Soledad Martinez Peria; and Development Economics, Office of the Vice President and Chief Economist—Coralie Gevers. With Dean Yang, Claudia Martinez, and Hwa Jung Choi, University of Michigan; Dominique Gross, University of Geneva; Frederic Docquier, University of Lille 2; J. Edward Taylor, University of California at Davis; David McKenzie, Stanford University; and Riccardo Faini, Ministry of Economy, Italy.

Reference: PO88066.

Completion date: June 2007.

Reports
Determinants of Urban Air Pollution

Among widely measured air pollutants, suspended particulate matter (dust) is now believed to be the most damaging. Several epidemiological studies have reported associations between exposure to airborne particulate matter and daily mortality and morbidity. Over time health research has narrowed its focus from total suspended particulate matter to small particles less than 10 microns in diameter (PM10) and, most recently, to particles less than 2.5 microns in diameter (PM2.5). Small particles are likely to be more dangerous because they can be inhaled deep into the lungs and because their constituent elements tend to be more chemically active.

In developing countries scarcity of public resources has limited atmospheric monitoring of small particles, leaving policymakers uncertain about the human cost of fine particulate pollution. This research drew on new air pollution data from the World Health Organization (WHO) and other sources to narrow that information gap.

Using an econometrically estimated model of particulate pollution, the study projected ambient PM10 concentrations for 3,200 cities. At the country level it combined these projections with recent results from quantitative health research to estimate the human cost of air pollution.

The results suggest that the effects of pollution vary widely, both within and across developing countries. But they also suggest that the total burden of pollution-related disease is very heavy.

The project’s results provide policymakers with useful information on the potential benefits of stricter air pollution control. Its estimates of the impact of outdoor air pollution were adopted by the WHO for its work on the global burden of disease. Estimates of air pollution for the 3,200 urban areas are available on request in Excel format.

The results were presented to a WHO workshop in Boston in 2003.

Responsibility: Development Research Group, Infrastructure and Environment Team—David Wheeler (d wheeler1@worldbank.org), Uwe Deichmann, and Craig Meisner; and Environment Department—Kirk Hamilton and Katherine Bolt. With Kiran Pandey, Global Environment Facility; and Bart Ostro, California Office of Environmental Health Hazard Assessment.

Reference: PO76644.
Completion date: June 2004.

Reports
Pandey, Kiran, David Wheeler, Katherine Bolt, Uwe Deichmann, Kirk Hamilton, Craig Meisner, and Bart Ostro. Forthcoming. “Air Pollution in Developing Countries: New Estimates for PM10.” Environmental Health Perspectives.

Toward Greenhouse Gas Emission Reduction Commitments by Developing Countries? Costs and Benefits of Various Options under Uncertainty

The history of the Kyoto Protocol suggests that the framework in which climate negotiations are conducted—cap and trade—might make reaching an agreement difficult because it creates a wedge between what parties negotiate (emission targets) and what they really care about (abatement costs). Because of uncertainty on abatement costs, parties cannot assess the costs of the agreement they are striking and so are tempted to seek the lowest possible effort. With developing countries at the
table, the risk of negotiations being stalled by uncertainty becomes even greater.

This research project examined how the framework of the climate regime makes it easier, or not, to reach agreement. Are there quota allocation rules that are more robust than others to uncertainty? And are other frameworks being discussed more likely to yield an agreement?

The project developed a succession of partial equilibrium models of the market for greenhouse gas emission allowances, with 12 regions (6 industrial, 6 developing) and 9 five-year commitment periods. It used this model to evaluate six quota allocation rules proposed in the literature, assessing their performance on the basis of total emissions, the price of allowances, and the total costs of mitigation for each region. Given uncertainty on both business-as-usual emissions and abatement costs, the model was run under 23 baseline scenarios extracted from the literature and under two sets of regional abatement cost functions.

All the quota allocation rules tested yield a wide range of uncertainty on costs, and none appears to be more robust to uncertainty. Although parties’ rankings of rules appear to be relatively stable, they vary with the time horizon. An approach based on a quota indexed to GDP reduces uncertainty relative to a pure quota only if there is a strong correlation between GDP and emissions, which past data suggest is not the case for developing countries.

The project was part of a broader research effort aimed at equipping the World Bank to help client countries negotiate the post-Kyoto climate regime. The results are being disseminated to the community of experts and scientists working on post-Kyoto approaches. Presentations have been made in the World Bank; at the 12th Annual Conference of the European Association of Environmental and Resource Economists, in Bilbao, Spain (June 2003); at the workshop on Climate Policy after 2012, organized by Ghent University (November 2003); and at a seminar at the Potsdam Institute for Climate Research (October 2004).

**Responsibility:** Development Research Group, Infrastructure and Environment Team—Zmarak Shalizi (zshalizi@worldbank.org) and Franck Lecocq.

**Reference:** PO79969.

**Completion date:** June 2004.

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**Report**


**Foreign Direct Investment and Pollution Havens**

Much debate has been stirred up by the pollution haven hypothesis—the contention that stringent environmental regulation in industrial countries drives firms out of those countries to establish plants in poor countries with more lax regulation. While little econometric work has been done to test the hypothesis, empirical studies have suggested that there is no evidence to support it. But analytic weaknesses in this earlier work suggest a need for more testing.

This study, designed to overcome those weaknesses, econometrically tested the pollution haven hypothesis by examining foreign direct investment flows into Chinese provinces, using a location choice model. Chinese data present an ideal test for the hypothesis: China has been the largest recipient of foreign direct investment in the developing world 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 was 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 was estimated with conditional logit, using data on joint ventures, effective environmental levies on water and air pollution as measures of environmental stringency, and estimates of Chinese emissions and abatement costs at the industry level as measures of pollution intensity.

Results show that relatively high pollution levies deter foreign direct investment from Hong Kong (China), Macao (China), and Taiwan (China). By contrast, they attract direct investment from OECD and other non-Chinese economies—the reverse of the pollution haven hypothesis.

The results have been presented at Williams College, Cornell University, the University of Maryland, the
University of Minnesota, American Economic Association meetings, Econometric Society summer meetings, Midwest International Economics meetings, the Northeast Universities Development Consortium Conference, the University of California Trade and Environmental Economics Workshop, and the World Bank Trade Seminar.

Responsibility: Development Research Group, Infrastructure and Environment Team—Hua Wang (hwang1@worldbank.org). With Syracuse University; and Shawei Chen. The U.S. International Trade Commission and Syracuse University contributed staff time.

Reference: PO81716.

Completion date: December 2004.

Report


Methods for Allocating Water among Competing Uses under Stochastic Supply Conditions

Cooperative game theory and negotiations are suitable approaches for handling water allocation issues, especially where externalities exist and the number of parties involved is relatively small. Traditionally, applications of cooperative game theory to water resource problems have assumed a deterministic pattern of supply, an approach that has led to allocation schemes that are somewhat limited in scope, suggesting that some solution concepts are not possible. Yet water resource investments and flow allocation are subject to stochastic water supply patterns, which affect the performance, sustainability, and stability of any use and investment arrangement among users of the same source.

This research develops a stochastic cooperative game theory framework with the aim of demonstrating how stochastic considerations may change the solution, depending on the attitude toward risk aversion among potential users and the cost function of the water project. In addition, since hierarchical and power relationships between parties (such as control and mandate) may push allocation outcomes beyond those identified by game theory solutions based on certain rational behavior, the study develops a stochastic cooperative game theory framework and negotiation framework to address situations with and without hierarchical and power relationships. The study applies these frameworks to watersheds in river basins in Bulgaria, including the Maritza Basin, to identify conditions under which cooperative allocation arrangements could yield sustainable solutions.

Responsibility: Agriculture and Rural Development Department—Ariel Dinar (adinar@worldbank.org) and Erick Fernandes; and Europe and Central Asia Region, Environmentally and Socially Sustainable Development Sector Unit—Rita Cestti. With Ilia Natchkov; Carmen Marchiori, London School of Economics; Ian Calder, University of Newcastle; Carlo Carraro, University of Venice; Alessandra Sgobbi, Fondazione Eni Enrico Mattei, Venice; and Fioravante Patrone, University of Genoa. The government of Bulgaria contributed river basin data.

Reference: PO87312.

Completion date: December 2004.

Reports


Baseline Studies in Climate Change

Under the Kyoto Protocol industrial countries can help meet their emission reduction targets by financing projects that reduce emissions in other countries, receiving emission credits in exchange. The financing—or “carbon funds”—is provided through two mechanisms: joint implementation (expected to involve projects primarily in transition economies in Eastern Europe) and the clean development mechanism (for projects in devel-
oping countries). The emission credits are based on the emission reductions likely to be achieved through the project, calculated by estimating the emissions that would have occurred in the absence of the carbon funds—that is, by establishing a baseline.

The objective of this research project is to develop a common methodology for baseline studies of emissions and thus to promote carbon financing for renewable and energy-efficient projects in World Bank client countries. It also aims to develop a knowledge base for baseline studies and monitoring plans for carbon finance projects.

A baseline study begins by identifying a service need that can be met in a variety of ways. The baseline, specific to a proposed project, is defined as the most probable way of meeting that service need if no carbon funds are provided. Robust baselines are discovered by considering several means of meeting the defined service need and then identifying the constraints and criteria that will lead to the most probable one in the absence of carbon funds. When both the baseline and the proposed project scenarios are fully characterized, carbon dioxide emissions for each can be projected over the lifetime of the project and over the proposed purchase period. Tradable carbon credits that accrue over long-term future periods require mechanisms for tracking key indicators to ensure that the initial estimates continue to be relevant.

The project has completed baseline studies for a coal-to-gas conversion project in Poland and wind and biomass projects in the Philippines. Workshops in Warsaw and Manila are planned to disseminate the results. The research also has been disseminated through presentations in the World Bank. Responsibility: Energy and Water Department, Energy Unit—Takahashi Masaki (tmasaki@worldbank.org); Europe and Central Asia Region, Infrastructure and Energy Services Department—Helmut Schreiber; and Environment Department, Carbon Finance Division—Jari Väyrynen, Inamuro Masaya, and Francisco Fernandez-Asin. With Mitsubishi Securities and Mitsubishi Research Institute, Japan. The Japan Staff-Consultant Trust Fund contributed funding for the research. Reference: PO82031. Completion date: June 2005.

Biomass and Coal Utilization Study

Biomass and coal have long been traditional fuels for domestic and industrial use and for power generation. But the conventional way of using biomass and coal is inefficient and leads to environmental problems.

This research project has reviewed technical and economic aspects of such alternatives as coal washing, biomass and coal briquette, coal-water mixture, biomass and coal cofiring, and rehabilitation of existing plants. The study also is reviewing the World Bank’s portfolio of biomass power and heat projects, to help identify issues and options and potential countries and regions for further application of such projects, and developing a knowledge base on biomass and coal utilization. In addition, research has been initiated on a clean coal market, environmental regulation, and environmental enforcement and monitoring.

The project has contributed to World Bank operations, helping to appraise the clean coal component of an urban development project in China and reviewing the economic and technical aspects of lignite-fired power plant projects that are part of a power sector liberalization and rehabilitation project in Turkey.

The research has been disseminated through presentations in the World Bank, and further dissemination is planned through seminars in China and Turkey. Responsibility: Energy and Water Department, Energy Unit—Takahashi Masaki (tmasaki@worldbank.org). With Horii Nobuhiro; Ishizato Hiroshi; Sase Shuhei, Japan; and Chubu Electric Power, Japan. The Japan Staff-Consultant Trust Fund contributed funding for the research. Reference: PO82032. Completion date: June 2005.

Economic Instruments for Habitat Conservation

This research project was designed to find cost-effective, economically attractive, and socially acceptable policies for conservation of “biodiversity hotspots.” The research has focused on the Central Atlantic Forest Corridor in the south of the Brazilian state of Bahia, among the most important parts of a forest that conservation biologists rank among the habitats with highest priority for conservation.
The project has 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 has 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 spatially explicit software model, TAMARIN, that draws on these components.

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.

The project organized two workshops in Salvador, Bahia—one for government officials and environmental nongovernmental organizations (June 2001) and the other for the management committee of the Bahia Ecological Corridor (December 2003). Findings were presented at a workshop at the World Conservation Congress in Bangkok in November 2004. And the work has been cited in a World Bank Institute course on territorial development in Brazil.

A manuscript describing the results of the simulation analyses has been completed.

Responsibility: Development Research Group, Infrastructure and Environment Team—Kenneth M. Chomitz (kchomitz@worldbank.org). With the Instituto de Estudos Sócioambientais do Sul da Bahia, Brazil; the 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 S. Thomas. The Rain Forest Trust Administration Unit contributed funding for the research. Conservation International (Brazil and United States), the Center for Advanced Biodiversity Science, the Federal University of Minas Gerais, and the Instituto Brasileiro de Geografia e Estatística contributed data.

Reference: POS53633.

Completion date: June 2005.

Reports

Environmental and Natural Resource Management

This research project evaluates the impact of actual or potential policy instruments and institutions that regulate land use and affect the conservation of forests or other natural habitat. It applies econometric analysis to geographically referenced data on land cover and land use, population characteristics, and the coverage of land use policies.

Initial work is examining the impact of the innovative system used by the Brazilian state of Mato Grosso to reduce illegal deforestation.

The research is expected to provide insights and information useful to Brazilian policymakers and stakeholders at the state and national levels and to inform the World Bank’s dialogue with Brazil, especially on projects relating to regional development in environmentally sensitive regions.

Responsibility: Development Research Group, Infrastructure and Environment Team—Kenneth M. Chomitz (kchomitz@worldbank.org). With Sheila Wertz-Kanounnikoff. The German Consultant Trust Fund contributed funding for the research.

Reference: PO82224.

Completion date: June 2005.

Reports


The Functional Value of Biodiversity and Its Correlates

This research project investigates the conditions under which maintaining high-biodiversity tropical forests yields hydrological benefits, such as flood prevention. The aim is to provide practical guidance for the design of policies and projects (especially for natural resource management and environmental services projects) about when the forest-biodiversity-hydrology links are likely to be important.

Because the relationship between forest maintenance and biodiversity is sensitive to watershed scale, the project carried out a set of detailed investigations at three levels of scale and detail: small watersheds in Southeast Asia; the Mekong Basin and its tributaries; and the major basins of the tropics, at a global scale. This work relied on a nested suite of hydrological simulation models with varying spatio-temporal resolution. The models divide the watershed into grid cells. Soils, vegetation, and precipitation are specified for each grid cell, and the models compute soil moisture, water use by vegetation, and runoff for each one. The models, once calibrated by comparing observed and model-predicted river flows, can be used to predict the effect on low flows, peak flows, and average flows of geographically specific scenarios of change in land cover.

The project has led to several key findings:

- Simulation models can inform policy and project design about the effects of land use management and biodiversity on hydrological functions. Thus researchers were able to use existing data resources in calibrating and applying models for the Mekong and its tributaries and for more than 100 large tropical watersheds worldwide.

- Deforestation increases total water yield at all scales. Although forest conversion has in some cases led to diminished dry season flows, it generally increases the availability of water for agricultural and other human uses. This potentially sets up a tradeoff between environmental and economic demands for water.
Deforestation increases the risk of moderate (but not catastrophic) floods even in large basins.

Links between deforestation and vulnerability are more likely to be important in smaller watersheds. The importance of “local hazards” to the hydrology-forest-vulnerability nexus depends empirically on where people, forests, and biodiversity overlap in small basins.

The project’s results have contributed to the Millennium Ecosystem Assessment, through which it will influence policy globally. Its insights already are contributing to the design of proposed watershed projects. The global population, poverty, biodiversity, and hydrology data assembled and analyzed by the project have been used in a variety of World Bank projects and publications. And the biodiversity data and approaches developed for the project were incorporated into a proposed performance-based allocation framework for Global Environment Facility (GEF) resources developed by the GEF secretariat. Much of the data developed by the project is available at http://www.asb.cgiar.org/BNPP/phase2/bnpp_phase2_datasets.htm.

Results have been disseminated at the Watershed Policy Seminar held at the World Bank in December 2003 and at the Alternatives to Slash and Burn Forests and Water Meeting organized by the Center for International Forestry Research (CIFOR) in Bogor, Indonesia, in December 2004. In addition, results have been integrated into ongoing training and outreach activities provided by the World Agroforestry Centre and Alternatives to Slash-and-Burn Programme for policymakers and technical staff in developing countries.

Responsibility: Development Research Group, Infrastructure and Environment Team—Kenneth M. Chomitz (kchomitz@worldbank.org). With the World Agroforestry Centre (ICRAF); the Alternatives to Slash-and-Burn Programme; the International Food Policy Research Institute; Porraneec Rattanaviwatpong, University of Washington; the University of New Hampshire; the International Center for Tropical Agriculture; Andrew Nelson; Desi Suyamto, Ai Farida, Atiek Widayati, Pornwilaai Saipothong, Betha Lusiana, Ni'matul Khasanah, and Subekti Rahayu, ICRAF Southeast Asia; and Didik Suprayogo, Brawijaya University, Indonesia. The Bank-Netherlands Partnership Program contributed funding for the research.

Reference: PO72962.
Completion date: June 2005.

Reports


Markets for Environmental Resources

This project encompasses two studies reviewing experience relevant for new institutions under the Kyoto Protocol. The first examines U.S. experience with “banking” emission permits under the U.S. program for sulfur dioxide emissions. 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. Econometric estimates based on panel data suggest considerable substitution possibilities between emissions, fuels, labor, and capital in electric power generation. In the short run relative fuel prices are a more important determinant of factor substitution than are changes in permit prices, and they continue to be the predominant force as stocks of capital and permits adjust in the long run.

The results also show 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 statistically insignificant. Thus fears that a large initial allocation of permits may lead to higher emissions may be unfounded.

The second study relates to provisions of the Kyoto Protocol that permit the creation of project-based tradable offsets to meet treaty obligations. To test novel aspects of these provisions before their adoption, treaty participants agreed to launch country-based pilot projects, referred to collectively as Activities Implemented Jointly (AIJ). Relying on a nine-year history of projects, the study investigates the determinants of AIJ investment. Its findings suggest that private sector incentives to invest were filtered by a selection process that advanced national political objectives. This characterization differs from the market-based assumptions that underlie well-known estimates of cost savings related to the Kyoto Protocol’s flexibility mechanisms. If institutions developed under the AIJ programs for approving projects are retained as the protocol is implemented, benefits from the flexibility provisions will fall short of those widely expected.

Responsibility: Development Research Group, Infrastructure and Environment Team—Donald F. Larson (dlarson@worldbank.org). With Timothy Considine, Shilpa Rao, and Nazia Mohammed, Pennsylvania State University; and Gunnar Breustedt, University of Kiel.

Reference: PO81180.

Completion date: June 2005.

Institutional and Spatial Aspects of Sustainable Development

This project aims to catalyze follow-up work on the framework and messages of the World Bank’s World Development Report 2003: Sustainable Development in a Dynamic World—Transforming Institutions, Growth, and Quality of Life (New York: Oxford University Press, 2002). Through literature surveys, case studies, and, where feasible, econometrics, it attempts to identify global or country-specific opportunities to stimulate further research and experimentation on improving the dynamics of sustainable development and institutional transformation. It focuses in particular on identifying gaps that require further research to understand and facilitate institutional transformation at global, national, and local levels.

Questions of particular interest include these: How can we get ahead of existing and emerging races for property rights to transform vicious cycles into virtuous ones? What kinds of tools and methodologies are needed to analyze the spatial dimensions of sustainable development in a dynamic world—to help catalyze institutional change and improve policy formulation?

Results so far show that developing institutions with an ability to pick up signals early, balance interests, and devise commitment devices to stay the course on long-term strategies matters. These institutions need an ability to learn and adapt as the understanding of the problems—and of the consequences of different solutions—improves.

The project has spawned research on institutional development for mitigating and adapting to climate change, on innovative institutions to deal with deforestation, and on the development of tools based on geographic information system approaches to help incorporate the spatial aspects of development into poverty analysis, environmental analysis, and urban and regional priority setting. The project has also helped incorporate some of the framework and concepts into economic and sector work by the World Bank in Brazil, Cameroon, and China and into work by the World Bank’s Operations Evaluation Department on Madagascar.

The work under the project has prompted the World Bank Institute to develop a course presenting the frame-
work and sustainable development concepts of World Development Report 2003. The course has been presented in five countries in Southeast Asia (December 2003), in three to four countries in Africa (March–November 2004), in China (September 2004 and April 2005), and in Morocco (June 2005). It has also been presented at the United Nations.

The project has included presentations to government officials and professionals in China, Thailand, and Vietnam (October 2003); to the United Nations Environment Programme’s Finance Initiative Global Roundtable in Japan (October 2003); at a conference with China’s National Development and Reform Commission relating to China’s 11th Five-Year Plan (June 2004); and to a seminar for World Bank and International Monetary Fund staff on China’s long-term development opportunities and risks (September 2004). In addition, the project has created an interactive Web site to improve dissemination of World Development Report 2003 (http://www.dynamicsustainabledevelopment.org/).

Responsibility: Development Research Group, Infrastructure and Environment Team—Zmarak Shalizi (zshalizi@worldbank.org). With Miho Ihara, Tomoko Okano, and Bulent Ozbilgin.

Reference: PO86101.
Completion date: July 2005.

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

Designing effective incentives for pollution control requires an understanding of what determines the environmental performance of industrial enterprises. Earlier research on agents that may exert pressure on enterprises to improve their environmental performance has shown that capital markets—including in such countries as Argentina, Chile, Mexico, and the Philippines—react to news relating to a firm’s environmental performance. But do the reactions of capital markets, reflected in lower market values, then induce enterprises to improve their environmental performance? That question has not yet been investigated in developing countries. This research is aimed at filling that gap through analysis of data from the Republic of Korea.

Since 1989 Korean environmental authorities have published a monthly list of enterprises that have violated the country’s environmental rules and regulations. In 1993–2001 these monthly lists recorded more than 7,000 violations, involving more than 3,400 different companies. A descriptive analysis of this data set suggests that the news media have given important (though perhaps declining) coverage to the violation lists. The media have focused on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

The research also examined the reaction of investors to the monthly violation lists. Using event study methodology, it found that enterprises appearing on these lists have 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.

The study has collected information on environmental performance over time from 42 companies (28 of which had environmental violations in the news). Analysis of the data is ongoing.

When completed, the research will provide policymakers with clear guidelines on how public information can affect enterprises’ environmental performance through the capital markets.

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

Reference: PO77423.
Completion date: December 2005.

Reports
Environmental Performance Rating and Disclosure in Ghana

Public disclosure of the environmental performance of regulated entities has proved to be a powerful regulatory instrument in both industrial and developing countries. In Africa, however, despite rapid urbanization and industrialization in some countries, no public disclosure programs have been established. This project is intended to test the feasibility and effectiveness of a public disclosure strategy for African countries while accounting for specific social, cultural, and economic systems and values.

The project is supporting work by Ghana’s Environmental Protection Agency to establish a pilot public disclosure program covering manufacturing in Accra and Tema and mining industries in Tarkwa. This effort involves developing an appropriate performance rating methodology based on experience in other countries and data availability in Ghana; devising a disclosure strategy well suited to Ghana’s cultural, political, and socioeconomic environment; designing and implementing the pilot program; assessing the effects of the program; and deriving lessons on how best to expand it on a national scale. The lessons and experiences will be disseminated to other African countries.

Although the project is still ongoing, results so far suggest that establishing a disclosure program in Ghana is feasible.

The project is expected to help build the capacity of regulatory agencies in Ghana to implement other regulatory instruments, empowering these agencies—along with markets and communities—to improve environmental quality in the country. In addition, the methodologies it develops, especially that for rating the environmental performance of mining industries, should be useful not only in Ghana but also in other African countries.

Responsibility: Development Research Group, Infrastructure and Environment Team—Hua Wang (hwang1@worldbank.org); and Africa Technical Families, Environmentally and Socially Sustainable Development I—Aziz Bouzaher. With Environ Engineering and Management Consult, Tema, Ghana; Forum One Communications, Alexandria, Virginia; Benoît Laplante; Changhua Wu; and Jie He. Ghana’s Environmental Protection Agency is contributing data to the research.

Reference: PO86358.
Completion date: December 2005.

Strengthening Public Pressure for Water Resource Protection in Indonesia

Most local authorities in developing countries have not allocated sufficient resources to improving water quality, despite the known economic and financial benefits of such efforts. While many factors contribute to this situation, a critical one is lack of public pressure and lack of broad participation in the public decisionmaking process. Earlier experience with schemes to publicly disclose environmental performance shows that this lack of public pressure in turn results from insufficient access to information. This experience also suggests that a formal system for ranking the performance of local governments in protecting water resources can generate strong incentives for them to invest in maintaining or improving water quality.

This research project aims to develop a comprehensive system of indicators to rate the performance of local governments in Indonesia in protecting water resources and the environment and a strategy for disclosing the results to the public. It will design the rating and disclosure system to work through the Bangun Praja program, an initiative developed by Indonesia’s Ministry of Environment to assist local governments in building environmental management capacity. Performance will be rated in a few categories that can be easily understood by the public and can provide clear incentives for governments to improve their efforts in environmental conservation. The project will apply the rating system in selected cities and districts participating in the Bangun Praja program, taking into consideration the presence of river basins in choosing sites.

The project should result in a system that enhances water resource management by improving the public’s...
access to critical information and increasing pressure on
government authorities to improve their performance.

Responsibility: Development Research Group, Infrastructure and Environment Team—Hua Wang (hwang1@worldbank.org); and East Asia and Pacific Region, Urban Development Sector Unit—Risyana Sukarma. With the Center for Environmental Research, Bogor Agricultural University, Indonesia; Benoît Laplante; and Jie He. Indonesia’s Ministry of Environment provided data.

Reference: PO82287.
Completion date: December 2005.

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

This research project, motivated by serious pollution from China’s township-village industrial enterprises (TVIEs), is investigating the determinants of TVIEs’ environmental performance, methods of promoting environmentally and socially sustainable development of industries in rural China, and monitoring and enforcement problems. The project’s analysis of the economics of monitoring and enforcement in China helps fill a clear gap in environmental economics, where these issues have attracted relatively little research effort. Much of the literature has been theoretical, and most empirical work has focused on industrial countries.

The project has involved establishing pilot environmental councils in Chinese townships to test a collaborative model of community self-regulation. To assess the results, the project has surveyed township government leaders, plant managers, TVIE workers, and households and is performing econometric analyses of the data collected.

The analyses have produced several findings:

• The environmental performance of TVIEs surpasses that of state-owned enterprises.
• Both inspection and community dialogue can create incentives for enterprises to improve their environmental performance.
• Negotiation exists in regulatory enforcement.
• Stakeholders often have different understandings of local environmental issues.

The community approach to environmental dialogue has been adopted as a provinciwide program in Jiangsu.

The project has included numerous workshops in China as well as presentations at the Conference on Environmental and Natural Resources Policy in China, organized in Beijing in October 2003 by the Professional Association for China’s Environment and Renmin University. The research has been disseminated within the World Bank through presentations and training courses.

The project has contributed to training activities provided by the World Bank Institute, including training for directors of China’s Environmental Protection Bureau in 2003, environmental economics training in Chinese universities in 2003 and 2004, and training for staff of China’s National Development and Reform Commission in 2005. Its collaboration with Nanjing University and the Policy Research Center of China’s State Environmental Protection Administration has helped increase research capacity in those institutions.

Responsibility: Development Research Group, Infrastructure and Environment Team—Hua Wang (hwang1@worldbank.org), David Wheeler, and Susmita Dasgupta. With Nlandu Mamingi, University of the West Indies; Benoît Laplante; Wenhua Di; Yanhong Jin, University of California at Berkeley; and Jun Bi.

Reference: PO65614.
Completion date: June 2006.

Reports
Climate Change and Rural Poverty

The importance of climate to ecosystems and to agriculture is well known, yet relatively little research has investigated the interaction between climate and rural poverty, especially in developing countries. Part of the problem has been inadequate information, which has made it difficult to monitor the impact of climate—including extreme climate events such as floods, hurricanes, and prolonged droughts—on poor rural communities in many areas of the world. A promising source of information is remote sensing, capable of observing events and outcomes in remote locations and across vast landscapes. Since remote sensing provides continuous measurements of weather and its impact on the earth’s surface, the data can also help determine the influence of climate variability on year-to-year agricultural production and vegetation in rural communities.

This study is investigating the link between climate and rural poverty using detailed household survey data and remote sensing data on climate from defense satellites. The study applies a Ricardian (cross-sectional) approach, developed in earlier studies in Africa and India, to seven countries in Latin America—Argentina, Brazil, Chile, Colombia, Paraguay, Uruguay, and República Bolivariana de Venezuela.

The analysis draws on the household surveys for information on farm performance across a broad range of climates as well as data on socioeconomic conditions, while using the satellite data on climate to explain the observed variation in farm performance. Observing how farm performance changes with climate makes it possible to estimate long-run impacts. The analytic approach fully captures adaptation by farmers to the climate in which they live. The technique measures the full net cost of climate change, including the costs as well as the benefits of adaptation.

Responsibility: Agriculture and Rural Development Department—Ariel Dinar (adinar@worldbank.org). With Robert Mendelsohn, Yale University; Alan Basist, Commodity Hedgers; the Inter-American Institute for Cooperation on Agriculture (IICA), Costa Rica; the Cooperative Program for the Agricultural-Technological Development of the Southern Cone (Procisur), Uruguay; and the Cooperative Program for Agricultural-Technological Innovation of the Andean Group (Prociandino), República Bolivariana de Venezuela. The IICA contributed funding for the research.

Reference: PO87597.
Completion date: December 2006.

Public Disclosure of Industrial Pollution in China

This research project is intended to determine whether programs disclosing environmental performance can feasibly be established in China and whether these programs can provide effective incentives for industries to reduce pollution. In collaboration with Chinese environmental agencies, the project has established and tested pilot public disclosure programs in several Chinese provinces.

To investigate how successful these pilot programs have been, interviews have been conducted with Chinese environmental authorities and plant managers, and information on pollution discharges has been gathered and analyzed. The results show that companies—especially big polluters—do respond to the public disclosure programs. Moreover, the cost of establishing and maintaining such programs is modest. The coverage of disclosure programs is expanding rapidly in China.

The project has involved workshops, conference presentations, and meetings on the pilot program design in several Chinese provinces. Presentations were made at the Conference on Environmental Information Disclosure, held at China’s State Environmental Protection Administration in August 2003 for Chinese government officials; and at the Conference on Environmental and Natural Resources Policy in China, organized in Beijing in October 2003 by the Professional Association for China’s Environment and Renmin University. In addition, presentations on the experience in China have been made in several World Bank client countries, and the
World Bank has started working with such countries as the Arab Republic of Egypt and Ghana on similar programs.

The project has contributed to training activities provided by the World Bank Institute, including training for directors of China’s Environmental Protection Bureau in 2003 and environmental economics training in Chinese universities in 2003 and 2004. Its collaboration with Nanjing University, the Chinese Academy of Environmental Planning, the Policy Research Center of China’s State Environmental Protection Administration, and other institutions has helped increase research capacity in those institutions.

**Responsibility:** Development Research Group, Infrastructure and Environment Team—Hua Wang (hwang1@worldbank.org), David Wheeler, and Susmita Dasgupta. With Genfa Lu and Yuan Wang, Nanjing University; Jinnan Wang and Dong Cao, Chinese Academy of Environmental Planning; Guomei Zhou, Policy Research Center, State Environmental Protection Administration, China; Zhong Ma, Renmin University; Huaping Mu, Chongqing Municipality; Wanxin Li, Virginia Polytechnic College and State University; Xinyuan Wang, and Changhua Wu, Professional Association for China’s Environment. The Asian Development Bank provided funding for the research.

**Reference:** PO77806.

**Completion date:** December 2006.

**Reports**


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**Climate Change Mitigation and Sustainable Development: Risks, Benefits, and Institutional Implications**

Developing countries, now accounting for half the world’s emissions of greenhouse gases, can expect to be called on to control their emissions at some point in the future and indeed already face some pressure to do so as early as 2013. This research project is intended to improve the understanding of the potential benefits and risks of climate change mitigation policies in developing countries and to draw implications for the architecture of the future climate regime.

The study addresses four key questions:

- How can developing countries avoid the risks of lock-in in developing long-lived capital that emits greenhouse gases, such as transport infrastructure and power generation facilities?
- What are the distributional impacts of climate policies?
- How can climate change mitigation leverage financing for development?
- What should be the balance between mitigation of and adaptation to climate change?

The analysis will be based on microeconomic and macroeconomic modeling, applied to such countries as Brazil and India. The work will be conducted in partnership with institutions in developing countries.

The project is part of a broader research effort aimed at equipping the World Bank to help client countries negotiate the post-Kyoto climate regime.

**Responsibility:** Development Research Group, Infrastructure and Environment Team—Zmarak Shalizi (zshalizi@worldbank.org) and Franck Lecocq.

**Reference:** PO84595.

**Completion date:** January 2007.

**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 work focuses on comparing the World Bank’s actual environmental investments with
the portfolio of investments implied by its new environment strategy.

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.

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.

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. Presentations have included those to the World Bank’s Environment Sector Board (2003), to the country director for Bangladesh (2004), and to staff of the East Asia and Pacific Region and Middle East and North Africa Region (2004).

Responsibility: Development Research Group, Infrastructure and Environment Team—David Wheeler (d wheeler1@worldbank.org), Susmita Dasgupta, Uwe Deichmann, and Kenneth M. Chomitz; and Environment Department—Kirk Hamilton, Anjali Acharya, and Ede Jorge Ijjasz-Vasquez. With Kiran Pandey, Global Environment Facility; Craig Meisner; Piet Buys; Mainul Huq; M. Khaliquzzaman; and Bart Ostro.

Reference: PO76657.

Completion date: June 2007.

Reports


The Distributional Impact of Reforming Electricity Prices in Serbia and Montenegro

Since 2001 the electricity industry of Serbia and Montenegro has experienced changes in both price structure (with the introduction of an increasing block rate system) and price levels (with sharp increases). Moreover, prices are expected to increase even more in the next few years, in part as a result of conditions attached to loans made by international financial institutions. While these changes are justified on efficiency grounds, they nevertheless can cause serious distributional problems. Indeed, given the high level of subsidies embedded in the old tariff system, substantial price increases clearly have adverse effects on the most vulnerable parts of society. The poor could be forced to pay a disproportionate share of their income for this basic good, contrary to equity objectives requiring that all households be able to obtain electricity for essential uses at prices they can afford.

This study predicted the likely impact of the proposed price changes on the welfare of families by calculating the affordability ratio (the share of electricity expenditure in the household’s total consumption) and the affordability index (the proportion of the population with an affordability ratio exceeding a certain level) before and after the reform. Electricity demand was estimated using several techniques, and simulations were constructed under different sets of assumptions.

Responsibility: Development Research Group, Growth and Investment Team—Ioannis Kessides (ikessides@worldbank.org).
Reference: PO89730.
Completion date: June 2004.

Reforming Infrastructure: Privatization, Regulation, and Competition

Infrastructure is crucial for generating growth, alleviating poverty, and increasing international competitiveness. For much of the 20th century and in most countries the network utilities that delivered infrastructure services—such as railroads, electricity, telecommunications, natural gas, and water supply—were vertically and horizontally integrated state monopolies. But this approach often resulted in extremely weak services, especially in developing and transition economies. Common problems included low productivity, high costs, poor quality, insufficient revenue, and inadequate investment—leading to long waits for and short supplies of services, especially for poor people.

Recognizing infrastructure’s importance, over the past two decades many countries have implemented far-reaching infrastructure reforms—restructuring, privatizing, and establishing new approaches to regulation. This study identified the challenges involved in this massive policy redirection in the historical, economic, and institutional context of developing and transition economies. It also assessed the outcomes of these policy changes as well as their distributional consequences, especially for poor households and other disadvantaged groups. And, drawing on a vast range of international experiences and empirical studies, it developed recommendations on directions for future reforms and research to improve infrastructure performance—identifying pricing policies that strike a balance between economic efficiency and social equity, suggesting rules governing access to bottleneck infrastructure facilities, and proposing ways to increase poor people’s access to these crucial services.

Responsibility: Development Research Group, Growth and Investment Team—Ioannis Kessides (ikessides@worldbank.org).
Reference: PO70151.
Completion date: June 2004.
Understanding and Measuring Motorization Externalities

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

The motor vehicle fatality rate 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 peak 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 people in high-income countries by 2020, it will rise to around 2 per 10,000 in developing countries.

Data for 1963–90, from the International Road Federation’s annual World Road Statistics, were digitized and have been made available on the Web at http://econ.worldbank.org/WSBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20355209–pagePK:64165401–piPK:64165026–theSitePK:469382,00.html. The fatality data, cleaned and cross-checked, have been made available to researchers in such countries as India.

The models developed in the study have been used to formulate road safety targets (stated in terms of fatalities per vehicle) for different world regions. In addition, the research provided key input to the World Bank and World Health Organization’s World Report on Road Traffic Injury Prevention (Geneva: WHO Press, 2004). During 2004 the research was presented at seminars at the University of Maryland, Resources for the Future, and the U.S. Environmental Protection Agency.

Responsibility: Development Research Group, Infrastructure and Environment Team—Maureen L. Cropper (mcropper@worldbank.org). With Elizabeth Kopits, University of Maryland.

Reference: PO53608.
Completion date: June 2004.

Report

Industrial Organization Policy for Development

Through a range of studies, this research project examines various aspects of infrastructure reform in developing countries, particularly in the electricity sector.

Electricity sector reform in developing countries. Vast resources and efforts—driven by ideology, economic reasoning, and early success stories—have been spent on reforming infrastructure industries in developing countries. Does the evidence support the logic of such reforms? Reviewing the empirical evidence on electricity reform in developing countries, this study finds that reforms appear to have increased operating efficiency and expanded access for urban customers. But only to a lesser degree have they passed on efficiency gains to customers, tackled distributional effects, or improved rural access.
Some of the literature, however, is not methodologically robust. Moreover, findings on some issues are limited and inconclusive, while other important areas have yet to be addressed. Until we know more, implementation of reforms will be based more on ideology and economic theory than on solid economic evidence.

Core indicators for determinants and performance of the electricity sector. Market-oriented electricity reforms in developing countries involve important sectoral, economic, and social dimensions. Yet empirical analysis and evaluation of such reforms have been of limited use in testing their economic rationale, perhaps in part because of a lack of generally accepted and measured indicators for monitoring their progress, effects, and performance—unlike in such areas as health and education. This study proposes a set of indicators as a first step toward filling that gap and developing a coherent framework for studying electricity reform in developing countries—covering resource and institutional endowments, key reform steps, market structure, performance, and different types of impact.

Regulatory effectiveness in the electricity industry. This research reviews a number of studies of the effectiveness of utility regulatory agency and governance arrangements for the electricity industry, particularly in developing countries. It examines governance criteria and their measurement. And it reviews the results of econometric studies of the effectiveness of regulatory agencies for electricity and telecommunications and compares these with the results of econometric studies of independent central banks and their governance. Based on this work, the research provides policy implications and priorities for information collection to improve understanding of these issues.

Impact of variations in regulatory governance in electricity. Drawing on theoretical and empirical work on the impact of independent central banks and of developing country telecommunications regulators, this study assesses for 28 developing countries over the period 1980–2001 whether a regulatory law and higher-quality regulatory governance are significantly associated with superior outcomes in electricity. Controlling for other relevant variables and allowing for country-specific fixed effects, the empirical analysis concludes that these elements are positively and significantly associated with greater per capita generation capacity. Moreover, as experience develops and regulatory reputation grows, the positive effect increases for at least 3 years and probably for more than 10. The results are robust to alternative dynamic specifications and show no sign of significant endogeneity biases.

Private participation in water and sewerage. Empirical studies on the effects of introducing private participation in water and sewerage in developing countries are scant and generally inconclusive. While case studies tend to find improvements in the sector after privatization, they suffer from selection bias and it is difficult to generalize from their results. To empirically explore the effects of private participation, this study assembles a new data set on connections to water and sewerage services at the city and province level based on household surveys in Argentina, Bolivia, and Brazil. The household surveys, conducted over a number of years, allow the study to compile data before and after the introduction of private participation as well as from similar (control) regions that never privatized.

The analysis shows that connection rates to piped water and sewerage generally improved after the introduction of private participation. But it also finds that connection rates similarly improved in the control regions, suggesting that private participation may not have been responsible for those improvements. Connection rates also tended to increase for the poorest households in both sets of regions, suggesting that—in terms of connections at least—private participation did not harm the poor.

Electricity reform in Chile and Argentina. Two studies look at the comprehensive electricity sector reform in Chile and Argentina. They trace the history of the reform programs, which began in 1982 in Chile and in 1992 in Argentina, and assess progress and lessons. The study of Chilean reform finds that it has been very successful. While the initial market structure and regulatory arrangements gave rise to some problems, the overall experience argues strongly for private ownership and operation of the electricity industry. The Argentine reform too was very successful, until the collapse of the Argentine peso in early 2002. The sector's achievements are now threatened by the delays in tackling the financial consequences of the peso devaluation. The studies suggest lessons for the
countries’ generation, transmission, and distribution sectors as well as the economic regulation of electricity and the general institutional environment favorable to reform.

Responsibility: Development Research Group, Growth and Investment Team—Ioannis Kessides (ikessides@worldbank.org).

Reference: PO81965.

Completion date: March 2005.

Reports


Kessides, Ioannis, and Michael Pollitt. “Electricity Reform in Argentina: Lessons for Developing Countries.”

Pollitt, Michael, and Ioannis Kessides. “Electricity Reform in Chile: Lessons for Developing Countries.”


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.

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.

The research has centered on three main issues: service delivery for the poor, housing and financial interventions, and local public finance. Results show that tenure security has positive effects on community involvement in the provision of local public services but does not translate into better access to credit markets or changes in investment behavior. Strategies that improve community infrastructure within slums do more to improve the livelihoods of slum dwellers than any strategy that includes relocation to alternative locations. And while property taxes are an important source of local public finance, improvements in taxes are not accompanied by improvements in service delivery.

Government officials and researchers have been involved from the outset, 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.

A workshop in Mumbai on March 10–11, 2005, brought together senior urban policymakers from India and other countries in the region to discuss the implications of the
research findings. The project’s findings also will be synthesized in a policy-relevant paper.

**Responsibility:** Development Research Group, Infrastructure and Environment Team—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 contributed funding for the research.

**Reference:** PO72882.

**Completion date:** March 2005.

**Reports**


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**Measuring Quantity-Quality Tradeoffs in Regulated Industries**

This research tests a method for measuring tradeoffs between the volume and the quality of outputs in service delivery. While the method is particularly useful in considering the tradeoffs between quantity and safety in transport, it could potentially be applied to any public sector activity or regulated industry.

The analysis is based on the calculation of a synthetic indicator that allows the integration of various outputs and various dimensions of quality and is general enough to apply to a wide range of efficiency-quality tradeoffs. The indicator, based on a Malmquist productivity index, relies on the calculation of an efficiency frontier (using data envelopment analysis) that includes quality adjustments. The study tests the indicator using data from the Brazilian rail freight industry both before and after privatization.

The research shows that it is possible to come up with a quantitative joint assessment of quality and quantity in service delivery and that this makes any assessment of the tradeoffs analytically much more rigorous than the usual ad hoc approaches used in regulatory processes.

In addition, results show that Brazilian rail freight operators do not always adjust quality to favor quantity, perhaps as a result of the safety incentives built into the concession contracts. Indeed, all private operators managed to improve quality, and three did so at the expense of quantity. Thus the main policy lesson may be that incentives matter. Another is that if regulators choose to provide incentives in a specific direction, they need to make that choice as explicit as possible in the design of regulatory regimes.

The project has facilitated the development of research networks in Brazil, Latin America, and francophone Africa as well as exchanges between regions.

The results have been used in technical assistance to underscore the importance of regulators investing in information. In addition, the research has contributed to discussions of tariff revision for the Brazilian railway industry.

Findings have been disseminated through presentations at an infrastructure economics workshop in Berlin (October 2004) and through events organized by the World Bank Institute in Dakar (June 2003 and June
2004), Santiago, Chile (January 2004), and Rio de Janeiro (December 2004).

Responsibility: Infrastructure Network, Office of the Vice President—Antonio Estache (aestache@worldbank.org). With Antonio Alvarez, University of Oviedo, Spain; Aliou Fall, government of Senegal; Andres Gomez-Lobo, University of Chile; Marianela Gonzalez and Lourdes Trujillo, University of Las Palmas de Gran Canaria, Spain; Eugene Kouassi, University of Cocody, Côte d’Ivoire; Ronaldo Magalhaes, National Land Transport Regulatory Agency (ANTT), Brazil; Augustín Mpapa Mbangala and Sergio Perelman, University of Liège; Martín Rossi and Christian Ruzzier, Centro de Estudios Economicos de la Regulación, Argentina; and Ronaldo Serou da Motta, Instituto de Pesquisa Economica Aplicada (IPEA) and Federal University of Rio de Janeiro, Brazil. ANTT provided support in data collection, and ANTT, IPEA, the University of Chile, and the government of Senegal provided staff time in organizing workshops and seminars.

Reference: PO83320.
Completion date: June 2005.

Report

Urban Transport and the Welfare of the Poor

This research is aimed at contributing to the design of transport policies that will benefit the poor in the long as well as the short run. Using data collected through a household survey in Mumbai, it is analyzing both the short- and longer-run impacts of urban transport policies and the welfare effects of slum relocation projects.

The household survey was administered to a random sample of 5,000 households in Mumbai to elicit information on household location, housing and neighborhood attributes, household consumption, the employment and other activity patterns of household members, and their travel behavior. These data have been used to describe patterns of travel and residential location by income group, to estimate models of vehicle ownership and mode choice for a variety of types of trips, and to estimate models of commuting behavior and residential location choice.

A striking finding is the extent to which all households, but especially poor ones, rely on walking. Overall, 44 percent of commuters in Mumbai walk to work. Among the poor the share is even higher—63 percent. And more people rely on walking for nonwork than for work trips. People who travel on foot will not benefit directly from improvements in public transit but will benefit from the construction of footpaths and roads.

A second finding is that public transit remains key to mobility for the poor and especially for the middle class, suggesting that improvements in public transit could have substantial value. Rail remains the main mode of commuting to work for 23 percent of commuters, and bus the main mode for 16 percent.

The research has produced important information about travel patterns in Mumbai, about the price and income elasticities of demand for transport services, and about the access of the poor to jobs, schools, and health care facilities. Preliminary results have been given to the Mumbai Metropolitan Region Development Authority and presented to World Bank task managers for the Mumbai Urban Transport Project II and other transport sector staff.

Responsibility: Development Research Group, Infrastructure and Environment Team—Maureen L. Cropper (mcropper@worldbank.org) and Somik V. Lall; East Asia and Pacific Region, Transport Sector Unit—Rakhi Basu; and Transport and Urban Development Department—Judy Baker. With Monitoring and Research Systems Private Limited (MaRS), Mumbai; Cal2Cal, Calcutta; and Akie Takeuchi, University of Maryland.

Reference: PO81190.
Completion date: June 2005.

Reports

The Impact of Rural Roads on Poverty: 
The Case of Bangladesh

Roads have both a direct and an indirect effect on welfare, as they boost agricultural growth and investment, household food security, and investment in human capital. In addition, they can improve access to markets for rural products and services and reduce transaction costs. Still, little is known about the quantifiable benefits of roads, mainly because of methodological constraints and data limitations.

This study will calculate the economic and social returns of roads and their effect on poverty in Bangladesh using household and community data from a rural road project financed by the World Bank that allows identification of control and treatment groups. The data come from two panel surveys conducted by the Bangladesh Institute of Development Studies as part of the government’s efforts to analyze and quantify the short- and long-term effects of improvements in rural roads. The study will use panel econometric techniques to resolve any household- or community-level endogeneity.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Shahidur Khandker (skhandker@worldbank.org).
Reference: PO85643.
Completion date: September 2005.

Infrastructure and Regional Growth in Indian Manufacturing

This study investigates private sector responses—changes in employment or growth in the number of firms—to additions to physical infrastructure. Using data on India’s manufacturing industry, the research tests the hypothesis that those responses enhance the output and productivity effects of additions to road, rail, telephone, and electricity generating capacity. It also examines the possibility that additions to infrastructure have spillover effects—intertemporal spillovers that yield economies of agglomeration or spatial spillovers that represent location externalities. In addition, to add to the understanding of how physical infrastructure is allocated, the study looks for possible political determinants of this.

The economics of the model, starting from a production function with inserted infrastructure variables, yield equations that can be directly estimated from panel data. The analysis uses manufacturing industry data for states and a limited number of districts from India’s Annual Survey of Industries, and infrastructure data from official sources or the Centre for Monitoring Indian Economy. Additional data come from the Census of India, official price statistics, and World Bank sources.

The results of the research should contribute to the preparation and execution of infrastructure investment programs, spatial development plans, and industrialization policy. While the size, form, and timing of the net impact of infrastructure provision on industry are standard questions in all these efforts, they still are not well understood.

Responsibility: Development Research Group, Growth and Investment Team—Giuseppe Iarossi (g iarossi@worldbank.org). With Esra Bennathan, University of Bristol; Jayasri Dutta, University of Birmingham; and Paul Seabright, University of Toulouse.
Reference: PO85544.
Completion date: June 2006.

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

This research studies the relationships between infrastructure, geographic location, and economic development in Nepal—a particularly suitable place to study spatial specialization because of its extreme diversity in accessibility and in 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 Thünen 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. It also 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, while agricultural wage employment dominates villages located farther away. Isolated villages are essentially self-subsistent. 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 uses the 1999 Labor Force Survey data 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.

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 the 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 thus far suggest that market size and accessibility, because they have a significant influence on the types of rural diversification observed, should be taken into account in deciding the location of infrastructure and rural development projects.

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

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

Reference: PO63054.

Completion date: December 2006.

Reports

Impact Evaluation of a Rural Road Rehabilitation Project in Vietnam

Roads are often seen as key to raising living standards in poor rural areas. Yet despite much anecdotal evidence, there is little hard evidence on the size and nature of their benefits. This study is assessing the impact of rural roads on poverty and aims to 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 financed and helped implement a large-scale rural road rehabilitation project—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.

As a first step in evaluating impact, the analysis is investigating the extent to which project funding was used as intended, relying on impact evaluation methods and the local-level data. Responses to development project aid have typically been studied at high levels of aggregation. Yet the decisions increasingly are being made at the local level, in community-level projects. A simple double-difference estimate suggests that the project’s net contribution to rehabilitated road increments is close to zero, suggesting complete displacement of funding. But with better controls for the endogeneity of project placement, the analysis finds much less evidence of fungibility, with displacement of around a third of the aid. The results point to the importance of dealing with selection bias in assessing project aid fungibility.


Reference: PO59436.
Completion date: December 2006.

Reports

Information Technology and Development

This research project is studying policies and programs that promote access to information and communications technology (ICT) in developing countries. The research addresses three critical questions: How and to what extent have policy reforms in the ICT sector promoted private sector provision of ICT services to the poor? What have been the results of direct public interventions to promote access to ICT services for the poor? And what factors have significantly influenced the costs of public intervention?

The project focuses on the effects of ICT policy reform and universal access promotion in Bangladesh, particularly for rural villages and households. Using a large panel database with detailed information on access to ICT services as well as village-level socioeconomic information, the study will analyze both the effect of reform on the rural diffusion of ICT use and the subsequent effect of greater ICT use on household characteristics. This analysis will address a number of specific questions, including these:

- How has liberalization of the ICT market affected the distribution of ICT use in Bangladesh, both spatially and by income group?
- How have community characteristics affected the timing and spatial incidence of telephone installation, both before and after market liberalization?
- What are the main factors determining the adoption and use of information and communications technology by rural households?
- How has access to ICT services at the household and community levels affected households’ social, demographic, and economic characteristics over time?

The results are expected to contribute valuable insights to the ongoing debate about the effect of policy reform on ICT use and welfare for rural households.

Responsibility: Development Research Group, Infrastructure and Environment Team—David Wheeler (d wheeler1@worldbank.org), Susmita Dasgupta, and Uwe Deichmann. With Mainul Huq, Craig Meisner, and Piet Buys.

Reference: PO70367.
Completion date: June 2007.
Private Sector Participation in Water Resource Management in the Middle East and North Africa

This research was aimed at identifying concrete options for public-private partnership in water resource management and determining their applicability to the West Delta area of the Arab Republic of Egypt. The area includes more than 100,000 hectares of farms and around 1,000 farmers employing more than half a million people, mostly producing export crops for Europe.

The study analyzed the technical and economic feasibility of recovering from farmers in West Delta the full capital and operation and maintenance costs of providing surface water supply (from the Nile) to augment diminishing groundwater reserves and sustain employment and groundwater. The analysis drew on case studies in the region (Jordan and Morocco) and in Chile and on information from field visits, research institutes, and the Ministry of Water.

The research produced a concept for water delivery by a private operator and an assessment of stakeholders’ willingness to pay. A follow-up workshop with stakeholders representing more than 60 percent of the West Delta farming area produced unanimous agreement on the preliminary tariff structure proposed.

The research contributed to a World Bank lending operation for fiscal 2006, the West Delta Irrigation Infrastructure Development Project, the first irrigation project in Egypt with full cost recovery for water supply. It also provided important input into an action plan for water resource management in Egypt. The research also provided input into a World Bank lending operation for fiscal 2006, the West Delta Irrigation Infrastructure Development Project, the first irrigation project in Egypt with full cost recovery for water supply. It also provided important input into a World Bank lending operation for fiscal 2006, the West Delta Irrigation Infrastructure Development Project, the first irrigation project in Egypt with full cost recovery for water supply. It also provided important input into a World Bank lending operation for fiscal 2006, the West Delta Irrigation Infrastructure Development Project, the first irrigation project in Egypt with full cost recovery for water supply. It also provided important input into an action plan for water resource management in Egypt.

Early results of the research were presented at a three-day workshop in Alexandria, Egypt, in May 2004 that was attended by more than 60 representatives of the government, the private sector, nongovernmental organizations, and academia.

Responsibility: Middle East and North Africa Region, Rural Development, Water, and Environment Group—Maher Abu-Taleb (mabutaleb@worldbank.org) and Vijay Jaganathan; Africa Technical Families, Nile Basin Coordination Unit—Ashok Subramanian; and World Bank Institute, Environmentally and Socially Sustainable Development Division—Vahid Alavian. With Nathalie Abu-Ata and Sixto Requena.

Reference: PO77567.

Completion date: June 2004.

Report


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

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

In Indonesia, where household panel data were available, the research was based on econometric analysis using a difference-in-differences approach. For Peru and the Philippines only cross-sectional household data 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 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. Moreover, the current design could be ineffective in conveying and diffusing knowledge of integrated crop and pest management on a large scale. And the approach is unlikely to be fiscally sustainable. 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 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), a seminar at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico (October 2003), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India (January 2004), the Congress of the International Plant Protection Organization in Beijing (May 2004), Virginia Polytechnic Institute and State University (June 2004), and the Mekong Rice Conference in Vietnam (October 2004).

Responsibility: Development Research Group, Rural Development Team—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 Elisabeth Sadoulet, University of California at Berkeley; and Hania Rahma.

Reference: PO85969.

Completion date: July 2004.

Reports
Macro-Micro Linkages of Irrigated 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 in turn affect the farm firm.

This study traces direct and indirect effects of policy reform on the economy and on the water sector. The analytic framework relies in part on a computable general equilibrium 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 show how the macro-micro linkage works, the study has conducted several sets of policy analysis. The first set centers on macroeconomic policies, with trade reform illustrating the links. The second 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.

Additional sets of policy analysis have looked at local interventions in water management, such as conjunctive use of surface and ground water under conditions of frequent drought and water transfer to satisfy urban and industrial water demand. Analysis has also examined the effects of governance structure and institutional arrangements, including replacing domestic input and output subsidies with direct farm income payments and allowing revenue generation and investment at the regional level.

Responsibility: Agriculture and Rural Development Department—Ariel Dinar (adinar@worldbank.org). With Xinshen Diao, International Food Policy Research Institute; Terry Roe, University of Minnesota; and Yakov Tsur, Hebrew University of Jerusalem.

Reference: PO81240.
Completion date: October 2004.

Land Institutions and Land Policy

This research undertook a comprehensive review of land policy issues and ways of addressing them in different types of situations. It 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 workshops to obtain feedback, disseminate results, and discuss how these can inform policy. 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 how financial markets function.
• 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.

Researchers and government officials played an integral part in the project, preparing background studies for four regional workshops (attended by about 700 participants) aimed at discussing the key policy issues raised. Government officials who participated in these regional workshops also helped organize a session on land policy during the May 2004 Shanghai conference on Scaling Up Poverty Reduction.

Dissemination activities have included collaboration with the World Bank Institute to create a four-day distance learning course for government officials, academics, and representatives of nongovernmental organizations. The course, which combines presentations on land policy principles with elaborate case study material specific to different regions, has been held seven times thus far, in Africa, East Asia, and Central and Latin America. Strong positive feedback has prompted plans by the World Bank Institute to retain the course in its rural portfolio.

Within the World Bank the work has had a significant impact on the operational agenda, fueling strong demand for land-related policy advice. In 2004 a two-day session drawing about 100 participants from across the World Bank’s Regions and from other donor organizations was held to discuss how to implement the findings in World Bank operations. The research has contributed to a guidance note for task managers working on land reform projects, served as the basis for a chapter on land policy in a sourcebook on poverty and social impact analysis, fed into economic and sector work in Colombia, and formed the basis for a note on land policy to provide guidance to the incoming government in Indonesia. The policy impact is also visible in the European Union, which established a task force to prepare land policy guidelines for its member states, approved in December 2004.

The research has been widely disseminated through presentations at conferences, including the biannual meeting of the United Nations Economic Commission for Europe’s Working Party on Land Administration, in Geneva (November 2003); the Second World Urban Forum, in Barcelona (September 2004); a special forum on the development of land information policies in the Americas, in Aguascalientes, Mexico (October 2004); and a conference on the rural nonfarm economy organized by Pontificia Universidad Javeriana in Bogotá (October 2004). Presentations have also been made at many workshops, including a workshop on land policy and land administration in Manila (December 2003); a workshop with high-level Indian policymakers in New Delhi (May 2004); a national land policy workshop organized by UN-HABITAT and Kenya’s Ministry of Lands (May 2004); a workshop with South African policymakers in Pretoria (May 2004); a workshop with policymakers and academics from Central American countries and Mexico, held in Nicaragua (July 2004); a workshop on the future of the Chinese rural economy organized by the prime minister’s office in Beijing (September 2004); a rural economy workshop organized by Colombia’s National Planning Department and the World Bank in Bogotá (September 2004); a workshop organized by Norway’s Ministry of Foreign Affairs in Oslo (September 2004); a workshop on poverty and social impact analysis for rural areas organized by the International Fund for Agricultural Development and the German Agency for Technical Cooperation in Rome (September 2004); a workshop on land and conflict organized by the International Peace Academy in New York (December 2004); and a workshop organized by the Royal African Society and International Institute for Environment and Development in London (December 2004).

Other dissemination activities have included a presentation on policy options to ensure women’s land rights, organized by the United Nations High Commissioner for Human Rights in New York (March 2003); a presentation on the relevance of land policy for development assistance for southern Africa, made to the foreign relations subcommittee of the German parliament (December 2003); and presentations to donor agencies of Germany, Norway, and the United Kingdom (December 2003). Dissemination activities have also included training courses—for European Union officials in Brussels and for officials of the Food and Agriculture Orga-
nization and International Fund for Agricultural Development in Rome.

Eight key papers from the Eastern Europe workshop held in Budapest were published as a special issue of the Quarterly Journal of International Agriculture (2004), and 13 country case studies and an overview paper were published in a special issue of FAO’s journal Land Reform, Land Settlement, and Cooperatives (2003).

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

Reference: PO86499.

Completion date: December 2004.

Reports


**Land Market Reforms and Their Effects on the Poor**

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

Through econometric analysis of panel household survey data, the research shows that liberalization of land markets, together with efforts to increase the security of land tenure, had a significant and positive impact on the operation of land markets, the ability of the poor to obtain access to land through such markets, and the incentives for land-related investment. While significant, the impact was not, however, large enough to overcome the high levels of inequality and inefficiency in land use present in some of the countries studied.

Findings have been discussed at a workshop with Central American academics and policymakers organized by the government of Nicaragua with support from the European Union in August 2004. In addition, a World Bank Institute course on land policy for Latin America included a presentation on the topic by a Nicaraguan researcher collaborating in the project.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org). With the University of Wisconsin; and Juan Sebastian Chamorro, Office of the President, Nicaragua. The European Union Trust Fund contributed funding for the research.

Reference: PO53319.

Completion date: December 2004.

Reports


**The Benefits and Costs of Organic Agriculture: Evidence from Cuba**

Evidence of serious health and environmental damage in many developing countries from the use of chemical pesticides and fertilizers indicates that much less
chemical-intensive farming techniques will be needed in the future. Organic farming eliminates the health damage from pesticide exposure and also has strong appeal from an environmental perspective because it uses neither chemical pollutants nor transgenic crops. Its labor intensity and its viability at a modest scale add to its attraction in low-wage developing countries, where smallholder agriculture is the dominant mode of production.

Before developing country policymakers are likely to promote widespread adoption of organic methods, however, a host of research issues need to be addressed. Comparative production functions, cost functions, learning curves, environmental effects, and public overhead costs (agricultural extension, organic certification) of organic and mainstream agriculture in developing countries must be analyzed. Evidence on organic agriculture in developing countries is largely anecdotal, with data scarcity impeding empirical work on its economics and environmental benefits.

This research will analyze evidence from Cuba—which has shifted from large-scale, chemical-intensive agriculture to organic farming since 1990—to develop much more systematic evidence on the benefits and costs of large-scale conversion to organic production. The research will estimate a stochastic production frontier (with technical inefficiency effects), analyze ambient environmental quality data, and conduct expert interviews.

The scope of the research, data requirements, policy questions, and methodology were jointly developed with a team of Cuban researchers from the Ministries of Health, Agriculture, and Science, Technology, and Environment. Collaborating ministries and research organizations are compiling data from secondary sources.

With earlier work on organic agriculture relying heavily on anecdotal evidence, the results of this research are expected to promote a new round of international policy dialogue. Latin American countries that have begun promoting organic agriculture (such as Brazil and Mexico) may be especially receptive to more detailed research on the Cuban transition.

Responsibility: Development Research Group, Infrastructure and Environment Team—Susmita Dasgupta (sdasgupta@worldbank.org), David Wheeler, and Craig Meisner.

Reference: PO82436.
Completion date: June 2005.

The Economics of Pesticide Contamination in Bangladesh

Indiscriminate use and inappropriate handling of chemical pesticides in agriculture have caused serious health and environmental problems in many developing countries. To control pesticide hazards effectively, policymakers need to understand issues underlying the use of pesticides, including institutional incentives; the comparative economics of safe alternatives; the dynamics and determinants of farmers’ choices; the availability of information on risks, safe handling, and alternatives; perceptions of the associated risks among wholesalers, retailers, and users; and gaps in knowledge about appropriate application and related externalities. This research examines these critical issues by drawing on survey and interview results from Bangladesh and using a range of analytic methods.

The research gives particular attention to integrated pest management (IPM), an ecologically based alternative to chemical pesticides. Since IPM uses natural parasites and predators to control pest populations, rather than expensive chemical pesticides, it offers the prospect of lower production costs and higher profitability. But scarcity of data has prevented a full accounting of IPM’s effect on profitability, health, and local ecosystems. Using new survey data, the research undertakes such an accounting for rice farmers in Bangladesh. It compares outcomes of IPM and conventional farming using input-use accounting, conventional production functions, and frontier production estimation.

The results suggest that the productivity of IPM rice farming does not differ significantly from that of conventional rice farming. Since IPM reduces pesticide costs with no countervailing loss in production, it appears to be more profitable than conventional techniques. Moreover, interview results suggest substantial health and ecological benefits. But externality problems make it difficult for farmers to adopt IPM individually. Without collective adoption, neighbors’ continued use of chemicals to kill pests will also kill helpful parasites and predat-
tors and expose IPM farmers and local ecosystems to chemical spillovers. Successful adoption of IPM may therefore depend on institutional support for collective action.

The findings have immediate applicability, particularly for the government of Bangladesh, and have been integrated into the World Bank’s Country Environmental Analysis of Bangladesh.

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

**Reference:** PO82454.

**Completion date:** June 2005.

**Report**


**Land Reform in Zimbabwe**

Land reform in Zimbabwe has been politically very controversial. Available estimates of the effects of such reform undertaken in the period immediately after independence vary widely, leaving it unclear whether there is an economic case for redistributing land to smaller producers or not. This research has investigated that question, which has clear implications for the wider region. The study conducted a follow-up survey of households included in an earlier panel of beneficiaries of land reform along with an appropriate control, and used econometric analysis and matching techniques to estimate the effects of the reform.

Results show that transferring land to small producers can significantly enhance their welfare. In Zimbabwe such transfers provided a safety net for the extended family of beneficiaries. At the same time the benefits have been constrained by limitations on security and on the transferability of rights awarded under the program.

The economic rationale for land reform suggests that in Zimbabwe removing obstacles to the functioning of land markets and taking measures against speculative land accumulation are likely to have already led to a significant transfer of land to poor small producers.

Results from the study have been used by missions of multilateral institutions to Zimbabwe and in World Bank economic and sector work about the potential for reengaging with the country.

**Responsibility:** Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org); and Human Development Network, Social Protection Team—Johannes Hoogeveen.

**Reference:** PO50542.

**Completion date:** June 2005.

**Report**


**Land Rental Markets in Eastern Europe**

Mainly as a result of political pressures, the process of land and farm privatization in many Eastern European countries has led to a structure of landownership that is not necessarily the most conducive to productivity. In many cases, however, capital market imperfections suggest that land sales markets may not necessarily be efficiency-enhancing—and that land rental markets may therefore have an important part to play.

This research is examining differences in the extent to which rental markets function in six countries of Eastern Europe and the implications for household welfare in rural areas. The research is based on econometric 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.

Results show that besides initial conditions (particularly the type of farming structure and the nature of privatization), policy choices are important determinants of land rental market activity across countries.
The research was among the factors leading the World Bank’s Europe and Central Asia Region to initiate economic and sector work on this topic.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org). With Sara Savastano, University of Rome; and Raffaella Castagnini, University of Verona and University of Michigan.

Reference: PO87932.
Completion date: June 2005.

Land Law and Land Conflict in Uganda

This study has investigated whether new legislation adopted in Uganda, the 1998 Land Act, can deal effectively with the accumulated land conflicts in the country. If not, why not? And what is needed to make the law effective? Through regression analysis of household survey data, the study estimated the incidence of land conflict and its effect on productivity and assessed the implications for policy to resolve existing land conflicts and to reduce the likelihood of new ones. It also assessed the knowledge of the new law among men and women, the implications of insecure tenure for land-related investment, and the demand for greater tenure security among cultivators.

The study has found that land conflict is widespread, has a significant adverse effect on productivity, and particularly affects widows (often through disputes arising out of inheritance). The new law has not reduced the incidence of conflict, suggesting a need for more effective means of implementation. The demand for greater tenure security and the willingness to pay for it are considerable, indicating that putting the Land Act’s provisions (such as that for certificates of customary “ownership”) to work cost-effectively could have large benefits.

Results have informed the debate on gender issues and on implementation of the new land law and contributed to the World Bank’s gender assessment in Uganda. Results also led to a request from the government for assistance, as part of a private sector development loan, in rehabilitating the land registry and implementing the law.

Through participation in the research project, staff from Uganda’s Economic Policy Research Centre and Makerere University have improved their skills in sampling, data collection, and analysis. Survey modules used in the study have been introduced into the national household survey.

The research was discussed at a conference on land issues held in Kampala in July 2004 with about 70 high-level participants.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org). With D. Sseruunkuuma, Makerere University, Kampala; P. Mijumbi, Economic Policy Research Centre, Uganda; Raffaella Castagnini, University of Verona and University of Michigan; and the Foundation for Advanced Studies in International Development, Tokyo.

Reference: PO89584.
Completion date: December 2005.
cation, entailing an equity-efficiency tradeoff that favored the poorest households. It found no evidence of widespread local capture. After decollectivization, land reallocations responded positively but slowly to the inefficiencies of the initial allocation. Nonmarket forces tended to aid adjustments toward greater efficiency.

New research is assessing the effect of the emergence of a functioning land market on poverty and inequality. As land transactions proceed, some households lose their land as a result of bad shocks and become poor; others sell their land as they move up the ladder of nonfarm income diversification. With the reforms, is lack of land becoming more or less correlated with poverty in rural Vietnam—and why? If access to land is becoming more correlated with standard of living, that would raise concerns that Vietnam is heading toward a South Asian style of rural development in which a large, poor, landless proletariat emerges.

The study is modeling land and consumption separately, using three repeated household survey crosssections for 1993, 1998, and 2002, to see how the determinants of these two variables are changing over time. Explanatory variables include ethnicity, education, household demographics, geographic fixed effects, gender of household head, and employment in the public sector or state-owned enterprises. The regressions will be used to study the conditional correlations between landholding and welfare.

Results from the early research 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 Northeast 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 California at Berkeley, the University of Laval (Quebec, Canada), the University of Massachusetts, and the University of Michigan.

Responsibility: Development Research Group, Public Services Team—Dominique van de Walle (dvandewalle@worldbank.org), and Poverty Team—Martin Ravallion; and East Asia and Pacific Region, Poverty Reduction and Economic Management Sector Unit—Martín Rama. With Hai-Anh Dang, University of Minnesota.

Reference: PO74050.

Completion date: December 2005.

Reports

The Impact of Agricultural Extension

This research is testing the effectiveness and sustainability of DrumNet, a program in Kenya providing smallholder farmers with credit linked to agricultural extension and marketing services. The research will test the effect of the credit separate from the effect of the services.

The research addresses four main questions: By linking credit to the uptake of more profitable crops, and by providing technical assistance, does DrumNet encourage faster adoption of high-return crops? Do farmers who enroll in DrumNet have higher yields, sales, and incomes than those not offered participation? Will social networks facilitate the spread of information about and adoption of DrumNet? Among the participants, will those receiving a loan earn higher profits, indicating that credit constraints are an obstacle to higher profits for farmers?
The research uses an experimental design in which self-help groups are randomly assigned to three experimental groups of 250 participants each—a control group, a group receiving all DrumNet services, and a group receiving all services except credit. The self-help groups will be assigned in such a way that at the outset the three experimental groups will be alike in such key characteristics as landholdings, crop mix, farming experience, and access to credit and infrastructure. Comparing outcomes between the two treatment groups will allow the study to measure the effect of the credit.

The study will use administrative data to measure the effects of the two different treatments on sales, revenues, and crop mix for the first year. It will use survey data to measure the effect of the program on crop yields, income, profits, and household well-being for the first year and, in the second year, to compare effects for early and late adopters.

Baseline data were collected in May–July 2004 by the Institute for Development Studies, a research center at the University of Nairobi, which has also collaborated in the design of the questionnaires.

Responsibility: Development Research Group, Finance Team—Xavier Giné (xgine@worldbank.org). With Nava Ashraf, Harvard University; Dean Karlan, Princeton University and Innovations for Poverty Action; and Walter Odhiambo, University of Nairobi. The International Development Research Centre, Canada, is contributing funding for the research. Princeton University has contributed staff time.

Reference: PO85253.
Completion date: June 2006.

Land Tenure

Despite growing evidence that land rental markets can increase equity and efficiency, activity in these markets is often constrained by insecure tenure or explicit policy restrictions. This research has been designed to identify these constraints and measure their impact in several countries with the aim of contributing to policy dialogue in those countries. The research is based on econometric analysis of household and village survey data.

In China the research has found that even though land markets are slowly overtaking land reallocation by village officials as a key mechanism for adjusting the amount of land operated by households to changing circumstances, much scope remains for increasing efficiency-enhancing transactions.

In Ethiopia secure land rights have a significant effect in enhancing investment, but transfer rights are at least as important and have a larger effect on productivity-enhancing investment. Insecure land rights slow the development of the rural nonfarm sector.

In India landownership significantly improves households’ ability to smooth consumption in the face of shocks. And access to land allows women to make more productive use of their labor, overcoming high levels of discrimination in wage labor markets.

In Vietnam land rental markets help increase equity by aiding the poor and more productive in gaining access to land. But less secure forms of tenure have a significant adverse effect on landowners’ willingness to supply these to the market, suggesting that increasing tenure security can enhance access to land.

Through intensive collaboration with the National Bureau of Statistics in China, the Economic Policy Research Institute in Ethiopia, and the National Council of Applied Economic Research and Centre for Economic and Social Studies in India, the research project has enhanced the capacity of national institutions in survey and questionnaire design and in analysis.

Results for Ethiopia were presented in a joint World Bank Institute–Development Economics land policy distance learning course for Africa, and results for Vietnam in a course for East Asia. Results for China were presented at a three-day, high-level conference on the future of China’s rural economy, organized by the office of the prime minister in Beijing in September 2004, and at the annual meetings of the International Association of Agricultural Economists in Durban, South Africa, in August 2003.

In China results have facilitated policy discussion at the highest level and are feeding into economic and sector work by the World Bank. In Ethiopia the research has similarly contributed to the domestic policy debate. And in India, where work is still under way, preliminary results have been discussed at a national-level workshop, attracting much interest.
Rural Growth and Productivity

This research project examines the role policies play in determining agricultural productivity and growth across countries and across regions within countries. Understanding what determines the geography of agricultural productivity is important for policy, since strategies to reduce poverty often feature components designed to boost regional agricultural incomes. The project undertakes two types of research. The first relies on extended time-series data or country panel data to examine the drivers of productivity and growth. The second relies on census and endowment data to examine regional differences in productivity outcomes.

In Southeast Asia the research finds that while the introduction of new technology through the Green Revolution was important in driving agricultural growth, factor accumulation was more important. The contribution of total factor productivity ranged from 10 percent of growth in the Philippines to 44 percent in Indonesia. Total factor productivity was more important in the 1960s and 1970s, following the introduction of the new crops, than in the later period, when the pace of progress depended mainly on the relaxation of constraints on capital, fertilizers, and irrigated land. Investment in infrastructure (such as roads), education, and health aided the transition to the new technology.

Research using census and endowment data from Ecuador provides strong support for the notion that applied technology choices are driven by broad factors that form the decision environment for agriculture. Because this decision environment has location-specific aspects, spatial patterns emerged in how available technologies are applied and thus in the productivity levels that result. These same factors probably influence rates of accumulation among individuals and communities, with long-run effects. But the effects on how accumulations are used are additional to the effect on the rate at which accumulations are built up or drawn down. For policymakers this distinction is important, since it is the shorter-term productivity outcomes that more quickly respond to policy.

At the same time simulation results suggest that the heterogeneity of applied technologies is greatest among smallholders and declines with scale. Because medium-size and large farms account for most output, most of the variance in average regional output stems from differences in accumulated factors. Nevertheless, among smallholders, two-thirds of whom are poor, regional differences in average productivity are large and sensitive to market conditions, household characteristics, and risk. Outcomes from any set of policies will have both spatial and scale aspects.
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 relationships between climate, risk, and productivity in developing countries. It examines how international markets for weather insurance might be used to benefit the poor and considers obstacles to extending the reach of these formal markets.

The research 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 are weaknesses in local 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 data can supplement ground station data, but in limited ways. Consequently, while analysis of weather-based risks can help policymakers in dealing with unanticipated secondary effects of policy, providing the poor with direct access to global markets is difficult.

New research will examine whether intermediating groups, including microcredit institutions and mutual insurance groups, can reduce transaction costs to the point where it is possible to extend the reach of weather insurance markets.

Report
Tax Policy for Poverty Reduction

This research investigated the characteristic features of a tax system that takes account of poverty reduction objectives, with the aim of shedding light on the fiscal policy features most effective in protecting vulnerable groups. Theoretical work extended the results in the literature using a welfarist framework to integrate poverty concerns. This work focused on the taxation of income, considering both linear and nonlinear optimal tax schedules. But in poor countries with large informal sectors and poorly functioning tax administrations, indirect taxation—the taxation of goods and services—not only is the main source of revenue for the government but also is the most effective fiscal vehicle for affecting individual welfare, especially among the poor.

The theoretical analysis adopted a Mirrleesian approach to which it added poverty reduction as another objective of the social planner. Its main finding is that negative marginal income tax rates at the bottom of the income distribution are optimal. This amounts to subsidizing earned income for the poorest, inducing an increase in their labor supply and reducing the overall redistribution pressure.

Empirical work used household data from Ghana and Senegal to identify the effect on the poor of restructuring the commodity taxation system.

Responsibility: Development Research Group, Public Services Team—Waly Wane (wwane@worldbank.org).

Reference: PO77208.

Completion date: January 2004.

Reports

Capital Subsidies and the Quality of Growth

This research developed a theoretical framework to analyze the consequences for long-run economic growth of public subsidies and the consequent underinvestment in public goods—education, infrastructure, natural resources, research and development, and the like—that support the profitability of private investment. Simulation results suggest that if governments underinvest in public goods, the profitability of private investment tends to fall as private capital becomes more abundant relative to public goods. This reduces the incentives of the private sector to continue investing and consequently slows growth over the long run.

This common framework was applied to two countries, Brazil and Chile, that have made intensive use of capital subsidies. Using new information sources, these case studies derived accurate estimates of the size, main beneficiaries, and regional and industrial composition of the most important kinds of public subsidies in each country in recent years. In Brazil three kinds of subsidies—credit subsidies to corporations, financial grants, and tax concessions—amount to 20–25 percent of federal government expenditures and are directed mostly to the wealthiest segments of society. In Chile public subsidies are more moderate, but still account for a significant share of government expenditures and benefit mainly the well-off.

An econometric study investigated the impact of subsidies in 10 Latin American countries using new annual data developed by the Food and Agriculture Organization on the allocation of government expenditures between public and private goods in rural areas in
Results show that increasing subsidies as a share of total rural expenditures reduces per capita agricultural income in the rural sector and worsens rural poverty as a consequence of the concomitant reduction of expenditures on mostly pro-poor public goods, such as education, health care, and agricultural extension.

Reviewing a large number of empirical analyses, a study of the development experience of Latin America over the past half century found that public subsidies, even if directed to promoting investments, have created little new incentive for investment—and instead have promoted greater consumption by the wealthy. There are clear indications that slow economic growth, deep social inequities, and environmental degradation in Latin America over the past 50 years are related in part to the allocation of large volumes of public resources to private goods and the consequent underspending on public goods.

The research has influenced the World Bank’s policy dialogue in Brazil and, to a lesser extent, in Chile. The results have been incorporated into Inequality in Latin America: Breaking with History? (David de Ferranti, Guillermo E. Perry, Francisco H. G. Ferreira, and Michael Walton, Washington, D.C.: World Bank, 2004).

Reference: PO80619.
Completion date: June 2004.

Reports

Soto, Raimundo. 2004. “Capital Subsidies and the Quality of Investment in Chile.”

Macroeconomic Volatility and Real Exchange Rate Misalignment

Economic recovery is intrinsically costly, as it requires significant reallocation of resources. This research tests the hypothesis that slow and costly recoveries are the result of impediments to the natural process of resource reallocation, some of which can result from government policy interventions.

The research first develops a dynamic general equilibrium model of heterogeneous plants subject to aggregate and idiosyncratic shocks and rigidities. These rigidities are modeled as subsidies and taxes that change the relative cost of firm creation, expansion, and survival, thus altering the natural rate of factor reallocation. The modeled economy is then submitted to aggregate shocks, and the recovery path of a distorted economy compared with that of a fully flexible one.

Through cross-country empirical analysis, the research finds evidence of a negative relationship between the burden of the regulatory environment and the economy’s ability to recover from shocks. Using average data from the 1990s for a sample of 76 countries, it finds that countries that impose heavier restrictions on product and factor markets suffer from deeper and more prolonged recessions.

Industrial and developing economies show surprisingly similar rates of job reallocation, though output volatility is markedly higher in poor countries. This high volatility suggests the need for greater restructuring. Thus the evidence is consistent with sluggish restructuring in developing countries, perhaps as a result of institutional impediments to resource mobility across production units. Governments are willing to impose these rigidities to reduce the depth of recessions and the associated short-run social and political costs. But lower volatility comes at the cost of stagnation and greater output losses in the long run.

This research reinforces the view that excessive regulation can have adverse effects on a country’s ability to recover from shocks.
Findings were presented in the World Bank; at the National Bureau of Economic Research’s 2004 Inter-American Seminar on Economics, in Santiago, Chile; and at the Ninth Annual Meeting of the Latin American and Caribbean Economic Association, in San José, Costa Rica, in November 2004.

Responsibility: Development Research Group, Growth and Investment Team—Norman V. Loayza (nloayza@worldbank.org). With Andrea Repetto and Raphael Bergoeing, University of Chile; and Megumi Kubota.

Reference: PO83218.
Completion date: December 2004.

Report
Africa Trade Standards

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. 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. The teams drew on existing studies, conducted firm and industry surveys, used results from a World Bank survey on technical barriers to trade, and collected input and information from key private and public sector stakeholders.

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, as when human rights associations launched a boycott of Del Monte’s products in supermarkets in the European Union in 2001, arguing that its operations in Kenya failed to apply adequate worker safety and environmental health standards.
- 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 were 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 were held in 2003 in Midrand, South Africa; Accra, Ghana; Nairobi, Kenya; and Washington, D.C.; and at the European Policy Center in Brussels and the U.K. Department for International Development in London. Seminars were also 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.


**Reference:** PO72424.

**Completion date:** June 2004.

**Report**


**How Do U.S. Multinationals Respond to Strengthened Intellectual Property Rights Abroad?**

The standards required under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) have been a significant point of contention. Many developing countries believe that strengthening intellectual property rights systems will work against their national economic interests, transferring rents to multinational corporate patentholders headquartered in the world’s most advanced countries. Advocates of strong intellectual property rights counter that the reform 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 the gains.

Largely because of methodological difficulties, these competing claims have been insufficiently grounded in empirical research. This study took a new approach to the issue. Using data from a survey of U.S. multinational activity by the U.S. Bureau of Economic Analysis as well as other sources, it analyzed the responses of individual multinational enterprises to a series of reasonably well-documented patent regime changes in 12 developing countries. The analysis also drew on data from the World Intellectual Property Organization on patent filings in the countries that undertook patent reform. Information on changes in intellectual property rights regimes and enforcement of the new laws came from published sources and interviews with multinational managers and with international consultants and lawyers specializing in intellectual property rights.

The study found that, all else equal, the strengthening of intellectual property rights observed in several developing countries in the 1980s and 1990s was strongly associated with an increase in technology transfer from U.S.-based multinationals. 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. Other evidence supports the interpretation that at least part of this increase reflects a real increase in the deployment of new technology to those foreign affiliates. If these results are substantiated by further research, they may help allay some of the concerns of developing countries about implementing the TRIPS Agreement.

Findings have been presented at the Harvard Business School (November 2002 and October 2003); Stanford University (December 2002); the University of Michigan (January 2003); Columbia University (April 2003); Yale University (May 2003); the National Bureau of Economic Research Summer Institute (July 2003); the Academy of International Business Conference in Monterey, California (August 2003); Hitotsubashi University, Japan (October 2003); and Yokohama National University, Japan (November 2003).

**Responsibility:** Development Research Group, Trade Team—Carsten Fink (cfink@worldbank.org). With Lee G.
Most developing countries have been undertaking first-generation trade reforms, mainly easing border restrictions to 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 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 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 2000), in Singapore (September 2000), at the Japan Bank for International Cooperation (March 2002), and at the World Trade Organization (July 2003).

The project 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 provided analytic support for World Bank country economic memorandums for Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua; for a trade facilitation grant to the Conference of Ministers of Agriculture of West and Central Africa; and for operational projects relating to trade facilitation and export competitiveness in Honduras, Mozambique, Peru, and Uganda. It also fed into World Bank courses on trade facilitation in June 2003 and March 2004.

Results from the study are available on the Web at http://www.worldbank.org/trade/standards.

Responsibility: Development Research Group, Trade Team—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.

Reference: PO77455.
Completion date: June 2004.
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 explored 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 aimed to help build the capacity of developing countries in research and policymaking to facilitate trade.

The research quantified the impact of standards on trade and development, focusing on developing countries. The analysis was 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 compared 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 empirically estimated the cost to developing country firms of complying with foreign standards and the effect of standards on export ability.

The project provided advisory services to developing countries through World Bank missions. And it contributed to a policy-based loan in the Arab Republic of Egypt, a public policy technical assistance loan in Panama, and export competitiveness projects in Honduras, Mozambique, Peru, and Uganda.

Results were presented at seminars and conferences for donor and government officials and trade and development economists and practitioners. Presentations included those 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 included presentations in Panama City (June 2000), Nairobi (July 2001), and Tokyo (March 1998).
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 developed a database on standards and trade based on a firm-level survey in 17 countries. Results from the study are available at http://www.worldbank.org/trade/standards.

Responsibility: Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org) and Tsunehiro Otsuki. With Keith Maskus and Xiaoyang Chen, University of Colorado at Boulder.

Reference: PO83360.

Completion date: June 2004.

Reports


Antidumping and Safeguard Actions by Developing Countries

Provisions allowing import restrictions such as safeguard and antidumping actions were included in the General Agreement on Tariffs and Trade (GATT) to help preserve the momentum toward liberalization created by agreed tariff reductions. The principal rationale for these mechanisms is that they provide an escape valve that a government can use to accommodate and at the same time isolate powerful domestic interests that might otherwise set back an entire liberalization program. In recent decades developing countries have significantly reduced the number and intensity of trade restrictions they impose, yet since the Uruguay Round they have increasingly taken safeguard and antidumping actions to restrict imports. This juxtaposition of facts raises an obvious question: Is increasing use of these instruments by developing countries and their continuing use by industrial countries part of a momentum toward liberalization or part of a reversal toward protection?

This project aims to identify the problems that developing countries have attempted to manage with safeguard and antidumping actions and the resources that their policy managers have available to execute their responsibilities. The focus is on learning how policy managers have incorporated these instruments into their systems for managing trade policy in ways that are supportive of a country’s overall liberalization objectives rather than a reversal of them.

The research is examining how use of these instruments has contributed to maintaining a dynamic toward openness to international trade. Where the instruments have caused problems, it is looking at how developing country policy managers have dealt with the problems. It is also investigating where the instruments have been overtly used for protection or for strengthening monopolistic positions in the domestic economy. Of particular interest is to identify where policy managers have found discipline over application.
The research is being carried out by developing country analysts who are working with high-level policy managers in Argentina, Brazil, Chile, Costa Rica, Mexico, and Peru to help them clarify and systematize their experiences. A major objective is to bring policy managers who have documented and systematized their experiences into contact with policy managers in other countries who may be undertaking similar institutional reforms.

To the extent the work has application to multilateral negotiations, the objective is to introduce the reality of policy management in developing countries—the issues policy managers confront and the resource constraints they must accept.

Preliminary results were presented at a workshop for African trade officials in Stellenbosch, South Africa, in October 2004.

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Reference: PO85090.

Completion date: December 2004.

Reports


invest in locations with weaker environmental regulations. On the contrary, the study finds that foreign direct investment in transition economies is more likely in clean industries.

A second study looks at the effect of labor market flexibility on foreign direct investment, an issue neglected by the empirical literature despite anecdotal evidence and theoretical work suggesting that it ought to be important. This study tests empirically whether a host country’s labor market flexibility, in absolute terms or relative to that in the investor’s home country, affects the location decisions of multinationals. The analysis uses firm-level data on new investments undertaken in 1998–2001 in 19 Eastern and Western European countries. The study uses a variety of proxies for labor market regulations—reflecting the flexibility of individual and collective dismissals, the length of the notice period, and the required severance payment—along with controls for business climate characteristics.

The results suggest that greater flexibility (absolute or relative) in the host country’s labor market is associated with larger inflows of foreign direct investment. The size of the effect is economically meaningful. As labor market flexibility in the host country (with the source country and other things kept constant) increases from the level of France (inflexible) to that of the United Kingdom (flexible), investment rises by 12–26 percent, depending on the measure used. Investment in services appears to be more sensitive to labor market regulations than that in manufacturing.

The research findings have been presented at the World Bank International Trade Seminar Series, the Empirical Investigations in International Trade Conference at Purdue University, the International Atlantic Economic Society Conference in Paris, the Yale University School of Management Seminar Series, and the annual meetings of the American Economic Association in San Diego.

Responsibility: Development Research Group, Trade Team—Beata Javorcik (bjavorcik@worldbank.org). With Shang-Jin Wei; Mariana Spatareanu; Reno Dewina; and Yi Wu.
Reference: PO76326.
Completion date: December 2004.

Reports

Estimating Trade Elasticities
Import demand and export supply elasticities are part of the everyday tool kit for trade policy analysis, needed for any exercise estimating the impact of a trade reform on customs, export, and import revenue. These elasticities are also crucial for transforming a nontariff barrier into an ad valorem equivalent of the cost for importers. Some of these barriers (agricultural subsidies, sanitary and phytosanitary standards) have taken on great importance in the Doha agenda, and estimating their costs for developing country exports is essential. But trade economists have lacked a consistent set of up-to-date import demand and export supply elasticities to do so. This research is intended to fill that gap by providing a consistent set of trade elasticities by year for 117 industrial and developing countries and 4,200 products.

The methodology closely follows the GDP function approach to estimating trade elasticities, where imports are treated as inputs into domestic production given exogenous world prices, productivity, and endowments. In a world where a significant share of trade growth is explained by vertical specialization, the treatment of imports as inputs into the GDP function—rather than as final consumption goods, as in most previous literature—is an attractive feature. The main difference with earlier
estimates using the GDP function approach is that import
demand elasticities are estimated at the tariff line level
rather than at the aggregate or industry level.

Results show much heterogeneity in import demand
and export supply elasticities across products and coun-
tries. Elasticities tend to be larger among homogeneous
goods. They are also larger in large and poor countries.
And they are larger when estimated at very disaggregated
levels (tariff line rather than industry level). All these
results have implications for the measurement of the
welfare cost associated with trade barriers.

The data set of trade elasticities was distributed
and discussed in a World Bank course in Washington,
D.C., in November 2004 and will be used in a series of
World Bank Institute courses in developing countries.
The results were used in computing the Overall Trade
Restrictiveness Index and in estimating the effect of
regional trade agreements in African and Latin American
countries.

Results have been presented at workshops and con-
ferences at the World Bank, Brown University, the
Woodrow Wilson Center, the Center for Global Devel-
opment, and the University of West Virginia as well as
at the Latin American and Caribbean Economic Asso-
ciation meetings in San José, Costa Rica.

The data set will be posted on the Web at http://

Responsibility: Development Research Group, Trade Team—
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Looi Kee. With Alessandro Nicita, University of Geneva;
Robert Feenstra, University of California; and Eugenia
Baronecelli, University of Bologna.

Reference: PO82628.
Completion date: January 2005.

Reports
“Estimating Export Supply Elasticities.” World Bank, Develop-
ment Research Group, Washington, D.C.
———. 2004. “Import Demand Elasticities and Trade Distor-
Development Research Group, Washington, D.C.

Accessing International Equity Markets

An important part of the globalization trend has been the
migration of securities market activities abroad, partic-
ularly for emerging market economies. Many firms now
cross-list in global markets, and many stock exchanges
have seen trading and issuance migrate abroad. This
research project is intended to provide a better under-
standing of the reasons that firms list abroad.

The research compares the characteristics of domestic
and international firms to find out whether firms that
cross-list have some common, distinguishable character-
istics relative to firms that list only domestically. It esti-
mates the probability of cross-listing for firms from different
countries and macroeconomic environments and at dif-
frent points in time to identify what firm and country char-
acteristics determine the probability of listing abroad.
Finally, it compares the evolution of firm characteristics
before and after cross-listing to gain insight into the deter-
minants of the decision to go abroad. The analysis is based
on data on firm characteristics from Worldscope and data
on firms’ international activities from Euromoney, the
Bank of New York, and several stock exchanges.

The research finds that firm characteristics (size,
growth, exports, and valuation) are important determi-
nants of access to international equity markets for firms
from industrial countries but less so for firms from devel-
oping countries. Conditional on the country already
being internationalized, firms from less developed coun-
tries use cross-listings to bond to higher legal standards—
a finding suggesting that countries could reduce firms’
incentives to list in foreign markets by improving dis-
losure standards and investor protection. Finally, listing
abroad is associated with increases in sales growth, val-
uation, and return on assets, though these effects dimin-
ish in subsequent years.

The results have raised questions warranting further
research. In particular, the study is now analyzing whether
different elements of a country’s securities laws matter
for access to international markets.

The findings have been widely disseminated, includ-
ing through seminars at the Centre for Studies in
Economics and Finance in Salerno, Italy (October 2003),
the University of Amsterdam (November 2003), and the
The results of the research influenced the World Bank’s Latin American and Caribbean regional study Whither Latin American Capital Markets? (Augusto de la Torre and Sergio Schmukler, eds., Washington, D.C.: World Bank, Latin America and the Caribbean Region, 2004). They have also contributed to an ongoing project on capital market development in East Asia.

**Responsibility:** Pension Investments Department—Daniela Klingebiel (dklingebiel@worldbank.org); Financial Sector Operations and Policy Department—Stijn Claessens; and Development Research Group, Growth and Investment Team—Sergio Schmukler. With Tatiana Brandao and Juan Carlos Gozzi.

**Reference:** PO78496.

**Completion date:** June 2005.

**Report**


**American Depositary Receipt Holdings of U.S.-Based Emerging Market Funds**

This research project investigates the factors determining portfolio choices of foreign investors in emerging market economies. In particular, it studies the effect of firm and country characteristics, including corporate governance and investor protection, on the decision of overseas investors to invest in firms and on their decision to invest in local or American depositary receipt (ADR) shares.

The project merged data from Morningstar, Morgan Stanley, and Worldscope to create a database containing information on firm characteristics, governance, country characteristics, and the percentage of shares held by overseas investors. Through econometric analysis, it then used these data to study the determinants of foreign holdings.

The research has found that investment is higher in open emerging market economies with stronger accounting standards, shareholder rights, and legal frameworks—and in firms that adopt discretionary policies of better corporate governance, such as greater accounting transparency. ADRs are the preferred holdings if the issuer’s local market is poorly developed, has low liquidity, and has high transaction costs and if the firm is small and has limited following among analysts. Results suggest that ADR listings do not adversely affect local markets if the investment climate is good, such as in East Asia. These findings highlight the importance of good governance and investor protection in attracting foreign capital.

The research has provided input into work by the World Bank’s Corporate Governance Forum and into corporate governance reports (Reports on the Observance of Standards and Codes, or ROSC).

Findings have been disseminated through presentations within the World Bank; at meetings of the Financial Management Association in New Orleans in October 2004; at the Georgia Tech–Fortis Conference on International Finance; and at seminars at American University, Cambridge University, Emory University, the Federal Reserve Board, Georgetown University, the International Monetary Fund, Lancaster University, London Business School, Pennsylvania State University, the University of Alabama, the University of Florida, the University of Texas at Austin, and Yale University.

**Responsibility:** Development Research Group, Finance Team—Leora Klapper (lklapper@worldbank.org). With
Accession to the World Trade Organization (WTO) could have significant economic effects for the Russian Federation. To help Russia recognize where reform and WTO commitments can be useful to its growth, development, and poverty reduction, this study estimates potential effects of WTO accession on the Russian economy.

The analysis uses computable general equilibrium models built on household expenditure surveys, input-output tables, regional trade flow matrices, and estimates of ad valorem equivalents of nontariff barriers to foreign direct investment. It assumes that WTO accession encompasses improved market access and reductions in tariffs and barriers against multinational service providers in Russia. The model incorporates productivity effects in both goods and services markets endogenously, through a Dixit-Stiglitz framework. The ad valorem equivalents of barriers to foreign direct investment have been estimated on the basis of detailed questionnaires completed by Russian research institutes.

Estimates suggest that Russia would gain about 7.2 percent of the value of Russian consumption in the medium run from WTO accession and up to 24 percent in the long run. The largest gains would come from reducing barriers against multinational service providers. Piecemeal and systematic sensitivity analysis shows that the results are robust.

An analysis of household and poverty effects incorporates all 55,000 households from the Russian Household Budget Survey as “real” households in the model, using a new algorithm developed to solve general equilibrium models with a large number of agents. Results show that in the medium term virtually all households would receive income gains from WTO accession. In the short term, however, many households might lose because of the costs of transition. The estimates are decisively affected by the lowering of barriers against foreign direct investment in business services and endogenous productivity effects in business goods and services.

Findings will be disseminated in Russia in part through participation in forums organized by the Ministry of Economic Development and Trade and the International Labour Organization to discuss the modeling results on the effect of WTO accession. Summaries have been disseminated through a World Bank Institute course on trade policy and WTO accession for development in Russia and the Commonwealth of Independent States, a “training of trainers” course delivered in March–April 2005 in Moscow.

A Russian-English Web site has been developed to disseminate this and related work (http://www.worldbank.org/trade/russia-wto).

Reports


Determinants of Trade Policy in Developing Countries

Understanding the economic and political determinants of trade barriers is important for evaluating the impact that removing these barriers would have on trade flows or for evaluating the costs and benefits of trade barriers. This knowledge is also crucial for developing and designing trade policy reform packages: those that ignore the underlying determinants of trade policy run the risk of being economically inappropriate and infeasible or simply politically unacceptable.

This research project evaluates the relative significance of a variety of factors underlying trade protection in developing countries. The analysis first developed a broad theoretical framework allowing the derivation of predictions relating trade policy to underlying determinants. Then it estimated these relationships to arrive at quantitative estimates of parameters describing the relative magnitude of a variety of factors affecting trade policy in more than 50 developing countries. Finally, to explain cross-country variations in the structure of trade protection, the analysis looked for associations between the factors determining trade policy and a variety of economic and institutional variables in these countries.

Findings thus far show that strengthening counterlobbying by users of intermediate goods and factors is an effective way of promoting trade liberalization in developing countries.

The research has been disseminated through presentations in the World Bank.

Responsibility: Development Research Group, Trade Team—Marcelo Olarreaga (molarreaga@worldbank.org), Hiau Looi Kee, and Alessandro Nicita. With Kishore Gawande, Texas A&M University; Pravin Krishna, Johns Hopkins University; Olivier Cadot, University of Lausanne; and Jaime de Melo, University of Geneva.

Reference: PO87859.
Completion date: July 2005.

Reports

The Political Economy of Trade Policy

This research project is aimed at identifying the winners and losers associated with different trade policies or reforms, including agricultural trade liberalization in the World Trade Organization (WTO) and tariff preferences granted by the United States to Latin American and Sub-Saharan African countries.

The research uses a range of methodologies, building on partial equilibrium global trade models to identify winners and losers and the Grossman-Helpman lobbying trade model to incorporate the role of political economy factors.

Findings relating to agricultural trade policy suggest that agricultural exporters should focus their negotiating capital in the WTO on market access, not subsidies. For developing countries the greatest barrier to agricultural exports is border protection, addressed in the market access negotiations, while the gains from elimination of domestic agricultural subsidies in rich countries are likely to be small. Moreover, liberalization of agricultural trade may actually hurt many developing and least developed countries (such as Mauritania) because it will lead to a deterioration in their terms of trade.

Results relating to U.S. tariff preferences for poor countries suggest that only a fraction of the gains are captured by developing country exporters, while a sometimes significant share is captured by rich country importers. Indeed, African exporters of apparel capture on average only 30 percent of the tariff rent associated with the tariff preferences under the United States’ African Growth and Opportunity Act. Exporters tend to capture a larger share in the presence of greater competition among importers. Similarly, while lobbying for tariff preferences in the United States can have important returns for Latin
American exporters, it has larger returns for U.S. importers.


**Responsibility:** Development Research Group, Trade Team—Marcelo Olarreaga (molarreaga@worldbank.org), Bernard Hoekman, Hiau Looi Kee, Francis Ng, and Çağlar Özden. With Peri Silva, University of Illinois.

**Reference:** PO65308.

**Completion date:** July 2005.

**Reports**


**Does Regionalism Help or Hinder Multilateralism?**

This research project examines the implications of continuing regional trade integration for multilateral trade liberalization. The research investigates how discriminatory liberalization has affected countries’ attitudes toward multilateral liberalization. It explores differences between customs unions and free trade areas, the efficiency of current World Trade Organization policies relating to 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 Mercosur, the Association of Southeast Asian Nations (ASEAN), and the SAARC (South Asian Association for Regional Cooperation) Preferential Trading Arrangement (SAPTA) indicate that regionalism has not been a stumbling block to multilateral trade liberalization. Indeed, there is weak evidence that regionalism has been a building block. The study is testing alternative specifications to ensure that the results are robust.

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

The project will produce 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 Society (SBE) Congress, and the European Commission’s Directorates General for Development and for External Affairs, and 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 Team—Caroline Louise Freund (cfreund@worldbank.org). With
Geography and Trade Growth

This research project has two purposes: First, to develop and apply 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 groups and industries, so as to develop a better understanding of the changing role of geography in globalization.

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 produce a policy report explaining the results in nontechnical terms and detailing their implications for feasible gains from trade liberalization in different locations.

Findings have been presented at the World Bank, the Federal Reserve Board, the University of Chile, 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 the effects of unilateral, regional, and multilateral liberalization, center on institutions dealing with these matters: the European Union, the World Trade Organization, the Regional Integration Network in Latin America, and members of the Economic Community of West African States (ECOWAS).

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Reference: PO82424.
Completion date: September 2005.

Reports
Freund, Caroline Louise, and David Hummels. “Why Hasn’t Distance Died?” World Bank, Development Research Group, Washington, D.C.

Implementation of Obligations under World Trade Organization Agreements

In recent international trade negotiations governments have increasingly committed themselves to making substantial changes in domestic regulations. By contrast with liberalization of market access, the traditional focus of trade talks, these obligations require developing countries to make significant investments in administrative capacity and market-supporting institutions in order to receive any economic benefits from implementing the reforms. And even if reforms ultimately yield social benefits that exceed the administrative costs, it is not obvious that implementing trade-related regulatory reforms is the best use of a developing country’s scarce resources.

This research project is assessing the costs and benefits of implementing domestic regulatory reforms mandated by international trade agreements. Through
a series of country case studies it is documenting the scope and sequence of institutional reforms required for World Trade Organization (WTO) agreements to yield economic benefits. The country studies focus on reforms in customs, technical standards, intellectual property rights protection, sanitary and phytosanitary standards, and regulations affecting trade in services (such as telecommunications and financial services).

Local researchers are carrying out the case studies—in Argentina, Botswana, Cambodia, Costa Rica, Kenya, Peru, Tanzania, and Uganda—by gathering information from public sector budgets, international trade data, and donor project documents and through interviews with public and private sector officials.

The research may lead to a shift in the focus of World Bank programs and policy discussions in client countries away from legal compliance with WTO agreements for its own sake and toward implementation of obligations in ways that advance economic reform programs.

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**Reference:** PO82440.

**Completion date:** December 2005.

**Trade Research Relating to the Doha Development Round**

The failure of the World Trade Organization’s (WTO) ministerial meeting in Cancún and the emergence of a nonspecific framework agreement in August 2004 made clear the need for analytic studies to help developing country policymakers understand, and make better choices about, the issues on the negotiating table. This research initiative is intended to help fill that gap and to provide developing countries with negotiation strategies consistent with their development objectives.

The initiative has launched a series of related theoretical and empirical studies, undertaken by World Bank staff in close collaboration with academics in developing and industrial countries. Theoretical studies have helped in understanding what is at stake, while empirical studies have helped in understanding how much is at stake.

The research has 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 the WTO’s special and differential treatment is crucial. The same is true for market access.

There is no area in which developing countries would 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 reduces border barriers to trade in agriculture (not necessarily subsidies) would probably benefit developing countries as a group (though Mauritania, for example, would lose given its import and export bundle). In services, binding commitments in mode IV (allowing people to move temporarily into a country for the purpose of providing services) would probably benefit many developing countries (such as India).

In fiscal 2004 a major research effort investigated the poverty effects of a potential Doha Development Agenda. The research drew on an intensive analysis of the framework agreement, paying particularly close attention to potential reforms in agricultural trade. It built scenarios using newly available tariff line data and established the implications of these scenarios for world markets using a global modeling framework. These world trade effects formed the basis for 13 country case studies of the national poverty effects of the scenarios, focusing on Bangladesh, Brazil (two studies), Cameroon, China (two studies), Indonesia, Mexico, Mozambique, the Philippines, the Russian Federation, Vietnam, and Zambia. Key findings include these:

- The liberalization targets under the Doha Development Agenda must be ambitious if the round is to have a measurable effect on world markets and thus poverty.
- Assuming an ambitious Doha Development Agenda—including a tiered formula for industrial coun-
try agriculture with marginal tariff cuts of 45, 70, and 75 percent—the near-term poverty effects would be mixed: poverty would rise by a small amount in some countries and decline more substantially in others. On balance, however, poverty would fall, and the decline would be more pronounced in the longer run.

- Allowing minimal tariff cuts for just a small percentage of special and sensitive products would reverse the results, with global poverty rising rather than falling.
- With deeper cuts in developing country tariffs, the Doha Development Agenda would have a greater effect on poverty.
- Key determinants of the national poverty effects include incomplete transmission of world prices to rural households, barriers to the movement of workers between sectors, and the incidence of national tax instruments used to replace lost tariff revenue.
- Reducing poverty significantly in the near term would require complementary domestic reforms enabling households to take advantage of new market opportunities made available through the Doha Development Agenda.
- Sustaining the poverty reductions over the long term would require stimulating economic growth. Here the effect of the Doha Development Agenda (and trade policy more generally) on productivity is critical. Trade reforms, to fully realize their growth potential, need to be far-reaching, addressing barriers to services trade and investment in addition to merchandise tariffs.

The research initiative 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 have been the 2003, 2004, and 2005 editions of the World Bank’s *Global Economic Prospects* (Washington, D.C., 2002–04). These have been accompanied by a series of conferences, seminar presentations, and high-level meetings with policymakers in developing and industrial countries. The research initiative has 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.

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**Reference:** PO89139.

**Completion date:** December 2005.

**Reports**


Agricultural Trade Reform under the Doha Development Agenda

Agriculture emerged as the key issue in the World Trade Organization (WTO) negotiations following the Cancún ministerial meeting, particularly in the negotiations leading up to the framework agreement reached on August 1, 2004. This framework changed the landscape by introducing such key concepts as the tiered formula and formalizing agreement on the inclusion of sensitive and special products. Before the Hong Kong ministerial meeting at the end of 2005 negotiators must convert this framework into detailed modalities for reform.

The move to modalities involves substantial challenges given the generality of major elements of the framework and the complexity of the underlying situation. Only with detailed data and analysis will WTO members, particularly developing countries, be able to move forward with any confidence. This research project is aimed at providing some of the information needed to allow progress in agricultural trade negotiations while ensuring that the Doha Agenda remains a true development round.

The study draws heavily on the MacMaps data set developed by the Centre d’Etudes Prospectives et d’Informations Internationales (CEPII) and the International Trade Centre and the database on tariff bindings developed by CEPII—databases that include the all-important specific tariffs in agriculture and the impacts of tariff preferences. The study conducts tariff analyses using data at a fine level of disaggregation and only then aggregates up to changes that can be input into quantitative models.

Results show large gaps between bound and applied rates in both industrial and developing countries. These gaps mean that much more liberalization of bound rates will be required to achieve meaningful liberalization of applied rates and thus to have a development impact. The treatment of sensitive products in the negotiations could easily eliminate the liberalizing effects. Preventing that outcome will require tighter disciplines.

The research was presented at a workshop in The Hague on December 1–2, 2004. Developing country policymakers have expressed keen interest in using the results, and dissemination activities are planned in such countries as Argentina, Brazil, China, India, Indonesia, and South Africa.

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Reference: PO83210.
Completion date: March 2007.

Report

Services Trade Policy

This research project is intended to contribute to the formulation of services trade policy and to the effective participation of developing countries in the services negotiations at the World Trade Organization (WTO). It supplements sector-specific work at the World Bank on finance, transport, telecommunications, and other services sectors.
Addressing a range of questions, the research has led to varied findings. A study on India found that the more liberalized services sectors had faster growth in both output and employment than other sectors. A study on telecommunications reform in developing countries showed that both the combination and the sequence of policy reforms matter: a comprehensive reform program, involving privatization and competition and the support of an independent regulator, produced the largest gains, and performance was better if competition was introduced at the same time as (or before) privatization. And a study on temporary migration found that a negotiating focus on intracorporate and contractual labor movement may help galvanize the services negotiations at the WTO. These findings help build the case for policy reform in services. These findings help build the case for policy reform in services (including trade liberalization), demonstrate the importance of appropriate combinations and sequences of policy change, and aid in the design of better international agreements on services.

The analytic approaches and data sources have been determined by the policy research question and thus have ranged from theoretical analysis motivated by stylized facts, to econometric analysis using panel data, to analysis of WTO rules and institutions using data on access commitments by countries.

The research is being undertaken in collaboration with other institutions: international organizations such as the WTO, the Andean Pact, the International Telecommunication Union, the Organization of American States, the Organisation for Economic Co-operation and Development, the United Nations Conference on Trade and Development, and the Economic Commission for Latin America and the Caribbean—and research networks and institutions such as the Latin American Trade Network, the African Economic Research Consortium, the Southern Africa Trade Research Network, the National Council of Applied Economic Research (India), and the Economic Research Forum for the Arab Countries, Iran, and Turkey.

Much of the research was used in the World Bank Institute course on Services Trade and International Negotiations, first delivered to 65 participants (most from developing countries) in Washington, D.C., in April 2004. The course was also offered in Bogotá in May 2004 and Geneva in November 2004, and other offerings are scheduled.

The project has provided extensive operational support. Results of analysis of India’s growing stake in more open services markets at home and abroad were taken into account in draft proposals for negotiations of the General Agreement on Trade in Services (GATS). The research has also contributed to work by the Brazilian government to formulate its position in negotiations on services under the GATS, with the European Union, and within Mercosur and the Free Trade Area of the Americas.

Jointly with the World Bank Institute, the project provided support to a research project of the Association of Southeast Asian Nations (ASEAN) Economic Forum that focuses on ASEAN’s services trade and the role of international trade negotiations.

The project also involved collaboration with the International Organization for Migration and the Organisation for Economic Co-operation and Development to organize a conference in Geneva in November 2003 that brought together trade and migration officials to discuss the relationship between temporary migration and trade in services.

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Reference: PO83482.

Completion date: March 2007.

Reports


Analytic Tools for Trade Policy

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 international organizations such as the United Nations Conference on Trade and Development (UNCTAD). 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 large numbers of users of the software in developing countries.

Clearly, there is enormous demand for this type of analytic tool in developing countries. While industrial countries have the analytic capacity needed to undertake their own analysis, many developing countries do not.

The work has been disseminated within the World Bank through training courses and seminar and workshop presentations.

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Reference: PO83214.

Completion date: Ongoing.

International Capital Flows

This research project consists of studies on several sets of issues relating to international capital flows. Most of the studies are empirical analyses based on cross-country or cross-firm panel regressions. Some also develop theoretical models. And analysis of specific crisis episodes uses household survey data to gain a better understanding of the distributional effects of financial crises.

Effects of financial globalization. One line of research studies the effects of financial globalization on developing countries, with particular attention to the relationship between globalization, financial development, and crises. This work investigates through which channels the integration of countries with the international financial system affects the domestic financial environment, how it expands financing opportunities, and through which mechanisms it affects the probability of crises. Many of the studies include analysis of the differential effects of globalization across sectors, firms, and households within countries.

The research finds that accessing international financial markets enables firms to lengthen their debt maturities, finance their growth opportunities, and expand.
Financial integration seems to have different effects on the firms able to integrate with world markets and obtain financing globally than on those that rely on domestic financing only.

Studies also find that capital market reforms and better institutional and macroeconomic fundamentals not only foster domestic stock market development but also accelerate the internationalization process. This pro-internationalization bias is found to be particularly strong in Latin America.

Research on bond markets shows that countries with less flexible exchange rate regimes have a larger share of debt denominated in foreign currency. The high degree of dollarization, short-term maturity structure, and use of foreign jurisdictions for financial contracting—features characterizing many developing countries—are found to be endogenous ways of coping with the systemic risks prevalent in these economies.

Analysis of the distributional effects of financial crises finds evidence of significant transfers from nonparticipants in the financial sector to participants, as well as transfers within the financial sector that tend to favor large depositors and borrowers.

Foreign direct investment. Another line of research studies foreign direct investment in emerging market economies. This investment boomed in the 1990s, becoming the dominant force in capital inflows in such regions as Latin America. The boom largely reflected the rapidly growing volume of cross-border mergers and acquisitions, including privatization of government-owned utilities in many developing countries. The research analyzes the foreign direct investment boom particularly from a macroeconomic perspective, exploring key questions relating to the rise in investment flows and future prospects.

The analysis finds that both domestic factors (trade openness, financial depth, macroeconomic stability) and global factors (world interest rates, world growth, credit spreads) are significant drivers of foreign direct investment. The importance of global factors has increased in recent years as a result of the growing integration of global capital markets. The research also finds that increases in cross-border mergers and acquisitions (purchases of existing assets) are usually followed by higher greenfield foreign direct investment (investment in new assets), suggesting that the foreign direct investment boom will continue even after the privatization process has ended. The effects of the two kinds of foreign direct investment on investment and growth are found to be roughly similar: both tend to lead domestic investment and follow growth.

Domestic and foreign asset holdings. A third line of research focuses on understanding cross-country differences in holdings of domestic and foreign assets. Key questions addressed include, Why are foreign asset positions so small? Why are they so stable? And what determines the extent to which they take the form of debt rather than equity? This work has resulted in the creation of a data set on country portfolios and a paper providing a theoretical account of stylized facts.

The research was widely disseminated in January 2004–January 2005, through papers and journal articles and through presentations at seminars and conferences held in Argentina, Chile, Colombia, Costa Rica, India, Mexico, Peru, Spain, Switzerland, the United Kingdom, and the United States, including at the International Monetary Fund, Stanford University, and the World Bank.

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Reference: PO53639.
Completion date: Ongoing.

Reports


Contractual Savings

This research investigated the effect of the accumulation of pension fund assets on national saving using regression analysis applied to unbalanced panel data from 43 industrial and developing countries. The main finding is that the accumulation of pension fund assets might increase national saving when these funds are the result of a mandatory pension program. By contrast, national saving might be unaffected when the accumulation of pension fund assets is the result of a public program implemented to foster voluntary pension saving.


Reference: PO86093.
Completion date: September 2004.

Credit Information, Credit Risk Measurement, and Solvency Ratios in Emerging Market Economies

This research project investigated the features of credit risk in emerging market economies by exploring the factors most likely to determine the probability of insolvency for individual bank borrowers and the risk of credit losses in bank loan portfolios. The research centered on three country cases: Argentina, Brazil, and Mexico.

Empirical analysis to define the probability of insolvency for individual borrowers used credit scoring models and data from credit registries. Results show that not just negative but also positive information on individual borrowers helps to predict their solvency. Thus the availability of positive information not only may help broaden access to bank credit but also may reduce its perceived risk. This finding suggests that policies aimed at improving credit access and those addressing bank solvency can effectively complement each other.

To measure the risk of credit losses in loan portfolios, the research used Monte Carlo simulations. This work produced evidence that the calibration underlying the new Basel II capital requirements may not provide the same level of protection in emerging market economies as it is expected to provide in industrial countries. This suggests that bank supervisors in emerging market economies should view Basel II prescriptions with caution. These cross-country findings also offer a reference point for calibrating capital requirements in non-G10 countries, contributing to the debate on Basel II and its impact in emerging market economies.

The simple method developed for measuring bank capital requirements has been applied to new samples by two of the case study countries, Argentina and Brazil, and has attracted interest among other countries—including Chile, China, Colombia, and Peru—and from the European Central Bank.

Results have been presented at a conference jointly organized with the Financial Stability Institute in Basel in November 2002; a risk management workshop for bank supervisors held in Cartagena, Colombia, in February 2004; a workshop for bankers and bank supervisors in Beijing in September 2004; a conference on banking regulation and supervision for U.S. and European financial regulators and academics in Madrid in November 2004; a
workshop for Latin American economists in San José, Costa Rica, in November 2004; and a workshop for European Central Bank staff in Frankfurt in February 2005.

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Reference: PO80369.

Completion date: December 2004.

Reports


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 exploit their entrepreneurial energies, it may also yield less stable banks prone to devastating crises.

This research project explored 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 was both theoretical and empirical, with the empirical work using cross-country macroeconomic, firm-level, and bank-level data. The project included regional studies—on Africa, Europe, and Latin America—exploring the impact of bank concentration. The aim was to better understand the elements that contribute to the level of bank competition, to benchmark bank competition and concentration around the world, and to investigate the tradeoffs involved in decisions on regulatory interventions to alter market structure.

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 financial stability, and good for firms’ access to finance. Another important finding is that concentration—often used, for lack of a better measure, as an indicator of bank competition—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 in 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. Papers from the conference appeared in a special issue of the *Journal of Money, Credit, and Banking* in June 2004 and are available on the Web, along with a database on bank concentration around the world, at http://www.worldbank.org/research/interest/conf/bank_concentration.htm.

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**Reference:** PO76512.

**Completion date:** June 2005.

**Reports**


**Current Issues in Financial Stability**

This research project develops earlier work in key areas of financial sector policy related to stability. It focuses on three issues: the potential for market discipline to reduce banking risks in low-income countries, the role of endogenous deposit dollarization in influencing financial development and banking risk, and the merits of alternative strategies for recapitalizing insolvent banking systems.

In addressing each of these issues the research provides a careful statement of the conceptual issues involved. Work on the first two issues combines this with cross-country regression analysis and a quantified description of the main features of the factual situation in a large number of countries. Empirical investigation of the third issue is based on five country case studies (Argentina, Bulgaria, Cameroon, Mexico, and Thailand).
Among the most striking findings are these:

- Preconditions for reliance on market discipline (rather than official intervention) in keeping banking safe and sound may be present to a greater degree in low-income countries than elsewhere.

- That deposit dollarization may pose problems for stability—without helping financial development—does not argue for reintroducing controls against it, which would be largely ineffective or counterproductive.

Results of the research should heighten awareness of the potential of specific policy tools for dealing with banking stability and have already formed the basis for World Bank policy advice.

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**Reference:** PO86233.

**Completion date:** June 2005.

**Reports**


**How Banks Go Abroad: Branches or Subsidiaries?**

How foreign banks enter markets matters for bankers and their customers and for domestic policymakers, for two main reasons: The mode of entry affects the competitive structure of local banking systems. And the regulatory challenges posed by fully capitalized foreign-owned subsidiaries differ from those associated with foreign branches.

This research seeks to shed light on how banks choose the organizational form under which to enter foreign markets. For that purpose it has built a large data set on the foreign activities and general characteristics of the 100 largest international banks and on the legal, regulatory, and market structures of host countries in Latin America and Eastern Europe. Using these data, the research studies the determinants of the decision by international banks to operate as a branch or subsidiary, focusing on taxation, risk considerations, expansion strategies pursued by the parent bank, regulations in the home and host countries, and the parent bank’s history of internationalization and preferences for an organizational form. Because a bank’s choice of a subsidiary or branch form can be observed only after the bank has made a decision to enter, the research estimates a Heckman probit model, where it models the choice of entry as well as the choice of organizational form.

The findings confirm some expectations, but also pose new questions and challenge some established views:

- The pattern of foreign entry in the sample varies both across and within markets.

- Regulation and institutional factors appear to be paramount. Branches are less likely to be found in countries that limit their activities and where regulation makes it difficult to establish new banks. Branches are more common in host countries with high corporate taxes, possibly because this structure makes it easier to shift profits across countries. They are also more likely to be found in relatively poor countries, perhaps because of the smaller room for large operations.

- Bank characteristics are also important. Branches are associated with smaller operations and are less likely to be chosen when the bank’s local activities have a large number of employees. And branches are less prevalent the longer the bank has been present in the host country.

- The riskiness of the host country does not seem to matter. This may suggest that parent banks do not perceive branches to be riskier than subsidiaries because they find ways to limit their exposures if necessary.
Preliminary findings were presented in an overview course on financial sector issues held at the World Bank in November 2004. Results also were presented at the joint World Bank–Journal of Banking and Finance conference on Globalization and Financial Services in Emerging Economies, held at the World Bank on June 20–21, 2005.

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Reference: PO75950.

Completion date: June 2005.

Report

What Determines the Mix of Foreign Bank Claims, and Does It Matter?

This research addresses two main questions about the way in which international banks extend claims overseas, particularly to developing countries: First, what determines the composition of foreign bank claims across countries? That is, why is it that in some host countries most or all foreign claims are extended cross-border, while in others a large share is extended by local affiliates of foreign banks? Second, how does the composition of foreign bank claims affect the overall volatility of foreign bank financing?

To address these questions, the study assembled a database on the foreign claims, cross-border and local, extended by Italian, Spanish, and U.S. banks to about 90 countries around the world in 1997–2002. Italian, Spanish, and U.S. banks are dominant players in the international banking market, jointly accounting for around 30 percent of all outstanding foreign claims against the countries in the sample. The data were provided by the Bank of Italy, the Bank of Spain, and the Bank for International Settlements.

To analyze the mix of cross-border and local claims, the study adapted empirical models used in the literature on trade and multinational firms, using regression analysis to test their validity.

Findings show that the share of local claims across countries is determined primarily by the startup and regulatory costs of operating local affiliates. Informational costs of international banking also influence the composition of foreign bank financing. The mix of international bank claims has implications for financial stability, since the volatility of these claims is lower in countries with a larger share of local claims.

The research suggests that one way to reduce the volatility of foreign bank financing is therefore to increase reliance on claims channeled through the local affiliates of foreign banks—and one way to do this is to lower entry costs and limit government intervention in the financial sector.

In November 2004 preliminary findings were presented in a World Bank overview course on financial sector issues and at the conference on Latin American Financial Systems and the Challenge of Economic Growth, held at the Stanford Center for International Development. The research also was presented at the joint World Bank–Journal of Banking and Finance conference on Globalization and Financial Services in Emerging Economies, held at the World Bank on June 20–21, 2005.

Responsibility: Latin America and the Caribbean Region, Finance Cluster—Susana Sanchez (ssanchez@worldbank.org); and Development Research Group, Finance Team—Maria Soledad Martinez Peria. With Maria del Pilar Casal; Eugenio Cerutti, Johns Hopkins University; and Alicia Garcia-Herrero, Bank of Spain.

Reference: PO84861.

Completion date: June 2005.

Report

Martinez Peria, Maria Soledad, and Alicia Garcia-Herrero. “What Determines the Mix of Foreign Bank Claims, and Does It Matter?”
Small and Medium-Size Enterprises’ Access to Finance

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 research project is intended 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 in different country settings to make the existing lending to small and medium-size enterprises more effective.

The research is based largely on empirical work, which uses 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 also includes country case studies.

The project organized the Conference on Small and Medium-Size Enterprises’ Access to Finance, held October 14–15, 2004, at the World Bank. Participants included World Bank and International Monetary Fund staff, policymakers from industrial and developing countries, and academics. The conference papers are available on the Web at http://www.worldbank.org/research/projects/sme_conference.htm and will be published in a special issue of the Journal of Banking and Finance. The project also held two online discussion sessions that generated much interest.

Responsibility: Development Research Group, Finance Team—Asli Demirgüç-Kunt (ademirguckunt@worldbank.org), Thorsten Beck, Robert Cull, Leora Klapper, and Inessa Love; Investment Climate Unit, Monitoring, Analysis, and Policy—Simeon Djankov; and Financial Sector Operations and Policy Department—Luc Laeven and Margaret Miller. With Ross Levine, University of Minnesota; Vojislav Maksimovic, University of Maryland; Allen N. Berger, Federal Reserve System; Greg Udell, Indiana University; Naomi Lamoreaux and J. L. Rosenthal, University of California at Los Angeles; and Raghuram Rajan, International Monetary Fund.

Reference: PO76963.
Completion date: June 2006.

Reports


Credit bureaus and other formal institutional mechanisms for exchanging information on borrowers are nearly absent in most countries where microfinance institutions are most active. Growing competition among microfinance institutions has raised concerns about whether their private incentives to share information will provide the sort of disciplinary check on borrowers that formal mechanisms do—an issue that has consequences for the cost of credit. Moreover, microfinance institutions are largely nonprofit entities that face substantial and diverse pressures from financiers: to attain solvency, to extend outreach (that is, reach poorer borrowers by keeping interest rates low), and to maximize throughput (lending volume). Their objective functions therefore differ qualitatively from those of profit-maximizing banks, which have received most attention in the literature.

This study examines, theoretically and empirically, the private incentives of competing microfinance institutions to share information. The theoretical work looks at these incentives under two alternative formulations: one where the microfinance institution seeks to maximize the welfare of its borrowers and another where it seeks to maximize throughput. Under each regime the study first examines the optimal loan contract when the microfinance institution is the only lender and then looks at the consequences of competition for the type of information shared, the efficiency of the loan contract, and the borrower’s repayment incentives. These results are contrasted with the more familiar case of a profit-maximizing bank. The study shows that the two regimes imply very different outcomes both in the extent and type of information shared and in the efficiency of the loan contract.

The empirical work uses new data collected in Bangladesh through a survey designed to investigate mechanisms for sharing information among geographically proximate microfinance institutions. The sample is based on a complete census of all microfinance institutions ever active in 120 villages across the country, with the villages selected randomly at the last stage from a national stratified sample.


Reference: PO74341.

Completion date: December 2006.

Report

Microeconomic Indicators of Financial Development

Earlier research on the effects of financial sector development has developed mostly macroeconomic indicators—such as the ratio of private credit or stock market capitalization to GDP—and has shown that these
indicators help predict economic growth at the country and firm level. But financial sector development, if it results in financial services reaching poor households and small and medium-size enterprises, is also crucial for promoting empowerment. The World Bank lacks a database making it possible to benchmark the reach of the financial sector for different countries. This research project will expand the existing set of indicators to include more microeconomic indicators that better capture access to finance, defined as access to credit, savings instruments, and such services as remittances and wire transfers.

The data collection effort has two main parts. First, the project is collecting country-level indicators of access by surveying banking authorities and by researching publicly available sources. It has developed a survey and circulated it to bank regulatory agencies in around 90 countries, asking for information on the number of bank branches, number of automated teller machines (ATMs), number of loans and deposits, size distribution of loans and deposits, and the like. Second, the project is surveying the five largest banks in 60 countries to inquire about the type and cost of services they offer and how they decide to whom to extend services and where to establish operations.

Once the data are assembled the research will define different indicators of access in terms of credit, savings, and payments. Using both descriptive statistics and regression analysis, the study will then investigate the relationship between these indicators and financial structure, conventional measures of financial development, and growth, poverty reduction, and development. The analysis will also examine how access measures vary with institutional measures (laws, regulations, legal effectiveness, corruption, and the like).

The indicators of financial access produced by the research will be useful in benchmarking countries and evaluating the success of financial sector programs. The data set will make it possible to study access to financial markets among small businesses and poor households systematically for the first time, with important policy implications for program design in these areas.

Responsibility: Development Research Group, Finance Team—Maria Soledad Martinez Peria (mmartinezperia@worldbank.org), Asli Demirgüç-Kunt, and Thorsten Beck.

Reference: PO82012.

Completion date: June 2007.
Export Market Participation and Investment in Knowledge as Determinants of Firm Productivity in East Asia

This research uses microeconomic panel data for manufacturing firms in several East Asian economies to investigate determinants of firms’ productivity.

A first analysis uses panel data from the Republic of Korea and Taiwan (China) for 1983–96 to examine how a firm’s participation in the export market and its investments in research and development (R&D), worker training, or both alter its future productivity trajectory. Controlling for the selection bias introduced by endogenous firm exit, the analysis finds evidence supporting the view that efforts by firms to absorb technical change through R&D investments interact with their export experience to enhance their future productivity trajectory. In Korea firms that both export and invest in R&D have significantly higher future productivity than firms that only export or only invest in R&D, particularly among high-productivity firms. The findings suggest that participation in export markets is more than just self-selection by more efficient firms. The study finds evidence consistent with learning from exporting once it takes into account the heterogeneity of firms’ in-house capabilities to assimilate new technology through R&D expenditures as well as their current productivity level.

A second analysis investigates the relationship between physical and technological proximity of manufacturing firms and spillovers from investments in knowledge, using panel data from the Census of Manufacturers in Indonesia (1990–95), Korea (1983–88), and Taiwan (China) (1986–96). Results suggest that both physical and technological proximity are economically and statistically significant in all three economies: having more neighbors in the same location and industry has a positive and significant effect on a firm’s expected future total factor productivity. For any given location and industry, firms in the top half of the productivity distribution are significant sources of knowledge spillovers, while those in the bottom half are not. In addition, more productive firms are more likely to continue production, while younger firms are more likely to exit.

Responsibility: Investment Climate Unit, Foreign Investment 1—Geeta Batra (gbatra@worldbank.org). With Bee Yan Aw, Pennsylvania State University; and Mark J. Roberts, Pennsylvania State University and National Bureau of Economic Research.
Reference: PO82376.
Completion date: November 2004.

Reports
———. 2004. “Productivity Spillovers from Physical Proximity in the Manufacturing Industries of Taiwan, South Korea, and Indonesia.” World Bank, Investment Climate Unit, Washington, D.C.

Business Regulation and Its Effects on Macroeconomic Performance

Regulation, purportedly enacted to serve specific social purposes, in reality follows a more complex political economy process, one that mixes legitimate social goals with the objectives of particular interest groups. Whatever its objectives, regulation can have potentially significant macroeconomic consequences by helping or hampering the dynamics of economic restructuring and resource reallocation that underlie the growth process. This research project provides an empirical analysis of the macroeconomic impact of regulation.

The research first characterizes the stylized facts on regulation across the world, using a set of newly constructed, comprehensive indicators of business regulation
in a large number of countries in the 1990s. These indicators, based on a range of data sources, cover firm entry, firm exit, labor markets, fiscal burden, international trade, financial markets, and contract enforcement.

Through cross-country regression analysis, the research then studies the effects of regulation on economic growth and macroeconomic volatility. The analysis considers whether the effects of regulation in a country depend in part on the level of institutional development. It controls for the likely endogeneity of regulation with respect to macroeconomic performance through instrumental variables.

The research finds that a heavier regulatory burden reduces growth and increases volatility, though the higher the quality of the overall institutional framework, the smaller these effects. These findings support the view that regulation can have adverse effects on growth and volatility if it is excessive and carried out in a context of poor governance.

The project team has shared data and results with researchers at the University of Bogotá. In addition, preliminary findings were presented at the Ninth Annual Meeting of the Latin American and Caribbean Economic Association, held in San José, Costa Rica, in November 2004.

Responsibility: Development Research Group, Growth and Investment Team—Norman V. Loayza (nloayza@worldbank.org); and Latin America and the Caribbean Region, Office of the Chief Economist—Luis Servén. With Ana María Oviedo, University of Maryland.

Reference: PO80834.
Completion date: June 2005.

Report

Improving City Competitiveness through the Investment Climate: Ranking 23 Chinese Cities

As more and more capital flows into China, the country’s investment climate becomes an increasingly important policy issue. This research assesses the investment climate in urban China, investigating variation in the performance and competitiveness of firms across 23 cities as well as the determinants of that variation. The study focuses on the effects on firm performance and growth of regulatory policies (relating to such issues as taxation, flexibility in labor use, and firm entry and exit) and the quality and quantity of physical and financial infrastructure.

The study uses classical firm-level growth models and data collected through two surveys: a survey administered to a sample of 1,500 firms in 5 cities in 2002 and a second survey administered to 2,400 firms in 18 cities in 2003.

Results point to significant variation in investment climate among the 23 cities. And they suggest that while China has been doing well in a number of important dimensions, some aspects need to be improved:

- China still lacks an integrated domestic market, which may hinder economic development in the long run.
- The labor market remains segmented despite significant developments in past decades. Many firms across the 23 cities have substantial overstaffing.
- Capital has been persistently channeled to loss-making state-owned enterprises, while private firms with higher marginal productivity of capital and greater potential to create jobs must rely on other funding channels. This pattern of capital allocation leads to lower economic growth.
- Weak legal enforcement and regulation are serious issues.

The surveys were carried out in collaboration with the Enterprise Survey Organization of China’s National Statistical Bureau, establishing a relationship with that unit and enhancing its research capacity through the sharing of knowledge.

Findings have been disseminated through seminars in China.

Responsibility: Development Research Group, Investment Climate Team—David Dollar (ddollar@worldbank.org) and Lixin Colin Xu. With Shuilin Wang and Anqing Shi.

Reference: PO75710.
Completion date: June 2005.

Reports
Dollar, David, Shuilin Wang, Lixin Colin Xu, and Anqing Shi. 2005. Improving City Competitiveness through the Investment Climate:
Corporate Governance

Corporate governance has received much attention in recent years, especially for firms in emerging market economies. But our understanding of the unique corporate governance challenges in emerging market economies remains limited. This research is intended to add to that understanding through several studies.

A first study investigates the role of corporate governance in improving firms’ performance and the cost of and access to financing. The analysis is 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.

A second examines how the ownership of banks and of nonfinancial firms with which they have relationships affects main and secondary bank relationships and the decision to have multiple banking relationships. This analysis uses a database of Indian firms that includes financial and ownership information and the identities of the banks with which these firms have relationships.

A third study looks at corporate governance in the Russian Federation. This study uses a panel data methodology, which allows formal treatment of firm-level fixed effects and makes it possible to investigate the dynamic relationship between changes in governance and changes in share prices and measures of firm performance. The study will construct a sample covering all Russian public companies with significant market liquidity (around 60 firms) from 1999 to the present. More firms will be added to the sample as data allow. Data from several sources—including Brunswick Warburg, Troika Dialog, recent survey data, and indexes constructed by the Institute for Corporate Law and Governance—will be used to construct a measure of corporate governance.

Responsibility: Development Research Group, Finance Team—Leora Klapper (lklapper@worldbank.org), Inessa Love, and Maria Soledad Martinez Peria; and Financial Sector Operations and Policy Department—Luc Laeven. With Reena Aggarwal and Sandeep Dahiya, George-town University; Allen N. Berger, Federal Reserve System; and Bernard Black, University of Texas.

Reference: PO76964.

Completion date: June 2007.
• The top concern of firms is policy uncertainty. The issue is not just that policies change, but that more than 95 percent of firms report a gap between formal rules and their actual implementation. Addressing such uncertainty is associated with a 30 percent increase in the probability of investment.

• Competition is the key to spurring innovation. Firms reporting significant competitive pressure are up to 70 percent more likely to innovate than those reporting little or no competitive pressure.

• Weak governance has big costs. The majority of firms report paying bribes. Clientelism and state capture are also associated with large costs. Firms with more influence face significantly lower obstacles in the investment climate but are also 30–50 percent less likely to innovate or to create jobs.

• 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. 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 those sources. The usual presumption is that trade credit can substitute for bank credit and cannot sustain the operations of firms constrained by banks.

Findings continue to be disseminated at such events as the Economics of Industrial Development conference, organized jointly by the London School of Economics and the World Bank, and through investment climate assessments prepared by World Bank country teams. In addition, 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 34 lending operations, mostly in Africa and Latin America, amounting to $1.8 billion. In most countries the investment climate work has received tremendous press attention.

The data are being made available to many scholars through an interactive Web site that provides a full range of econometric tools while maintaining the confidentiality of individual survey respondents (http://iresearch.worldbank.org/ics/jsp/index.jsp). The Web site has had more than 4,000 subscribers.

Responsibility: Development Research Group, Investment Climate Team—Philip Keefer (pkeefer@worldbank.org), David Dollar, George Clarke, Ibrahim Elbadawi, Pablo Fajnzylber, Ana Fernandes, Mary Hallward-Driemeier, Giuseppe Iarossi, Taye Mengistae, and Lixin Colin Xu; Investment Climate Unit—Neil Roger, Axel Peuker, Geeta Batra, John Nasir, and Andrew Stone; Africa Technical Families, Private Sector Unit—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 Marcel Fafchamps, Oxford University; Raymond Fisman, Columbia Business School; Omkar Goswami, Confederation of Indian Industry; Ann Harrison, University of California at Berkeley; and John Sutton, London School of Economics.

Reference: PO63219.

Completion date: Ongoing.

Reports
World Bank, Development Research Group, Washington, D.C.


Justice and Governance

This research project aimed to determine how difficult it is to collect quantitative data on court use in developing countries and to see what insights into policy interventions could be gleaned from an analysis of the data. The research relied on individual case files in the Philippine courts along with the data generated from these files. Staff of the Philippine Office of the Court Administrator helped gather the data and participated in the analysis.

The research showed that analyzing case file data in developing countries can be both difficult and expensive. Records are hard to access, often poorly maintained, and difficult to read. But gathering and analyzing the data can have a high payoff. Analysis showed that in the Philippines close to half the cases reaching the courts were criminal cases that were dismissed because they had been poorly prepared. Thus rather than increasing the number of judges and courthouses to handle the growing caseload, more effective reform would be to improve the prescreening of criminal cases by prosecutors, which could cut the caseload in half.

The research contributed to a comprehensive judicial reform program developed by the Philippine Supreme Court. Results were discussed at a workshop attended by the chief justice, key trial court judges, and the heads of the Tax Court, Anticorruption Court, and Court of Appeals. Results also have been presented in the World Bank.

Responsibility: Poverty Reduction and Economic Management Network, Public Sector Governance Group—Randi Rytterman (rrytterman@worldbank.org) and Richard Messick. With Rosemary Hunter, Griffiths University; and Jay Krishnan, William Mitchell College of Law.

Reference: PO72337.
Completion date: August 2003.

The Economics of Civil Wars, Crime, and Violence

This research project addressed a range of questions: Why do civil wars occur? What are the determinants of violent crime? What are the economic causes and consequences of political and criminal violence? Can we predict and prevent these phenomena? What economic policies are appropriate in countries that have undergone periods of large-scale violence and political conflict? What policies by which actors would be effective in weakening the link between natural resource revenues and civil wars?

The research used econometric methods to test theoretically derived hypotheses and developed formal theoretical models of conflict and appropriation. It conducted case studies of a set of countries systematically selected to include those that have civil wars and those that do not, with both of these subsets including countries that the theoretical and empirical models predict should have civil wars and those that models predict should not have civil wars. And it conducted studies of specific issue areas such as what regulatory mechanisms have been suggested or implemented to ensure transparency in the accounting of revenues from natural resource extraction.

Research on the causes of civil conflict found that a host of economic, social, and, to a lesser extent, grievance factors are at work. The economic causes of civil war include a reliance on primary commodity exports (especially oil), recession or stagnant growth, and pervasive poverty. Socioeconomic factors include lack of education, especially among young males, and the influence of diasporas from abroad. Among the sociopolitical factors are authoritarian rule, population size, and ethnic dominance and fractionalization. Historical and geographic causes of civil war were also identified, such as geographic dispersion, the amount of rough terrain that can accommodate guerrillas, and the duration of peace...
since the previous conflict or since the attaining of independence.

The research suggests a vast agenda for assisting conflict-trapped countries in such areas as conflict resolution, peace-building consolidation, and postconflict reconstruction:

• Preventing conflict in successful developers, such as middle-income and fast-growing poor countries, is vital. Although these countries face relatively small risks of future conflicts, they have not yet grown rich enough to completely escape the danger zone. Moreover, most of these countries either are still governed by autocratic regimes or are struggling with transitions to more democratic political orders, and research suggests that it is during these transitional periods that states are most vulnerable to civil conflict.

• Traditional policies to promote growth, applied universally, will have little effect in mitigating the risks faced by countries at a relatively high risk of civil conflict. Instead, development policy should focus first on helping these countries develop their capacity to deal with external shocks and to secure broad-based governance, including greater capacity to resolve social conflicts and provide social and economic services.

• For peaceful but poor marginalized countries, sustained economic growth can dramatically reduce the risk of future conflicts. But growth must be both pro-poor and associated with diversification away from dependence on primary commodities. This suggests a major role for donor countries not only in providing aid but also in opening their markets to labor-intensive processed and manufactured goods from these countries.

• Ending ethnic wars may require more explicit commitments by politically mandated international and regional bodies, including a military presence for peacekeeping and oversight of a peace treaty stipulating some form of political architecture for ensuring a transition to broad-based governance across ethnic groups.

• After long and intense civil wars catch-up growth can be supranormal and aid supraeffective. But this is likely to happen only after 2–3 years of peace and political consolidation in the immediate postconflict period. The supranormal growth can continue for 5–10 years before growth returns to more normal rates, suggesting an optimum aid cycle for postconflict countries.

• To accommodate the legacy of war, postconflict policy should include an international agenda for promoting transparency in the international trade of mineral resources; using aid to promote democracy and broad-based governance; and turning the diaspora (a major source of financing for ethnic wars) into an agent for promoting peace and development.

The World Bank’s operational agenda has taken on several lessons generated by the research. The Conflict Prevention and Reconstruction Unit has taken a lead role in mainstreaming conflict analysis and the design of aid programs for postconflict countries. The Low Income Countries Under Stress initiative is an explicit response to research insights on aid effectiveness, with new lending patterns reflecting the insights on postconflict absorptive capacity and the need for an integrated approach to postconflict reconstruction. And tools for postconflict financing now include the Postconflict Fund, which allows speedy and flexible funding of innovative work that cannot be financed through regular World Bank instruments.

The project built local research capacity in developing countries by incorporating researchers from those countries and, especially in the case study phase, by pairing U.S.-based researchers with scholars in the countries studied. The project also built a network of researchers through its Web site (http://econ.worldbank.org/programs/conflict), which facilitates communication among researchers around the world as well as disseminates data and publications from the project.

The project organized several workshops and conferences. These include the conference on Economics of Civil Wars, Crime, and Violence, held February 22–23, 1999, at the World Bank to initiate the project; the workshop on Civil Wars and Postconflict Transitions, held May 18–20, 2001, at the University of California at Irvine in collaboration with its Center for Global Peace and Conflict Studies; the conference on Identifying Wars: Systematic Conflict Research and Its Utility in Conflict Resolution and Prevention, held June 8–9, 2001, in Uppsala, Sweden, in collaboration with the University of Uppsala and with support from the European Commission and Sweden’s Ministry of Foreign Affairs; and a workshop held June 11–12, 2001, in Oslo, Norway, to
launch the project’s case study phase, coorganized by the International Peace Research Institute (PRIO) and sponsored by Norway’s Foreign Ministry.

**Responsibility:** Development Research Group, Office of the Director—Paul Collier, and Growth and Investment Team—Ibrahim Elbadawi (ielbadawi@worldbank.org). With Nicholas Sambanis, Yale University; Anke Hoeffler, Centre for the Study of African Economies, Oxford University; Håvard Hegre, Centre for the Study of Civil War, International Peace Research Institute (PRIO), Norway; Michael W. Doyle, Columbia University; Edward L. Glaeser, Harvard University; Ali Abdel Gadir Ali, Arab Planning Institute, Sudan; Mwangi S. Kimenyi, Kenya Institute for Public Policy Research and Analysis; Victor Ayodele Bamijoko, University of Sierra Leone; Samir Makdisi, American University of Beirut; Stergios Skaperdas, University of California at Irvine; and Laudemiro A. Francisco, Higher Institute for International Relations (ISRI), Mozambique.

**Reference:** PO58654.

**Completion date:** June 2004.

**Reports**


Implementing Affirmative Action in the Public Service

Through detailed case studies in India, Malaysia, Nigeria, and South Africa, this research examines diversity management in the public service, exploring special consideration, in publicly funded opportunities, of groups disadvantaged by past discrimination. The study is not about the theory, or why, of affirmative action. Instead, it concentrates on how governments implement their affirmative action policies.

Drawing on the case studies, the research seeks to identify patterns of implementation and draw generalizable lessons: Which groups are preferred within each public service and across the four countries? What targets are set for each group? And which criterion receives the most emphasis?

The study examines the institutional mechanism for implementation in each country, particularly how authority and responsibility for implementation are structured, what support and tools are provided, and how grievances are redressed. The countries use a uniform approach to monitoring affirmative action, based on tracking targets in the composition of the public service. Monitoring focuses mostly on checking whether the recruiting organization has complied with regulations and much less on evaluating whether disadvantages are being reversed as intended.

Diversity management could be askew with the merit principle, long considered central to a well-performing public service, and the research investigates how each public service reconciles diversity management with the merit principle.

Responsibility: Poverty Reduction and Economic Management Network, Public Sector Governance Group—Ranjana Mukherjee (rmukherjee@worldbank.org); and Development Research Group, Public Services Team—Heng-fu Zhou. With Ladipo Adamolekun; Pachampet Sundaram; John Erero and Ayo Adesopo, Obafemi Awolowo University, Ile-Ife, Nigeria; Babatunde Oyedoji, Independent Policy Group, Abuja, Nigeria; and Robert Cameron, University of Cape Town, South Africa.

Reference: PO89631.
Completion date: June 2005.

Report

Political Economy in Transition Economies

This study analyzes the effect of policy on the process by which a society moves from a state of no rule of law to a rule-of-law system. 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 influence the political will to establish the rule of law. The analysis focuses on two questions.

First, 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? The research has developed a dynamic model of the demand for the rule of law that focuses on how mass privatization with weak corporate governance can lead to asset stripping, such as occurred in the Russian Federation, which in turn creates forces that weaken the constituency for a rule-of-law state. The research explores the role that macroeconomic policy can play in shaping the future demand for a rule-of-law state.

Second, what is the role of political turnover in building a rule-of-law system? To investigate this question, the study has developed a simple model and assembled public data on governance and elections in 27 transition economies. Analysis suggests that political turnover in the period of nascent liberalization can play an important part in promoting the establishment of institutions to build a
rule of law. Turnover reduces the incentives of firms to buy special rules à la carte from the party in power—since the party is less likely to remain in power when turnover is high. And it increases the incentives of firms and politicians to support fair, open rules that will guarantee a modicum of protection of rights regardless of who holds power.

The project organized a conference on the political economy of transition economies at the Center for Economic Research and Graduate Education (CERGE) in Prague in September 2004.

**Responsibility:** Development Research Group, Growth and Investment Team—Karla Hoff (khoff@worldbank.org). With Branko Milanovic; and Shale Horowitz, University of Wisconsin. The Santa Fe Institute provided funding for the research.

**Reference:** PO87592.

**Completion date:** June 2005.

### Reports


### Displacement

This research project is aimed at providing policy-relevant insights into the dynamics of displacement by investigating the micro and macro determinants of involuntary displacement and the desire to return in Colombia. The analysis uses a wide range of administrative data at the municipio (municipality) level combined with data at the household level from a survey of more than 30,000 displaced households.

The research has identified several key factors that increase displacement from a municipio: land inequality, the presence of extractable natural resources, and low levels of infrastructure endowments and public spending. Restoring physical security in displaced people’s place of origin significantly increases their willingness to return. Having found gainful employment in the place to which they have emigrated reduces willingness to return, but this effect is more than compensated for by having owned land in the place of origin. Having received aid in the time surrounding displacement also increases the desire to return.

The research has contributed to World Bank economic and sector work on land policy in Colombia and, through a workshop organized in part by the World Bank, has fed into the domestic policy debate in that country. Findings were presented at two conferences in 2004, one organized in Helsinki by the World Institute for Development Economics Research and another held in Bogotá, attended by about 60 participants specializing in displacement, from government, universities, and nongovernmental organizations.

The research team provided support to the Universidad de los Andes in analysis and helped the university establish contact with the U.S. Agency for International Development for help in carrying out a resurvey of about 3,000 displaced households.

**Responsibility:** Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org); and East Asia and Pacific Region, Rural Development and Natural Resources Sector Department—Isabel Lavadenz. With Ana María Ibáñez, Universidad de los Andes, Colombia. The U.S. Agency for International Development contributed funding for background work and the resurvey.

**Reference:** PO89581.

**Completion date:** July 2005.

### Reports


The Economics of Secession: Inequality, Globalization, and Self-Determination

This research project is developing an economic theory of secession and conducting applied econometric analysis to identify the determinants of secession-motivated political violence. The empirical tests are aimed at explaining the causes of secessionist movements, identifying countries and regions most at risk of secession, and exploring the influence of globalization and economic policy on secessionist violence. The research is studying all cases of secession (successful or not) during the period after World War II, building on an existing database to address the questions of secession (the database was created as part of another research project, The Economics of Civil Wars, Crime, and Violence; see the abstract in this volume).

The starting point is a theoretical framework in which both greater political sovereignty and greater income are normal goods, but there is a tradeoff between the two. In this framework greater national income is achieved at the cost of surrendering some sovereignty by joining international agreements and organizations or by undertaking deeper forms of regional integration (such as the European Union). The income-sovereignty tradeoff is not the same for all countries or individuals: it is sharper for smaller countries, and it is different for policymakers than for ordinary citizens. These relationships are used as the basis for explaining the conditions for the development of secessionist movements.

The research will develop the policy implications stemming from the theory and empirical analysis.

Responsibility: Development Research Group, Poverty Team—Branko Milanovic (bmilanovic@worldbank.org). With Nicholas Sambanis, Yale University.
Reference: PO77354.
Completion date: July 2005.

Information and Voice

What are the most effective ways to increase primary school enrollment and student learning? This research project tests the hypothesis that innovations in the governance of social services may yield the highest return, since the delivery of such services in many poor developing countries is often plagued by inefficiencies and corruption. The analysis uses Ugandan data from two public expenditure tracking surveys and from an unusual policy experiment to increase transparency—a newspaper campaign aimed at providing schools and parents with information to monitor local officials’ handling of education grants from the central government.

Research during fiscal 2004 showed that the campaign reduced the capture of education funds by local governments and that this in turn had a strong positive effect on enrollment and student learning.

Work to design and develop the public expenditure tracking survey as a new data tool was done in close collaboration with Ugandan consultants, the Ministry of Education, and the Economic Policy Research Center (EPRC), which have honed the method so that it is now routinely used in Uganda. The project team has also worked with researchers and civil servants in Cambodia, Kenya, and Tanzania.

More than 20 countries in different regions have implemented public expenditure tracking surveys or are in the process of doing so. This work has shifted attention from budget allocations to actual spending and possible capture along the way. It has also highlighted new tools for increasing transparency, such as information campaigns. Several countries, including Cambodia, Kenya, Nigeria, and Tanzania, have introduced coun-
trywide initiatives such as newspaper campaigns to improve public information on public spending.

In collaboration with the International Institute for Educational Planning and the World Bank’s Development Research Group, the World Bank Institute organized a course on public expenditure tracking surveys in education in Cambodia in June 2004, attended by a large number of researchers and civil servants from Cambodia, Kenya, the Lao People’s Democratic Republic, and Mongolia. This course will be repeated in South Africa in 2005.


Findings have been presented at the Conference on Transition Economics held by the Centre for Economic Policy Research in Budapest (summer 2003), a conference for academics and policymakers held by the European Development Research Network (fall 2003), and the European Economic Association meeting in Madrid (summer 2004). Findings also have been presented at seminars at DELTA (spring 2004), the World Bank (spring 2004), the University of California at Berkeley (spring 2004), the University of Munich’s Center for Economic Studies (spring 2004), and Stockholm University’s Institute for International Economic Studies (fall 2004).

Responsibility: Development Research Group, Public Services Team—Jakob Svensson (jsvensson@worldbank.org), and Rural Development Team—Gershon Feder; Africa Region, South Africa Country Office—Ritva Reinikka; and Africa Technical Families, Environmentally and Socially Sustainable Development 2—Carolyn Winter. With Martina Bjorkman, University of Stockholm; Andreas Madestam, Stockholm School of Economics; Michael Galiwango; and Abel Ojoo.

Reference: PO76949.

Completion date: December 2005.

Reports


Nongovernmental Organizations as Service Providers in Developing Countries

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 staffing, activities, grants received, uses and sources of funds, 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).

In both Bangladesh and Uganda the surveys were implemented by local consultants, and the research strategy was designed in collaboration with government ministries.

**Responsibility:** Development Research Group, Public Services Team—Varun Gauri (vgauri@worldbank.org) and Ritva Reinikka. With Marcel Fafchamps, Abigail Barr, and Trudi Owens, Oxford University; Ray Fisman and Julia Galef, Columbia University; and Anna Fruttero, New York University.

**Reference:** PO71458.

**Completion date:** December 2005.

**Reports**

Barr, Abigail, and Marcel Fafchamps. “A Client Community Assessment of NGOs in Uganda.”


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**Governance and Service Delivery**

This research project, part of a broader research effort in the World Bank on service delivery, addresses two main questions: What kind of accountability and oversight mechanisms between different tiers of government, and between service providers and beneficiaries, are conducive to improved service delivery? And what impact do information and “voice” of different users have on the quantity and quality of services?

The project is collecting and analyzing nationally representative survey data from Gallup International and
Afrobarometer on the incidence of problems encountered by users of public health and education services, including absenteeism (of doctors and teachers), requirements for unofficial payments, poor availability of supplies (drugs, textbooks), and poor quality of facilities (clinics, schools). The analysis investigates the impact of electoral rules, other political institutions, and the nature and extent of mass political participation on the incidence of such service delivery failures.

Data collected were reported in the World Bank’s Global Monitoring Report 2005 (Washington, D.C., 2005) and will serve as inputs into country assistance strategies, Country Policy and Institutional Assessments, and Institutional and Governance Reviews focusing on service delivery issues. The data also will be posted on the Web, along with other data relating to governance and service delivery issues, at http://www1.worldbank.org/publicsector/index.cfm.

Responsibility: Development Research Group, Rural Development Team—Gershon Feder (gfeder@worldbank.org), and Public Services Team—Stephen Knack.

Reference: PO76813.

Completion date: June 2006.

The Political Economy of Public Services

Can differences in how political markets function and shape the incentives of political agents explain the large variation in the performance of developing country governments in delivering broad public services and reducing poverty? This research studies the theory and evidence on the role of institutions, information, social polarization, and credibility of political promises in shaping political markets and incentives to serve the poor. The aim is to identify political market imperfections responsible for policies suboptimal for development and poverty reduction—and to provide policy solutions that can help enhance the accountability of governments for development outcomes.

To address its questions, the study uses political economy theory, mainly a principal-agent framework under information asymmetry and uncertainty. Econometric work relies on publicly available data on public spending by the Indian government, publicly available cross-country data on economic and fiscal indicators, and cross-country political data from the World Bank’s Database of Political Institutions.

The main conclusion thus far is that much of the variation in public service delivery across developing countries can be attributed to differences in the incentives of politicians. Even in developing countries that are democracies, where politicians depend on the poor for political support, public expenditures often fail to deliver basic services to the poor because political agents have incentives to misallocate public resources to private rents and to inefficient transfers that benefit a few citizens at the expense of many. Such misallocation can be traced to imperfections in political markets that constrain the extent to which poor people can hold governments accountable for their actions, such as lack of information about service quality, lack of credibility of political promises, and polarization of voters on social and ideological grounds. Institutions such as decentralization, party systems, electoral regimes, and constitutional rules interact with these political market imperfections in determining outcomes.

A paper focusing on India’s experience in this area, published in the leading Indian political economy journal, appears to have fueled research activities and interest in the country.

The research has been used in a World Bank Institute course on Decentralization Relations delivered in March 2004. The research also was presented in a World Bank seminar on Politics and Service Delivery in April 2004.

Responsibility: Development Research Group, Public Services Team—Stuti Khemani (skhemani@worldbank.org), and Growth and Investment Team—Philip Keefer.

Reference: PO86338.

Completion date: June 2006.

Reports


This research project has four main objectives: to improve the understanding of how local conflicts evolve over time; to investigate how effectively customary and formal legal systems interact; to assess whether Indonesia’s Kecamatan Development Project (KDP)—a large, community-level service delivery project financed by the World Bank—helps or hinders local conflict mediation efforts; and to help inform the design of future such projects in areas experiencing moderate levels of conflict.

The study employs a mixed methods approach, using preexisting quantitative surveys to help identify otherwise comparable program and nonprogram sites for extensive qualitative investigation. In addition, new quantitative data have been collected on forms and levels of conflict (through regional newspaper reports) and on perceptions of project efficacy (through a key-informant survey).

Two key preliminary findings have emerged: KDP generates fewer local conflicts than comparable development projects. And KDP appears to generate positive “spillovers” on nonproject conflicts where the key issue is violation of procedural rules (such as in elections of local leaders).

The work has involved 12 local field researchers, trained for four months and then supervised in the field for another six months. Now that the data collection phase is complete, these researchers have formed a non-governmental organization and will be available for subsequent studies.

The study has generated interest elsewhere, such as in Cambodia, Colombia, and the West Bank, and funds have been secured to do a similar study in Cambodia. Though the study is still ongoing, it has informed the design of a new World Bank–financed project in Indonesia focusing on service delivery in areas of moderate conflict (Supporting Economic Revitalization Project). And in conjunction with related work on poor people’s access to formal justice systems, the study has helped inform legal and judicial reform efforts in Indonesia.

The research has been presented at workshops and seminars at the World Bank (October 2003, December 2003), Yale University (January 2004), Harvard University (April 2004), George Mason University (April 2004), and Universitas Indonesia (May 2004).

Responsibility: Development Research Group, Poverty Team—Michael Woolcock; and East Asia and Pacific Region, Environment and Social Development Sector Department—Scott Guggenheim and Patrick Barron. With Rachael Diprose, Oxford University; and Claire Smith, London School of Economics.

Reference: POS3756.

Completion date: July 2006.

Reports


Corruption

This research is analyzing the causes of corruption—shown to be a substantial impediment to development in poor countries—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.

Using individual-level data for 35 countries to investigate the microeconomic determinants of attitudes toward corruption, an analysis of social effects 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. 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 economic openness, investigating whether the presence of barriers to international trade and capital flows is associated with higher corruption. The evidence suggests that the main effect of trade barriers on corruption comes through the incentive for collusive behavior between individuals and customs officials rather than from the reduced pressure from foreign competition. Interestingly, no clear association emerges between corruption and variables proxying for the presence and intensity of controls on capital flows.

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 revenue 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 Economists’ Forum, at the Southeastern Economic Association conference in Washington, D.C., at the 2002 European Public Choice Society conference in Italy, and at the Institute Amedeo Avogadro for Public Policy, Universita’ del Piemonte Orientale, Italy.


Reference: PO49731.

Completion date: December 2006.

Reports

Trade-Based Index of Corruption

Corruption, by its nature, is difficult to measure. All available indexes of corruption are based on subjective perceptions of firms or individuals, usually collected by surveys. Since much attention and research effort has recently been devoted to the effects of corruption on different aspects of economic activity, there is great demand for a more objective way of measuring it.

This study is intended to be a first step toward meeting that demand. The basic idea is to infer the degree of corruption (or, more precisely, deviation from the rule of law) from the extent of tariff evasion together with the level of import tariffs. Conceptually, the elasticity of tariff evasion with respect to the tariff rate depends on the tax level and the penalty once evasion is discov-
Thus the elasticity of evasion and the level of tariffs may be used to infer the extent of corruption in customs.

Data for Eastern Europe and the former Soviet Union suggest that the degree of corruption in customs is highly correlated with the degree of overall corruption.


The results should enhance our understanding of the ways in which corrupt behavior manifests itself and affects economic performance.

**Responsibility:** Development Research Group, Trade Team—Beata Javorcik (bjavorcik@worldbank.org). With Jens Matthias Arnold, Bocconi University, Italy.

**Reference:** PO82617.

**Completion date:** December 2006.

### 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.

Papers completed so far examine the impact of caste reservations on governance and the impact of village meetings in promoting transparency and better targeting. The papers have been widely disseminated. They have been presented to India’s minister of *panchayat* affairs; at the World Bank Research Seminar and the South Asia Decentralization Seminar; and at the Delhi School of Economics, Georgetown University, the London School of Economics, the Massachusetts Institute of Technology, the University of California at Berkeley, and Yale University.

**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.
World Bank–Netherlands Partnership Program is providing funding for data collection.

Reference: PO72728.
Completion date: June 2008.

Reports

Evaluating Public Policies

This research project is aimed at designing an approach to guide policy analysts in applying the real option methodology to the evaluation of policies and projects. The research is assessing the relevance of options created and destroyed in evaluating policies and projects under dynamic uncertainty and irreversibility. It uses several analytic approaches: dynamic programming, stochastic process analysis, cost-benefit analysis, and scenario analysis. Data sources include World Bank policy and project data files and several country databases (for Argentina, Cameroon, Chad, Morocco, Senegal, and Vietnam) from the World Bank and other institutional sources.

The results of the research should help improve the conception, design, and support of policies and projects through greater participation of stakeholders and early planning for flexibility and effectiveness. The results may also prompt a shift in the focus of evaluation from increases in incomes to improvements in opportunities and capabilities.

Responsibility: Environmentally and Socially Sustainable Development Network, Office of the Vice President—Odin K. Knudsen (oknudsen@worldbank.org); East Asia and Pacific Region, Energy and Infrastructure Unit—Ian Alexander; Africa Technical Families, Private Sector Unit—Fabrice Karl Bertholet; Africa Region, Cape Verde, The Gambia, Guinea-Bissau, and Senegal Country Office—Iradj Alikhani, and Cameroon, Central African Republic, Chad, Equatorial Guinea, and Gabon Country Office—Ali Khadr; World Bank Institute, Finance and Private Sector Development Division—Gaetane Traez; and Middle East and North Africa Region, Finance, Private Sector, and Infrastructure Sector Unit—Mohammed D. E. Feghoul. With Pasquale Scandizzo, Serena Stefanoni, Carmela Notaro, Ludovica Maglione Pizomalio, Marika Maria Santoro, and Sara Savastano, University of Rome Tor Vergata; and Massimo Daniele Sapienza, Electrabel. The Italian Consultant Trust Fund and the University of Rome Tor Vergata are contributing funding for the research.

Reference: PO87295.
Completion date: Ongoing.

Reports
This ongoing, multiyear research effort investigates the effect of institutions on development. The most recent research has looked at imperfections in political markets, especially the impact on political incentives of citizen information and the credibility of pre-electoral promises made by political competitors to citizens. 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 pre-electoral credibility of political competitors influences post-election behavior.

The research has yielded a wide array of findings. The most recent include these:

- The security of contract and property rights is a product not only of institutions but also of the incentives of politicians to provide public goods. The security of these rights is lower in younger democracies—where political competitors are less able to make credible pre-electoral promises to citizens—and in democracies where citizens have less information.
- Government incentives to provide private rather than public goods are heightened when citizens are uninformed (newspaper circulation is lower) and where pre-electoral promises are less credible (democracies are younger). Under these circumstances government spending on public investment and on public sector employment is higher, while secondary school enrollment is lower.
- When the differences across democracies in the dynamics of political competition are controlled, there is significant evidence that democracy promotes growth. This finding is in contrast with the finding by earlier research of little systematic association.
- Elected governments make far fewer fiscal transfers in the event of financial crises than do unelected governments, suggesting that special interests that benefit from such transfers are less influential when politicians must compete for the support of citizens at large.

The work continues to shed light on optimal policy choices in different institutional and social settings (including post-conflict societies) and on tradeoffs in institution building. It has contributed to several of the World Bank’s *World Development Reports* (New York: Oxford University Press), to World Bank courses on governance and anticorruption, and to the Poverty Reduction and Economic Management Network’s flagship publication *Economic Growth in the 1990s: Learning from a Decade of Reform* (Washington, D.C.: World Bank, 2005).

The work has been presented in many venues, including most recently at Stanford University, the Southern Economic Association, the Inter-American Development Bank, and the meetings of the International Society of New Institutional Economics. Earlier presentations were made at Public Choice, the American Economic Association, the American Political Science Association, 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, Growth and Investment Team—Philip Keefer (pkeefer@worldbank.org). With Ji-Young Yang; and Razvan Vlaicu, Northwestern University.

**Reference:** PO60358.

**Completion date:** Ongoing.
Reports
The documents listed below are the output of research and policy analysis at the World Bank in fiscal 2004. 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 can also be purchased on the Web at http://wber.oxfordjournals.org or http://wbro.oxfordjournals.org. 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 Working Papers and other Bank series publications.

• World Bank Working Papers. This 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).


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 2005: A Better Investment Climate for Everyone. 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


**B. Book Chapters by Bank Researchers**


C. Articles Published in the World Bank Economic Review and World Bank Research Observer


D. Articles Related to Bank Research and Published in Non-Bank Professional Journals


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**E. World Bank Working Papers and Other Bank Series Publications**


**F. Policy Research Working Papers**


World Bank, Development Research Group, Washington, D.C.


Bank Research Output

175


Financial Sector Operations and Policy Department, Washington, D.C.


the Caribbean Region, Poverty Sector Unit, Washington, D.C.


Bank Research Output 179


G. Other Bank Working Papers

Africa Region Working Papers


Human Development Network, Social Protection Discussion Papers


Middle East and North Africa Working Papers


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