

**The
World
Bank
Research
Program**

Abstracts

of

Current

Studies

2008–2009



The World Bank
Research Program
2008–2009

Abstracts of Current Studies

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Contents

Introduction 1

Studies by Subject Area 7

Abstracts of Current Studies 15

| | |
|--|-----|
| Agriculture and Rural Development | 17 |
| Environment and Natural Resources Management | 31 |
| Finance and Banking | 45 |
| Governance, Political Economy, and Public Sector Management | 63 |
| Health, Population, and Nutrition | 81 |
| Human Capital Development, Labor, and Employment | 95 |
| Impact Evaluation of a Parental Empowerment Program in Mexico | 112 |
| Increasing Access to Education in Mozambique: Analysis of Barriers and Effects of Recent Reforms | 112 |
| Infrastructure and Urban Development | 115 |
| International Migration and Development | 125 |
| International Trade and Investment | 135 |
| Macroeconomics and Growth, and Investment Climate | 155 |
| Poverty and Inequality | 163 |
| Private Sector Development | 179 |
| Social Development, Gender, and Social Policies | 185 |
| Social Protection and Risk Management | 191 |

List of Publications 197

| | |
|--|-----|
| A. Books | 199 |
| B. Chapters in Books | 204 |
| C. Articles Published in the World Bank Economic Review and World Bank Research Observer | 210 |
| D. Journal Articles | 212 |
| E. World Bank Policy Research Working Papers | 235 |
| F. World Bank “Flagship” Reports, Policy Research Reports, Special Regional and Sector Series and Monographs | 258 |
| G. World Development Report: Background Papers and Background Notes | 259 |
| H. Other Publications | 262 |

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.

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Introduction

The World Bank Research Program has four basic objectives: to broaden understanding of development, to improve the Bank's capacity to advise its member countries, to support all aspects of its own operations, and to assist in developing research capacity in its member countries. For effective performance the Bank needs knowledge, and research is a crucial element in the knowledge strategy of the Bank. The knowledge generated by its research program provides the intellectual foundation of the Bank's corporate strategy, lending, and policy advice. Bank research is also a global public good that contributes to knowledge on the economic and social issues critical to the economic development of client countries, and can influence development thinking more generally. The World Bank has been a leader in development economics research and has also been the single most important source of data on economic development.

The World Bank Research Program Abstracts of Current Studies is a compendium of research projects initiated, under way, or completed in fiscal years 2008 and 2009 (from July 1, 2007, through June 30, 2009).¹ The abstracts in this volume describe, for each project, the questions addressed, the analytical methods used, findings to date, their policy implications, and use. Each abstract also identifies the research team, and any reports or publications produced. To make it easier to obtain information and data, each abstract gives the email address for the research project's supervisor.

Research by Topic

The Bank's overall research program analyzes issues to provide guidance and strategic direction on critical problems facing Bank clients and operations. Each research program centers on a theme which gives it coherence. Of the 248 research abstracts reported in this publication, International Trade and Investment and Human Capital Development, Labor and Employment categories were the most researched, with 11 percent each; the next important category was Governance, Political economy, and Public Sector Management with 10 percent of the abstracts; and other important themes include Agriculture and Rural Development, Environment and Natural Resources Management, Finance and Banking, and Health, Population and Nutrition with 8 percent each (see Table 1).

1. This volume covers only projects designated as "research activity" (coded RF in the World Bank's accounting system). It does not cover other analytical work included under the categories "economic and sector work" (coded EW) or "technical assistance" (coded TA).

Table 1. Research Topics and Number of Abstracts, FY08–FY09

| Research topics | Number of abstracts | Percent |
|---|---------------------|---------|
| 1 Agriculture and Rural Development | 19 | 8 |
| 2 Environment and Natural Resources Management | 21 | 8 |
| 3 Finance and Banking | 20 | 8 |
| 4 Governance, Political Economy, and Public Sector Management | 24 | 10 |
| 5 Health, Population, and Nutrition | 20 | 8 |
| 6 Human Capital Development, Labor, and Employment | 28 | 11 |
| 7 Infrastructure and Urban Development | 18 | 7 |
| 8 International Migration and Development | 11 | 4 |
| 9 International Trade and Investment | 28 | 11 |
| 10 Macroeconomics and Growth, and Investment Climate | 12 | 5 |
| 11 Poverty and Inequality | 18 | 7 |
| 12 Private Sector Development | 14 | 6 |
| 13 Social Development, Gender, and Social Policies | 7 | 3 |
| 14 Social Protection and Risk Management | 8 | 4 |
| Total | 248 | 100 |

Research by Type of Output

This volume also contains a complete list of research publications from the Bank produced during fiscal 2008 and 2009. World Bank publications are aimed at a diverse client base including operational staff, developing country policymakers, the development community, and academics. Major research products include books published by the Bank's publications department and by external publishers, scholarly articles published in peer-reviewed journals, working papers, policy research reports and so-called "flagship" reports like the World Development Report. During FY08–09, Bank staff and consultants produced 1,982 publications, including books, scholarly articles in peer-reviewed journals, and Policy Research Working Papers (see Table 2).

The remainder of this introduction presents a brief overview of the World Bank research program for 2010. More details can be found at www.econ.worldbank.org.

Table 2. World Bank Research Output, FY08–FY09

| Research output | Number of publications | Percent |
|--|------------------------|---------|
| Books by Bank researchers | 196 | 10 |
| Book chapters by Bank researchers | 133 | 7 |
| Scholarly articles published in <i>The World Bank Economic Review</i> and the <i>World Bank Research Observer</i> | 59 | 3 |
| Scholarly articles published in professional journals (excluding <i>The World Bank Economic Review</i> and <i>The World Bank Research Observer</i>) | 662 | 33 |
| Policy Research Working Papers | 715 | 36 |
| Bank series publications including flagship publications, policy research reports, regional and sectoral series, and other special series | 53 | 3 |
| Background papers to <i>World Development Reports—2008, and 2009</i> | 82 | 4 |
| Discussion paper series, occasional paper series, mimeos, technical series, regional and network working papers, and conference papers | 82 | 4 |
| Total publications | 1,982 | 100 |

Crisis Research

The global crisis of 2008–2009 prompted a rapid realignment of Bank research. For the period discussed in this edition, the Bank has concentrated on summarizing lessons from its past extensive research on crises and social protection policies. This work has identified some key lessons for the current crisis and also point to some areas for future research. These can be synthesized around the question of a trade-off between longer-term development goals and vulnerability to crises. The future work program seeks to characterize that trade-off (including whether it even exists) and how the terms of any trade-off vary with the country context (depending in part on past policies). Going forward, research on the global financial and macroeconomic crisis will thus be carried out in two main areas: mapping policy trade-offs posed by the financial crisis in specific country contexts, and analyzing policy responses in finance, macroeconomic policy and social protection to learn what works and what does not.

Agriculture and Rural Development

The agriculture and rural development research program covers a broad set of issues, including land policy, community driven development (CDD), the rural investment climate, and poverty and rural development. Land policy has become a significant component of the Bank’s operational and policy agenda and the current research program focuses on four main areas—gender-differentiated impacts of improving land access and tenure security; efficiency and equity impacts of

land rental and sales markets; short and longer-term impacts of land reform; and determinants and impacts of large-scale land acquisition. CDD programs, which increased substantially in the past decade, are being evaluated. A Policy Research Report on local governance and local development—planned to be released in early 2010—will bring together insights from these studies as well as research on CDD and local governance in academia and other institutions.

Environment and Natural Resources Management

The 2010 research program on environment and natural resource management covers environmentally sustainable development in general, including climate change and its implications for development; the economics and institutions of water resources; environmental governance; and spatial dimensions of development. The climate change research agenda consists of three areas: assessing the impacts of climate change and the implications for adaptation, mitigation and sequestration of emissions, the Bank’s role in the rapidly-growing carbon finance business, and the economics of biofuel and food production. Studies are being initiated on a comparative assessment of clean energy resources and abatement options; the efficiency of renewable energy investments in Bangladeshi villages; the economics of energy in rural Africa; the environmental aspects of policy interventions in the transportation sectors in Rio de Janeiro, Mexico City, and Beijing; and an analysis of policies to promote energy efficiency in the industrial and transportation sectors in India. The vulnerability of international river basin treaties in light of likely climate change driven water supply variability is also being studied. Several projects are being initiated to explore particular difficulties related to integrated water resource management and shared management of international water bodies.

Finance and Banking

Research on the financial sector will focus on identifying policies that work best to improve the efficiency, stability and reach of the financial system in developing countries. The two issues of significant policy interest are: access to financial services and risk management.

Financial services need to support broad-based, inclusive growth. Recognizing serious data and research gaps and lack of policy guidance on access to finance, a Policy Research Report was produced that documents and benchmarks differential access to financial services by small firms and the poor, and identifies underserved groups and barriers to building inclusive financial systems. The ongoing work is evaluating the channels through which access to finance can contribute to the growth process, such as by promoting entrepreneurship, innovation

and the process of technology adoption. The role of financial literacy and gender differences in this process is also receiving significant attention.

Deepening finance and expanding access are not enough, given the fragility of finance. Most countries have suffered from financial crises interrupting the growth process, and there are heightened risks also at the level of individual firms and households. This is why risk management, including crisis prevention, remains a central part of the finance research program. The topics under investigation are: the impact of supervision strategies as well as the impact of compliance with Basel Core Principles on bank stability, the interaction of bank insolvency resolution and deposit insurance policies, and the impact of financial globalization on bank efficiency and access to financial services. Work will also be initiated in the area of capital market development and insurance.

Governance, Political Economy, and Public Sector Management

The research program on governance pursues three themes: (i) The effects of weak governance in various dimensions that relate directly to growth. Particular attention is paid to public infrastructure services, firm investment decisions and, more broadly, the degree to which pro-growth policies actually promote growth. (ii) The political economy of good governance, understood as the social and political circumstances that lead governments to make decisions in the general interests of citizens, rather than the interests of narrow groups in society. This theme encompasses work on the sources of political credibility and clientelism, the role of political parties, and the consequences of long-standing social discrimination in terms of fostering or hampering accountability and governance. (iii) The efficacy of second-best policy responses to poor governance environments, including information provision to citizens and community-driven development. The latter research program involves a considerable data collection effort to measure governance and its determinants, exemplified by the well-known World Governance Indicators, the Database on Political Institutions, and the (ongoing) Database on Political Parties.

Health, Population, and Nutrition

The research program focuses on the delivery of health and social protection services, and examines health and nutrition outcomes, especially how these relate broadly to poverty reduction and development. The program includes a number of impact evaluations of specific interventions and policies that are meant to influence household demand and individual behaviors and those that improve the supply and quality of services. Measures of harder-to-quantify dimensions of human development, such as a person's health status, are being

developed. The 2010 research program examines, among other things, the role of access to service facilities and the impact of large social and economic changes—such as economic crises, violent political conflicts and droughts—on measures of human development, and the impact of low or unequal human development on individual and family vulnerabilities and coping strategies. Other studies are evaluating alternative forms of service delivery, including community-based programs (Senegal, Burkina Faso, India), home-based child health and parenting programs (Ecuador and the Philippines), and contracting private providers to deliver public services (Cambodia). Still others examine how household or individual responses intersect with supply changes to improve the effectiveness of service delivery (such as expanded prevention and new treatment programs for HIV/AIDS in Burkina Faso, Ghana, Mozambique, Rwanda, South Africa and Tanzania).

Human Capital Development, Labor, and Employment

Human development and the delivery of basic services are at the core of the Bank's strategy of investing in people. This research program focuses on the delivery of education, health and social protection services, and the political economy issues related to these sectors. New research is also being developed on work and labor markets.

The trends and patterns in human development and the association between human development and various dimensions of inequality, including gender, ethnicity, race or religion are explored. Projects are looking at targeted conditional cash transfers (Ecuador, Tanzania), scholarship programs (Cambodia, Indonesia), improvements in information availability (India, Uganda). A variety of impact evaluation methods are being used to understand how programs and reforms can shift demand for social services and improve human development outcomes. The Policy Research Report on conditional cash transfers published in 2009 develops a framework for assessing the impact of these programs and reviews the empirical evidence across the developing world. One subprogram aims to understand how to make public and private services work better for the poor. A key challenge is to identify the factors that affect what goes on inside schools and health clinics, and assess how resources are being used and how performance can be improved. Data collected on providers at both the facility level and the provider level adds to the knowledge base.

Labor is typically the most important resource possessed by poor people, and income from labor remains the most promising means by which the poor may raise their standard of living. A new research agenda is focusing on how labor markets function in different institutional settings and developing knowledge about which policy interventions and

social protection mechanisms promise better and more secure employment opportunities for the poor.

Infrastructure and Urban Development

This program aims to provide empirical evidence on the role of infrastructure in stimulating economic development and reducing poverty. Recent research on the contribution of infrastructure to economic performance at the micro (enterprise) level has provided evidence for Brazil, India, Indonesia and Mexico. It suggests that inter-regional transport connectivity improvement can have significant impacts on firm productivity, but that by itself is not sufficient enough to induce firms to relocate across sub-national regions. Other ongoing studies focus on the impact of rural infrastructure investments (energy, transport, communications) on poverty and rural economic performance. Socio-economic impacts of rural electrification projects are being studied in a number of countries. The issue of energy poverty is being studied using household survey data from Bangladesh and India. Research on long-run impacts of rural road investments is going on using household and community level panel data. New research plans to develop methods for assessing the macro impacts of inter-regional transport improvements on trade flows and economic performance.

Research on urban issues is closely linked to the 2009 World Development Report *Reshaping Economic Geography*. The two main sets of research questions stemming from that report relate to urban management, where the aim is to find the appropriate mix of policy instruments (institutions, infrastructure and intervention) that facilitate inclusive urbanization, and the dynamics of city systems, that focuses on the role of migration and transport infrastructure in facilitating urbanization while integrating lagging and rural areas.

International Migration and Development

The migration research program is comparatively new but dynamic. In the last couple of years it has produced numerous research papers as well as the most complete existing dataset of bilateral migration stocks, broken down by level of education and gender. The 2010 research program focuses on unraveling the links between trade, FDI and migration; the determinants and impacts of the brain drain; and additional surveys collecting individual and household micro data.

International Trade and Investment

The research program on international trade and investment will study (i) distortions in agricultural trade; (ii) policies affecting trade and investment in services; (iii) the impact of regulation and trade-related transactions costs on the international competitiveness of firms; and (iv) enhancement of the

benefits of trade for poor households. One research project is generating time series estimates of distortions to agricultural producer and food consumer prices in 75+ countries, which will be used to estimate the distributional and poverty consequences of alternative types of policies. Another ongoing project aims to develop a detailed picture of trade policy in services, market structure and performance across sectors and time. A cross-country survey is collecting information on impediments to international integration. The impact of regulatory policies, such as product standards and their enforcement or internal trade costs associated with “red tape”, on trade performance is the focus of ongoing and planned research in the area of regulation, trade costs and trade performance. Another area of research is the assessment of the impacts of trade and trade policy on poverty. Current focus is on domestic complementarities to trade policy, and on household-farm-enterprise adjustments to trade shocks. Finally, an assessment of Doha Round is under way, as is an effort to determine the extent to which regional trade agreements involve implementation of trade policy and regulatory commitments that go beyond the status quo.

Macroeconomics and Growth, and Investment Climate

Major research objectives looking forward are to understand the drivers of economic growth; the reasons underlying the aggregate instability of developing economies; the benefits and costs of international financial integration; and the contribution of governance to growth.

Research on the microeconomic foundations analyzes the firm-level behavior underlying aggregate investment, employment, productivity and growth, to gain insights into the efficacy of different growth strategies that also helps explain the heterogeneous responses of countries to similar policies. Also under examination are the scope, speed and efficiency of resource reallocation across the economy, and its consequences for aggregate performance. Research is also conducted on the determinants of technical progress for developing countries, the role of innovation in shaping the growth link between developed and developing countries over the short run and the long run, and assessing the role of fiscal institutions and rules for the efficiency of public expenditures, the contribution of public investment to growth, and the enforcement of fiscal discipline. The poorest countries often experience high macroeconomic volatility and frequent crises. The nature of the shocks faced by different types of developing countries, and how countries’ micro and macroeconomic policies and structural features mitigate or exacerbate instability, are being studied.

Research also examines the benefits and challenges of

financial globalization and financial development for aggregate performance, the links between international integration and domestic financial market development, and the propagation mechanism of financial shocks across countries. Ongoing and planned work explores the factors behind the international allocation of capital flows, and the exchange rate policies suitable to a financially-globalized world—including the potential use of the real exchange rate as a growth-promoting tool. Finally, research in 2010 will examine the macroeconomic effects of debt forgiveness, which has attracted little attention so far, despite its prominent role in the aid debate and the increasing claims it poses on scarce donor resources.

Private Sector Development

The private-sector development program focuses on the determinants of firm entry, exit and performance, which are central to understanding the microeconomics of the growth process. Special areas of investigation are the determinants and consequences of entrepreneurship and innovation, informality, and corporate governance. Finally, the impact of the business environment and its reforms on firm performance are also being studied to identify the most effective reforms and help prioritize them.

Central to the 2010 research program is the study of entrepreneurship and the environment that motivates and supports the creation of new firms, including self-employment. Planned research will use the investment climate firm surveys and individual country databases to investigate the role of different policies in influencing entrepreneurship and the innovation process. Informal firms account for roughly one-third of production and one-half to three-quarters of the non-agricultural labor force in developing countries, and is an important source of employment for the poor. Research on the determinants and consequences of informality includes coupling the detailed business environment data collected by the Bank with analysis of detailed firm-level cross-country data, and the development and analysis of new in-depth single country surveys.

Research on corporate governance investigates the impact of institutional development and the business environment on firms' governance structures, and how internal and external governance affects firm performance. Research on the role of business environment has two focuses. The first is seeking to identify binding constraints to firm growth. Second, the use of natural and randomized experiments to evaluate the impact of reform efforts will enable the Bank to provide policy advice on which reforms work, which does not, and why. This research will help policymakers develop policies to encourage the entry of new firms, promote self-employment, and enhance the growth of firms, both small and large.

Poverty and Inequality

The research program for 2010 is organized around two main themes: better data to describe poverty and inequity, and research to better understand and break poverty and inequality traps. Efforts are under way to both improve the quality of existing data and also find new data measures. A credible methodology for finer census and survey-based poverty maps was developed. Current efforts are directed toward extending these imputation methodologies to non-income dimensions of poverty (such as nutrition and calorie intakes), and to extend them to new areas as well, such as to fill in information gaps across multiple household surveys. There is need to develop operational measures of the concept of inequality of opportunities. Current research is finding that the notion of a “poverty profile” can also be extended to develop “opportunity profiles”, which can provide a complementary perspective on the dimensions of deprivation in a particular setting.

The Living Standards Measurement research agenda includes producing tools that provide guidance on best-practices in integrated household surveys, and partnering with the international survey community and client counterparts to increase the flow of information both north-south and south-south. There is an ongoing effort to develop computational tools for the analysis of poverty. The software ADEPT that offers a platform for users to produce tabulations and graphs for poverty assessments is currently being extended to perform similar functions for the analysis of labor markets, gender differences, education and social protection. A platform-independent software program called PovMap2 has been produced for the purpose of combining household survey data with very large datasets, such as a population census, to be used in constructing detailed poverty maps. The Investing in Equity research program aims to identify the most important specific dimensions of inequity that impinge on economic performance and are amenable to policy intervention. The three topics under study are: inequalities in education and health; inequalities in opportunities stemming from location and impediments to mobility; and inequalities in voice and power.

Social Development, Gender, and Social Policies

This research program uses several approaches to better understand the social inequalities and disparities in access to public services, finance, human development outcomes, and decision-making at the household level. One project sought to understand the role of culture and social norms in creating and sustaining the position of women in society. Another investigates the social status of stigmatized groups (untouchable caste) in India, trying to understand social exclusion—why certain social groups in certain localities remain poor and

disempowered, while others enjoy greater mobility and power. Yet another focuses on non-migrant women in rural China to see how their work, time allocation, and health are affected by living in a migrant household.

Social Protection and Risk Management

Conflicts and natural disasters severely impede economic growth, often reversing its course, and are frequently followed by disease, social fractionalization, environmental damage, and collapse of institutions. The World Bank has been involved in research on the economic causes and consequences of conflicts and natural disasters for nearly a decade. Building on earlier work on the economics of civil war and post-conflict transitions, this research program explores the intersection of political, security, and economic dimensions after a conflict or disaster. There has also been research on governance dimensions, including on the institutional and economic factors that determine whether strife reemerges or peace is sustained after a civil conflict. The studies have identified policy prescriptions that foster economic growth, promote sustainable democratization, and encourage institutional reform during post-conflict or post-disaster recovery situations.

How to Obtain More Information

This volume is published annually or biennially. More timely information on World Bank research and its findings is available in the monthly World Bank Research E-Newsletter and in the quarterly World Bank Research Digest, which reach subscribers by email. Subscription links to these newsletters, as well as links to archived Research newsletters, can be found at <http://newsletters.worldbank.org>. The Abstracts of Current Studies, Policy Research Working Papers, research reports, and development data are available at <http://econ.worldbank.org>.

Studies by Subject Area

Introduction 1

Studies by Subject Area 7

Abstracts of Current Studies 15

Agriculture and Rural Development 17

| | |
|---|----|
| Rural Growth and Productivity | 17 |
| Land Market Reforms and Their Effects on the Poor | 17 |
| Land Policies for Growth and Poverty Reduction | 18 |
| Alternative Ways to Insure Agriculture | 19 |
| Non-market and Market-Based Land Allocation in Vietnam | 19 |
| Inequality and Investment: Land Tenure and Soil Degradation in the Indus Basin | 20 |
| Macro-Micro Linkages of Irrigated Water Management | 21 |
| Differential Impacts of Trade Liberalization in China: Assessing the Effects on Poor and Vulnerable Households | 22 |
| Smallholders and Global Supply Chains | 23 |
| Capacity-Building Activity to Train Users of a Methodology Developed in the Study “Macro-Micro Feedback Links of Irrigation Water Management” | 24 |
| Land Tenure in Ethiopia | 24 |
| The Economics of Integrated Pest Management in Developing Countries: Evidence from Vietnam | 25 |
| New Options to Deepen Access to Low-Income Areas | 25 |
| Options for Cleaner Energy in Developing Countries: The Electrification of Africa | 26 |
| An African Green Revolution: Finding Ways to Boost Productivity | 26 |
| Land Policies in India and the Impact of Empowerment | 27 |
| Climate Change, Agricultural Productivity, and Rural Poverty in India | 28 |
| Non-Traditional Crops, Traditional Constraints: Are Smallholders Sharing the Benefits of High-Value Export Crop Production? | 28 |
| Living Standards Measurement Study: Integrated Surveys on Agriculture | 29 |

Environment and Natural Resources Management 31

| | |
|--|----|
| Markets for Environmental Resources | 31 |
| The Policy Nexus of Agriculture and Climate Change | 31 |
| The Impacts of Sea Level Rise | 32 |
| Identification of Flood Hazard Hotspots | 33 |
| Improving Indoor Air Quality for Poor Families: Proposal for a Controlled Experiment in Bangladesh | 33 |
| Understanding and Improving Environmental Governance in Developing Countries | 34 |
| Natural Disaster Management in Vietnam | 34 |
| Mitigating Climate Change by Avoiding Lock-ins to High-Carbon Energy Systems | 34 |
| Measuring the Health Effects of Indoor Air Pollution in Developing Countries: The Case of Bangladesh | 36 |

| | |
|--|----|
| Stockpiles of Obsolete Pesticides: Threat to Public Health and Biodiversity | 37 |
| Climate Change and Rural Development in South America | 37 |
| Options for Cleaner Energy in Developing Countries: Transportation in India | 38 |
| Global Warming and Developing Countries: An Economy-wide Perspective | 38 |
| Vulnerability of Hydropower Generation and Water Supply Arrangements in Transboundary Basins | 39 |
| Biofuel Production Costs: Focus on Africa | 40 |
| Health and Climate Change | 40 |
| Economic and Environmental Impacts of Biofuels | 41 |
| Opportunities for Financing the Destruction of Unwanted Ozone Depleting Substances through the Voluntary Carbon Market | 42 |
| State and Trends of the Carbon Market—2009 | 42 |
| Implications of Inertia, Irreversibility, and Uncertainty for Climate Change Mitigation Policy | 43 |
| Implications of the Economic Crisis for Natural Resources and the Environment | 43 |

Finance and Banking 45

| | |
|---|----|
| Globalization and International Capital Flows | 45 |
| Joint versus Individual Liability | 46 |
| Access to Finance and Poverty Alleviation | 47 |
| Finance Research Program FY 2005–2007 | 47 |
| The Impacts of Credit on Urban Micro-Enterprises in the Northeast of Brazil: CrediAmigo Meets ECINF | 49 |
| Remittances and Financial Development | 50 |
| Barriers to Banking | 50 |
| Foreign Banking | 51 |
| Gender and Financial Data | 52 |
| Research on Financial Indicators | 52 |
| Research Program in Finance and the Private Sector, FY08–FY10 | 53 |
| Financial Literacy and the Use of Financial Services | 59 |
| Biometric and Financial Innovations in Rural Malawi | 59 |
| Financial Literacy and Investment Choice | 60 |
| Impact Evaluation of the Thailand Village Fund | 60 |
| Access to Banking Services in Mexico | 61 |
| Money or Ideas | 61 |
| Understanding Stock Market Reactions | 62 |
| Reducing Barriers to Savings in Malawi | 62 |
| Youth Entrepreneurs in Bosnia-Herzegovina | 62 |

Governance, Political Economy, and Public Sector Management 63

| | |
|---|----|
| The Impact of Institutions on Development | 63 |
| Local Governance in India | 63 |
| Governance Assessments and Reforms | 64 |
| The Economics of Secession: Inequality, Globalization, and Self-Determination | 64 |
| Political Economy of Public Services | 65 |
| Citizen Report Cards at the Community Level—Impact Evaluation | 66 |
| Information Campaigns to Improve Public Services | 67 |
| Human Rights and Basic Services | 68 |
| Public Expenditure and Service Delivery in Chad | 68 |
| Decentralization and Local Participation | 69 |

| | |
|---|----|
| Limited Access Orders and Integration of Political and Economic Systems | 70 |
| The Impact of Citizen Report Cards at the Community Level | 70 |
| Development Impact Evaluation Initiative (DIME) | 71 |
| Governance Structure | 73 |
| The Role of the Private Sector and NGOs in Service Delivery | 73 |
| Improving the Fiscal Health of Large Cities: Evidence from India | 74 |
| Is Research Pro-Poor? Empirical Economics Research and the Wealth of Countries | 74 |
| Political Alternation as a Restraint on Investment in Influence | 75 |
| Trends in National E-Leadership | 75 |
| The Impact of E-Government Experience in India | 76 |
| Background Work on the Policy Research Report on Local Governance and Local Development | 77 |
| M&A Control and Thresholds for Pre-Merger Notification | 77 |
| How Unpredictable Aid Influences Service Delivery: Results from Country Case Studies | 78 |
| Trust in Government: Empirical Research on Latin America | 79 |

Health, Population, and Nutrition 81

| | |
|---|----|
| Health Care Providers and Markets in Delhi | 81 |
| Public Health Service Delivery | 81 |
| Improving the Effectiveness of AIDS Treatment while Strengthening Prevention in Free State Province, South Africa | 82 |
| Health Care Financing and Delivery | 83 |
| Research on HIV/AIDS Prevention and Treatment | 83 |
| Reproductive and Child Health and Human Development | 84 |
| The Role of Testing in HIV/AIDS Epidemics | 85 |
| Understanding Disease Control of Highly Pathogenic Avian Influenza | 85 |
| Conditional Cash Transfers for HIV/STI Prevention | 86 |
| Health Insurance Take-up, Market Efficiency, and Impacts: Field Experiments and Data Collection in the Philippines | 87 |
| Understanding Adult Mortality in Developing Countries | 87 |
| Socio-economic Impact of Reducing Premature Adult Mortality: The Case of Antiretroviral Treatment for HIV/AIDS Patients | 88 |
| Marriage Transitions and HIV/AIDS in Malawi | 88 |
| Impact of Family Size on Child Welfare | 89 |
| The Politics of Public Health: A Systematic Case Study Approach | 90 |
| Follow-up Study of Stunted Children in Jamaica | 90 |
| The Economic Impact of Pandemic Influenza and Mitigation Policies | 91 |
| Malaria Impact Evaluation Program | 91 |
| The Long-Term Impact of Providing Eyeglasses to Primary School Students: Further Analysis of a Randomized Trial Conducted in China's Gansu Province | 92 |
| Vietnam Avian Influenza Sero Prevalence Survey | 92 |

Human Capital Development, Labor, and Employment 95

| | |
|--|----|
| Developing Urban Knowledge Economies in Asia | 95 |
| Child Labor and Access to Credit | 96 |
| An Evaluation of Alternative Food for Education Approaches | 96 |
| Benefits of Conditional Cash Transfers in Cambodia | 97 |
| Schooling, Poverty, and Ethnic Minorities in Laos | 98 |

| | | |
|---|-----|--|
| Improving Schools in Pakistan | 98 | |
| Labor Informality: Estimating the Benefits and the Costs in Brazil | 99 | |
| Labor Issues in Service Delivery: Pay, Incentives, and Performance of Service Providers | 100 | |
| Measuring and Understanding the Impacts of Development Projects | 101 | |
| Informality in Latin America and the Caribbean: Understanding the Choices of Firms and Workers and Their Implications for the Welfare State | 101 | |
| Conditional Cash Transfers: Reducing Present and Future Poverty—Policy Research Report | 102 | |
| India’s Employment Challenges: Answering Old Questions with New Data | 103 | |
| Child Quality over Quantity | 104 | |
| Evaluating Small and Medium Enterprise Support Programs in Latin America | 104 | |
| Financial Incentives | 105 | |
| Small Enterprise Performance and the Investment Climate: Evidence from Ethiopian Rural and Urban Surveys | 106 | |
| The Determinants of Learning and the Impact of Private Tutoring on Educational Outcomes in Vietnam | 106 | |
| Marginal and Average Returns to Schooling across Geographical Regions | 107 | |
| Reaching the Poor with Quality Education: What Works? | 107 | |
| Labor Regulation and Employment in India’s Retail Stores | 108 | |
| Impact Evaluation of a School-Based Management Program in Mexico | 108 | |
| Unemployment and Worker-Firm Matching: Comparing Transition and Advanced Labor Markets | 109 | |
| Litigation and Settlement: New Evidence from Labor Courts in Mexico | 109 | |
| CCTs, Schooling, and HIV/AIDS | 110 | |
| Economic Restructuring, Shocks to Parent Employment and the Economic Enrollment Decision: Evidence from Urban China | 110 | |
| Openness and Labor Demand in East Asia | 111 | |
| Impact Evaluation of a Parental Empowerment Program in Mexico | 112 | |
| Increasing Access to Education in Mozambique: Analysis of Barriers and Effects of Recent Reforms | 112 | |

Infrastructure and Urban Development **115**

| | | |
|--|-----|--|
| Impact Evaluation of a Rural Road Rehabilitation Project in Vietnam | 115 | |
| Emergence from Subsistence: Infrastructure, Location, and Development in Nepal | 115 | |
| Information Technology and Development | 116 | |
| Infrastructure and Growth | 117 | |
| Fourth Urban Research Symposium: Follow-up Activities | 117 | |
| Price Structure and Network Externalities in the Telecommunications Industry: Evidence from Sub-Saharan Africa | 118 | |
| Identification and Analysis of Urban Disaster Risk | 118 | |
| Competition and Corruption in Public Procurement: Evidence from Infrastructure Projects | 119 | |
| Impact Evaluation of Reforms on Efficiency: Evidence from a New Sample of Electric Utilities | 119 | |
| The Livestock Industry and Infrastructure Development | 120 | |
| Addressing the Development Impact of the Media | 120 | |
| The Role of Mobile Phones in Sustainable Rural Poverty Reduction | 121 | |
| Understanding Equity-Efficiency Tradeoffs in Regional Development Strategies | 121 | |
| Opportunities and Challenges for Small-Scale Private Service Providers in Electricity and Water Supply: Evidence from Bangladesh, Cambodia, Kenya, and the Philippines | 122 | |
| Evaluation of Rural Electrification | 123 | |
| Fifth Urban Research Symposium | 123 | |
| The Role of Land Management in Pre and Post-Disaster Planning and Responsiveness: Impacts on Urban Land Markets | 124 | |

International Migration and Development 125

| | |
|--|-----|
| Trade and Technical Change | 125 |
| Remittances and Migration | 125 |
| International Migration: Implications for Growth and Welfare | 126 |
| Household Surveys on International Migration and Remittances in Ghana | 128 |
| International Migration and Development—Case Study of Brazil Nikkei Households | 128 |
| Remittances and Capital Market Access | 128 |
| Brain Drain and Brain Gain | 130 |
| Gender Action Plan | 130 |
| Where to Go? Migration Patterns in Nepal | 130 |
| KCP Migration, Remittances-Africa | 131 |
| Migration Africa-Regional Program | 132 |

International Trade and Investment 135

| | |
|--|-----|
| Product Variety in Trade and Factor Prices | 135 |
| Research in Industrial Organization | 135 |
| Agricultural and Non-Agricultural Trade Reform under the Doha Development Agenda | 136 |
| Trade Policy Data Support/Dissemination | 136 |
| Standards, Regulatory Reform, and Trade Facilitation | 138 |
| Beyond Openness: Trade and Behind-the-Border Policy Reforms | 138 |
| Doha, Trade, and Poverty | 139 |
| Global Trade Architecture | 139 |
| Poverty Alleviation through Reducing Distortions to Agricultural Incentives | 140 |
| Trade Facilitation | 141 |
| Trade Costs, Export Competitiveness, and Development Prospects | 141 |
| Export Crops, Marketing Costs, and Poverty | 141 |
| Deep Integration and the Adjustment Process in Mexico | 142 |
| Trade: Regulatory Governance Harmonization for Promoting Trade and Deepening Economic Integration in West Africa | 142 |
| Transnational Production Networks in East Asia and the Pacific | 144 |
| Services Analysis, Modeling, and Capacity-Building | 144 |
| Analysis of Agricultural Tariff-Based Import Barriers | 145 |
| A New African Trade Database | 145 |
| Transparency and Competitiveness | 147 |
| International Diversification | 148 |
| Corruption and Trade | 148 |
| The WTO and Economic Development | 149 |
| U.S. Anti-dumping on Vietnamese Catfish | 149 |
| Aflatoxin Standards and Agri-Food Trade: Barrier, Catalyst, or Distraction? Standards, Competitiveness, and Africa's | |
| Groundnut Exports to Europe | 150 |
| Services Trade Policy | 151 |
| Exports and Growth | 152 |
| Web Design and Maintenance | 153 |
| Competitive Africa—Strategies to Leverage the New Global Economy | 153 |

Macroeconomics and Growth, and Investment Climate 155

| | |
|--|-----|
| Poverty Alleviation and the Composition of Economic Growth | 155 |
| Finance and Macroeconomics | 155 |
| The Impact of Macroeconomic Policies on Poverty and Income Distribution: Macro-Micro Evaluation Techniques and Tools | 156 |
| The Investment Climate and the Micro Underpinnings of Growth | 157 |
| Aid and the Millennium Development Goals | 158 |
| Why Are Developing Countries So Slow in Adopting New Technologies? | 158 |
| Firm Dynamics and Growth | 159 |
| The Evolution of Development Economics and the Role of the World Bank: Archival Inquiries, 1948–1968 | 160 |
| Microeconomics of Productivity Growth in Eastern Europe and the Former Soviet Union | 160 |
| Gemloc Advisory Services | 161 |
| Pro-cyclical Effects of Capital Requirements: Theory, Evidence, and Policy Lessons for Middle-Income Countries | 162 |
| Africa and the Global Economic Crisis | 162 |

Poverty and Inequality 163

| | |
|---|-----|
| LSMS IV: Research for Improving Survey Data | 163 |
| World Poverty Monitoring | 163 |
| World Income Distribution | 164 |
| Poverty and Health | 165 |
| Looking Beyond Averages: A Research Program on Poverty and Inequality | 166 |
| Long-Run Impacts of Health Shocks in Africa | 167 |
| Aid Effectiveness | 168 |
| Equity and Development: A Research Program on Poverty and Inequality | 168 |
| Urban Poverty Project Evaluation—Indonesia | 171 |
| Trade, Growth, and Poverty in the Least Developed Countries | 172 |
| Poverty Impacts of Egypt's Social Fund for Development | 173 |
| Seasonality, the Hardcore Poor, and Micro-Finance: A Case Study of Bangladesh | 173 |
| Software Tools for Applied Economic Analysis | 174 |
| Poverty in Marginal Areas: Evidence from Small-Area Estimates of Local Welfare | 174 |
| Social Hierarchy and Cooperation | 175 |
| New Initiatives in Small Area Estimation: Validating Poverty Maps, Mapping Undernutrition, Constructing Pseudo-Panels | 175 |
| Inequality of Opportunity | 176 |
| Experiments on Fairness and Role Models | 177 |

Private Sector Development 179

| | |
|---|-----|
| Informality and Growth | 179 |
| World Bank Group Entrepreneurship Database | 179 |
| The Informal Sector, Business Climate and Economic Growth in the West African Economic and Monetary Union Countries: Case Studies | 180 |
| Corruption in Latin America | 180 |
| Entrepreneurship Database | 181 |
| LAC Enterprise Surveys: Trends in the Region | 181 |
| Informal Sector Competition | 182 |

| | |
|--|-----|
| Gender Differences in Microenterprises | 182 |
| Determinants of Competition | 182 |
| Gender and Returns to Capital in Ghana | 183 |
| Occupational Segregation in Sri Lanka | 183 |
| Innovation and Informality | 183 |
| Firm Productivity in China | 184 |
| Determinants of Growth Enhancing Reforms | 184 |

Social Development, Gender, and Social Policies 185

| | |
|---|-----|
| Social Customs and Women's Status in Rural Pakistan | 185 |
| Social Status in India | 185 |
| Nicaragua: Conditional Cash Transfer and Asset Creation | 186 |
| Gender and Rural Labor Markets | 187 |
| The Changing Gender Division of Labor in China | 187 |
| The Gender Dimension of Cotton Productivity in Uganda | 188 |
| GIAEA-Gender Law Library | 188 |

Social Protection and Risk Management 191

| | |
|--|-----|
| The Economics and Politics of Post-Conflict Transitions—Follow-up | 191 |
| Post-Conflict Transitions | 191 |
| Long-term Consequences of Conflict | 193 |
| STAR: Study of Tsunami Aftermath and Reconstruction | 194 |
| Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention | 195 |
| Regulation and Legal Origin | 195 |
| Armed Conflict Location and Event Database (ACLED) | 195 |
| Landmine Contamination, Casualties, and Clearance Database (LC3D) | 196 |

Abstracts of Current Studies

Agriculture and Rural Development

Rural Growth and Productivity

This research project is examining 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, because strategies to reduce poverty often feature components designed to boost regional agricultural incomes.

The research is based on sector and household analyses. The sector studies look at alternative growth paths taken by the agricultural sectors in Indonesia, Thailand, and the Philippines. The studies examine the factors that facilitate the reallocation of labor from agriculture to other sectors, and the alternative roles that productivity gains and factor accumulations have played in explaining the relative performance of the three Southeast Asian countries.

Using a panel of developed and developing countries, the research finds that total factor productivity increased at an average rate of 3.2 percent among the countries studied, accounting for 59 percent of overall growth. Most of the remaining gains stem from large inflows of fixed capital into agriculture. The results also suggest possible constraints to fertilizer use.

Based on household data, the project is also examining the role of natural endowments for growth and productivity in agriculture. Using census and endowment data from Ecuador, the research finds evidence 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 have emerged in how available technologies are applied and thus in the productivity levels that result. 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 of the 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.

In research that matches household survey data from the Philippines with household-specific measures of weather shocks, the findings show that diversification and input choices affect efficiency outcomes among farmers, although these effects are not dominant. Accumulated wealth, past decisions

to invest, favorable market conditions, and propitious weather are also important determinants of efficiency outcomes among rice farmers. This may lead to the conclusion that the costs of incomplete formal and informal insurance markets are higher for poorer farmers.

Responsibility: Development Research Group, Rural Development Team—Donald F. Larson (dlarson@worldbank.org). With Rita Butzer, Harvard University; Mauricio León, Government of Ecuador; and Yair Mundlak, Hebrew University.

Project Code: P043136.

Completion date: Ongoing.

Countries: Indonesia, Thailand, Philippines.

Publications

Larson, Donald F., and Frank Plessmann. 2009. "Do Farmers Choose to Be Inefficient? Evidence from Bicol." *Journal of Development Economics* 90(1): 24–32.

Mundlak, Yair, Rita Butzer, and Donald F. Larson. 2008. "Heterogeneous Technology and Panel Data: The Case of the Agricultural Production Function." Policy Research Working Paper 4536. World Bank, Washington, D.C.

Land Market Reforms and Their Effects on the Poor

This research project investigated how property rights reforms aimed at improving the functioning of rural factor markets in Honduras, Mexico, Nicaragua, and Ethiopia affected agricultural productivity and the lives of the rural poor. The study was 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 showed 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. Although it was significant, the impact was not large enough to overcome the high levels of inequality and inefficiency in land use present in some of the countries studied.

The findings were discussed at a workshop with Central American academics and policy makers 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.

The European Union Trust Fund contributed funding for the research.

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.

Project Code: P053319.

Completion date: December 2004.

Countries: Honduras, Mexico, Nicaragua, and Ethiopia.

Publications

Ayalew, W.D., and T. Alemu. 2008. "Assessing the Functioning of Land Rental Markets in Ethiopia." *Economic Development and Cultural Change* 57(1): 67–101.

Deininger, Klaus, and Songqing Jin. 2008. "Land Sales and Rental Markets in Transition: Evidence from Rural Vietnam." *Oxford Bulletin of Economics and Statistics* 70(1): 67–101.

Land Policies for Growth and Poverty Reduction

To bridge the gap between research and policy at the country level, this research project provided evidence to demonstrate the importance of secure land tenure and effective land institutions within the context of broader factor market development. The project also helped to identify policy and institutional options to improve tenure security and land access for the poor.

There is broad agreement on the importance of secure tenure and well-functioning land markets. The project sought to increase understanding of the magnitude of the associated effects, the channels through which they come about, the longer-term impacts, and the effect of innovative policy interventions in these areas, especially in the African context. The project explored the potential and actual impacts of greater tenure security and the implications of tenure security and land market functioning on non-agricultural development, especially through migration and development of the rural non-farm economy.

The project used large-scale household level panel data sets from a range of countries.

On tenure security, it used a large data set from Ethiopia that differentiates tenure security and transferability to explore determinants of different types of land-related investment and its possible impact on productivity. The analysis found some

support for endogeneity of investment in trees; this was not the case for terraces and fallowing. Transfer rights were unambiguously investment-enhancing. The large productivity effect of terracing implied that increased tenure security and transferability could significantly enhance rural welfare in Ethiopia.

In Uganda, information on parcels under ownership and usufruct by the same household from a nationally representative survey pointed toward significant disincentives of overlapping property rights on short and long-term investments, a result that was robust to various tests. The analysis combined this with information on crop productivity to obtain a rough estimate of the magnitudes involved and then made suggestions on ways to eliminate such inefficiencies.

The use of a large national dataset to explore the nature of internal migration in China highlighted the important contribution of land markets to occupational diversification as well as increased productivity, with increases in net revenues on the same plot of about 60 percent. The findings were that migration offers opportunities to escape poverty by the asset poor whose opportunities in the local economy are limited, and that over time returns to education have increased and a strong gender bias in favor of males has been attenuated. The fact that, in China as well as Vietnam, secure land rights significantly increased the supply of land to the rental market suggests that government has a key role in facilitating the emergence and functioning of efficiency-enhancing land markets.

The DFID-World Bank collaborative program on land policies and the KCP provided support for the project.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org). With S. Jin; T. Olsen; H.K. Nagarajan, National Council for Applied Economic Research, New Delhi, India; and Scott Rozelle, Stanford University.

Project Code: P054160, P095390, P098411.

Completion date: June 2007.

Countries: Ethiopia, Uganda, Tanzania, China, Vietnam, Sri Lanka, Cambodia.

Publications

Deininger, Klaus. 2007. "Land Markets." In Larry Blume and Steven Durlauf (eds.), *The New Palgrave Dictionary of Economics*. 2nd Edition. London: Palgrave.

———. 2009. "Land Registration, Governance, and Economic Development: Evidence and Implications for Policy." *World Bank Research Observer*.

Deininger, K., and D.A. Ali. 2007. "Do Overlapping Property Rights Reduce Agricultural Investment? Evidence from Uganda." *Policy Research Working Paper 4310*. World Bank, Washington, D.C.

- Deininger, Klaus, and D. Ayalew. 2008. "Do Overlapping Land Rights Constrain Agricultural Investment? Evidence from Uganda." *American Journal of Agricultural Economics* 90(4):869–84.
- Deininger, Klaus, D. Ayalew, S. Holden, and J. Zevenbergen. 2008. "Rural Land Certification in Ethiopia: Process, Initial Impact, and Implications for Other African Countries." *World Development* 36(10): 1786–812.
- Deininger, Klaus, D. Ayalew, and T. Yamano. 2008. "Legal Knowledge and Economic Development: The Case of Land Rights in Uganda." *Land Economics* 84(4): 593–619.
- Deininger, Klaus, S. Holden, and H. Ghebru. 2009. "Impacts of Low-cost Land Certification on Investment and Productivity." *American Journal of Agricultural Economics* 91(2): 359–73.
- Deininger, K., and S. Jin. 2007. "Does Greater Tenure Security Allow More Efficiency-Enhancing Land Transactions? Evidence from Vietnam." Policy Research Working Paper. World Bank, Washington, D.C.
- . 2007. "Linking Investment Climate and Household Surveys to Identify Key Constraints of Rural Nonfarm Activity: Evidence from Tanzania." Policy Research Working Paper. World Bank, Washington, D.C.
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- . 2009. "Securing Property Rights in Transition: Lessons from Implementation of China's Rural Land Contracting Law." *Journal of Economic Behavior & Organization* 70(1–2): 22–38.
- . "Land Rental Markets in the Process of Rural Structural Transformation: Productivity and Equity Impacts from China." *Journal of Comparative Economics*.
- Deininger, Klaus, S. Jin, and H.K. Nagarajan. 2009. "Land Reforms, Poverty Reduction, and Economic Growth: Evidence from India." *Journal of Development Studies* 45(4): 496–521.
- Deininger, Klaus, S. Jin, and M. Sur. 2007. "Sri Lanka's Rural Non-farm Economy: Removing Constraints to Pro-poor Growth." *World Development* 35(12): 2056–78.
- Deininger, K., S. Jin, and X. Yu. 2007. "Risk Coping and Starvation in Rural China." *Applied Economics* 39(11): 1341–52.

Alternative Ways to Insure Agriculture

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 explored relationships among climate, risk, and productivity in developing countries. It examined how international markets for weather insurance might be used to benefit the poor, and considered obstacles to extending the reach of these formal markets.

The findings were that traditional crop insurance suffers from design problems related to information asymmetries that lead to moral hazard and adverse selection problems. Informal practices can provide some protection against income risks, but these arrangements fail when risk is systemic. Weather insurance and other forms of index insurance resolve to go a long way in solving information problems, but do not directly link compensation with losses. Co-operative arrangements appear to mitigate information hurdles while linking compensation more directly to production shortfalls.

Responsibility: Development Research Group, Infrastructure and Environment Team—Donald F. Larson (dlarson@worldbank.org).

Project Code: P070527.

Completion date: June 2007.

Countries: Global.

Non-market and Market-Based Land Allocation in Vietnam

Early research in this project evaluated the equity and efficiency outcomes of the assignment of land use rights through decollectivization in Vietnam. It then examined whether subsequent reallocations of land during the 1990s adjusted for inefficiencies in the initial administrative privatization and whether non-market factors helped or hindered. The final stage looked at the recent increase in landlessness and asked whether this reflects a failure or success of the land market reforms and the emergence of a functioning land market.

The research found that the initial assignment of land use rights achieved a more equitable outcome than would be expected from a consumption-efficient allocation, entailing an equity-efficiency tradeoff that favored the poorest households. It found no evidence of widespread local capture. After decollectivization, land reallocations responded positively but slowly to the inefficiencies of the initial allocation. Non-market forces tended to aid adjustments toward greater efficiency.

As land transactions proceeded, some households lost their land as a result of bad shocks and became poor; others sold their land as they moved up the ladder of non-farm income diversification. With the reforms, did lack of land become more or less correlated with poverty in rural Vietnam—and why? To answer this, the study modeled land and consumption separately, using four repeated household survey cross-sections for 1993, 1998, 2002, and 2004, to see how the determinants of these two variables changed over time. Explanatory variables included ethnicity, education, household demographics, geographic fixed effects, gender of household head, and employment in the public sector or state-owned enterprises. The regressions

were used to study the conditional correlations between land-holding and welfare. In addition to examining what happened to the distribution of land, the project looked at how land quality, capital and investment gradients, and the profile of the landless and of rural employment changed over time. Although the research found rising landlessness among the poor, the post-reform landlessness rate tended to be higher for the non-poor. The results did not support the claim that the process of rising landlessness was poverty increasing in the aggregate, although the Mekong Delta was a possible exception.

A book was written combining the results of all three papers and extending the discussion in a number of directions. Results have been presented at a World Bank seminar (April 2001), a conference on Political Economy and Development at Yale University (2001), a seminar at the National Economics University and Institute of Social Studies in Hanoi (February 2002), the 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, the University of Michigan, the University of Melbourne (March 2003), and seminars at the World Bank resident mission in Hanoi (May 2004). The results on landlessness were presented at the Vietnam Academy of Social Sciences and in the Hanoi MDE seminar series (February 2006), and Pannasastra University of Cambodia in Phnom Penh (March 2006).

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.

Project Code: P074050.

Completion date: December 2008.

Countries: Vietnam.

Publications

Ravallion, Martin, and Dominique van de Walle. 2004. "Breaking Up the Collective Farm: Welfare Outcomes of Vietnam's Massive Land Privatization." *Economics of Transition* 12(2): 201–36.

———. 2006. "Land Reallocation in an Agrarian Transition." *The Economic Journal* 116(October): 924–42.

———. 2008a. "Does Rising Landlessness Signal Success or Failure for Vietnam's Agrarian Transition?" *Journal of Development Economics* 86(2): 191–209.

———. 2008b. "Land and Poverty in Reforming East Asia." *Finance and Development* (September).

———. 2008c. *Land in Transition: Reform and Poverty in Vietnam*. Palgrave Macmillan and World Bank.

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

Land ownership in Pakistan is extremely unequal, leading to very active land leasing markets. This study investigated the incentive problems that arise from land leasing arrangements, particularly the relationship between the structure of land lease contracts and agricultural productivity and investment in soil quality. Data for the study were principally from the 2001 and 2004 Pakistan Rural Household Surveys, which included detailed information on input use, plot-level production, and the terms of tenancy contracts.

The analysis of land-specific investment focused on the application of farmyard manure, which has productivity effects over multiple seasons. The findings showed that investment was lower on leased plots than on owned plots cultivated by the same household, even after taking into account potential adverse selection in the leasing market. The study also found that greater security of tenure increased investment on leased plots. Differences in tenure security across tenants were largely the result of differences in landlords' willingness to commit to long-term contracts.

These findings suggest that there is scope for effective tenancy reform in rural Pakistan. Legislation binding landlords to long-term contracts would encourage tenants to undertake certain types of investment. However, the productivity gains from such policies were estimated to be quite small.

The second phase of the study examined productivity differentials between sharecropped and owner-cultivated land in rural Pakistan. Although no evidence of an overall productivity differential was found, among sharecroppers, those who were more heavily supervised by their landlords were significantly more productive than those who were less supervised. This suggests that the main static efficiency cost of land inequality in Pakistan was not lower productivity per se, but the resource cost of landlord supervision. Further data collection has been undertaken to bolster these findings. Results from a new survey, providing more detail on landlord supervision of share-tenants, will soon be available. The project has contributed to the World Bank's Poverty Assessment in Pakistan and to the Pakistan Rural Factor Market Study.

The project findings were presented at two Poverty and Micro Seminars at the World Bank, Washington, D.C., and at seminars at the Department of Economics of the

University of North Carolina; George Washington University; Yale University; Centre d'Etudes et de Recherches sur le Developpement International in Clermont-Ferrand, France; the NEUDC development conference, Cornell University; the Winter Econometric Society Meeting, Washington, D.C.; and the South Asia Econometric Society Meeting, Lahore, Pakistan.

Responsibility: Development Research Group, Rural Development Team—Hanan Jacoby (hjacob@worldbank.org) and Ghazala Mansuri (gmansuri@worldbank.org). With Pakistan Institute of Development Economics; Juan Munoz, Systemas Integrales; Beatriz Godoy, Systemas Integrales; and David Cuberes, University of Chicago.

Project Code: P077760.

Completion date: December 2005.

Countries: Pakistan.

Publications

Jacoby, Hanan, and Ghazala Mansuri. 2008a. "Incentives, Supervision, and Sharecropper Productivity." *Journal of Development Economics* 88(2): 232–41.

———. 2008b. "Land Tenancy and Non-Contractible Investment in Rural Pakistan." *Review of Economic Studies* 75(3): 763–88.

Macro-Micro Linkages of Irrigated Water Management

This research project traced direct and indirect effects of policy reform on the economy and the water sector. In particular, the research had three main objectives. First, it applied the macro-micro linkages methodology to different environments. Second, it provided insights into how different water management institutions may compensate farmers that are adversely affected by economy-wide policy reforms. Third, it assessed key fundamental linkages between the governance structure of the water economy and the relationships between economy-wide institutions and district or water user organizations.

The analytical framework relied on the computable general equilibrium (CGE) methodology, aligned with a farm-level model that is built into the CGE. Using these components, a tractable empirical model of macro-micro linkages could be developed to test the influence of micro to macro and macro to micro policies, using data from Morocco.

To show how macro-micro linkages worked, the study conducted several sets of policy analysis. The first set centered on macroeconomic policies, with trade reform illustrating the links. The second dealt with microeconomic policies, with water reform chosen to illustrate the links. Trade reform removing protection caused all the endogenous variables to change, shifting the economy to a new equilibrium and benefiting the

country as a whole. The trade reform lowered 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 allocated to other crops.

Additional sets of policy analysis 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. The analysis 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.

The research also evaluated the sector and economy-wide impacts of four policy change scenarios in South Africa. The policy scenarios experimented with relaxing non-price restrictions on water distribution to allow for market based allocations under current water productivity levels and predicted urbanization and industrialization trends.

In Turkey, the study investigated the economy-wide effects of two external shocks, namely a permanent increase in the world prices of agricultural commodities and climate change, along with the impact of the domestic reallocation of water between agricultural and non-agricultural uses.

The project conducted three capacity-building workshops, one in South Africa (August 2006) and two in Turkey (November 2007 and March 2008).

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org). With Ariel Dinar, University of California Riverside; Xinshen Diao, International Food Policy Research Institute; Terry Roe, University of Minnesota; Yacov Tsur, Hebrew University of Jerusalem (Israel); James Thurlow, IFPRI (South Africa); Rashid Hassan, Centre for Environmental Economics and Policy for Africa (Sudan); Sinqobile Chumi, CEEPA (Zimbabwe); and Erol Cakmak, Sirin Saracoglu, and Hasan Dudu, Middle East Technical University, Ankara (Turkey).

Project Code: P081240.

Completion date: September 2008.

Countries: Morocco, South Africa, Turkey.

Publications

Cakmak, Erol H., Hasan Dudu, Sirin Saracoglu, Xinshen Diao, Terry Roe, and Yacov Tsur. 2008. "Macro-Micro Feedback Links of Irrigation Water Management in Turkey." Policy Research Working Paper 4781. World Bank, Washington, D.C.

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Dudu, Hasan, and Sinqobile Chumi. 2008. "Economics of Irrigation Water Management: A Literature Survey with Focus on Partial and General Equilibrium Models." Policy Research Working Paper 4556. World Bank, Washington, D.C.

Hassan, R., J. Thurlow, T. Roe, X. Diao, S. Chumi, and V. Tsur. 2008. "Macro-Micro Feedback Links of Water Management in South Africa: CGE Analyses of Selected Policy Regimes." Policy Research Working Paper 4768. World Bank, Washington, D.C.

Differential Impacts of Trade Liberalization in China: Assessing the Effects on Poor and Vulnerable Households

This research project assessed the impacts of proposed trade reforms under the Doha Agenda on poor and vulnerable people in China. Research undertaken under an earlier project examined the implications of China's World Trade Organization (WTO) accession and identified the possibility that some poor rural households would be adversely impacted by trade reform. According to China's own estimates, however, the annual loss due to WTO to the households—even to those that lose—is small.

This research project showed that the overall impact on those in the poorest 5 to 10 percent of China's rural population only averages about RMB50 per household. A policy that compensated such households by RMB50 per year for the first several years after WTO (e.g., through a direct payment policy or a policy that eliminated tuition and school fees for households in these areas) would more than offset the negative consequences.

The project found that trade liberalization under the Doha Agenda would be quite different from the reforms undertaken for WTO accession. Doha includes liberalization by trading partners, and hence creates opportunities for expanded exports of labor intensive agricultural exports from China.

The analysis suggested that liberalization under the Doha Agenda would be beneficial for China and raised questions about the effectiveness of proposals for increases in tariffs in China, or reductions in disciplines on agricultural protection in China.

The research was presented at conferences and workshops at the Doha Agenda and Agricultural Trade, World Bank Office, Beijing (September 2006); Trade Reform and Rural Poverty, Presentation to the Agricultural Trade Policy Center, Ministry of Agriculture, Beijing (December 2007); Tariff Policy Options

for Cotton in China, Seminar, World Bank Office, Beijing (December 2007); and XVIIth Conference of the International Association of Agricultural Economists, Beijing, China (August 2009).

Responsibility: Development Research Group, Trade Team—Will Martin (Wmartin1@worldbank.org). With Jikun Huang, Yu Liu, and Jun Yang, Center for Chinese Agricultural Policy (CCAP), China; and Scott Rozelle, Stanford University.

Project Code: P094470.

Completion date: June 30, 2008.

Countries: China.

Publications

Huang, Jikun. 2009. "Evolution of USA Farm Bill and Policy." World Bank, Washington, D.C.

Huang, Jikun, Yu Liu, W. Martin, and S. Rozelle. 2008. "Agricultural Trade Reform and Rural Prosperity: Lessons from China." NBER Working Paper 13958, National Bureau of Economic Research, Cambridge, MA. Forthcoming (in 2010) in R. Feenstra and S-J Wei (eds.), *China's Growing Role in World Trade*. National Bureau of Economic Research Conference Report. Chicago: The University of Chicago Press.

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Huang, Jikun, Xu Zhigang, Jun Yang, and Huanguang Qiu. 2009. "Outlook for Global and China's Agricultural Market in the Second Half of 2009." World Bank, Washington, D.C.

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Products in Doha Negotiations for World and China's Agriculture." Selected Paper, Conference of the International Association of Agricultural Economists, Beijing, August 16–22.

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Smallholders and Global Supply Chains

This project aimed to compare and contrast alternative mechanisms for the development of commercial and organizational linkages of small-scale producers to high-value supply chains for agricultural and food products, and for supporting the institutional architecture related to food quality and sanitary and phytosanitary management.

The project analyzed compliance with standards and assessment of conformity among smallholders in Africa. It looked for the set of "good practice" interventions in support of smallholder compliance with market/buyer requirements in high-value markets. It also looked at the underlying economic and institutional factors and outcomes associated with donor and government work in this field. And the project highlighted the lessons from implementation experience and guiding principles for improving the effectiveness and poverty reduction impacts of current and future interventions.

Investments and technical assistance in the area of smallholder compliance with market/buyer requirements have expanded considerably over the past decade. For some organizations, the efforts to facilitate small farmer standards compliance are a core line of activity; for others, these efforts form part of a broader range of activities pertaining to value chain or rural economic development. However, to date there have been limited attempts to draw lessons about operational effectiveness, define and document "good" or "best" practices in this field, and develop guiding principles for improving the effectiveness and poverty reduction impacts of future interventions.

The project developed an analytical framework to undertake country-level and comparative case studies. It carried out in-depth case studies in Sub-Saharan African countries involving primary and secondary data collection, interviews with private and public sector officials, and structured surveys of small-scale producers, buyers/exporters in Sub-Saharan Africa, and international practitioner organizations.

The poverty reduction strategy plans of countries in

Sub-Saharan Africa commonly include targets and strategies aimed at promoting trade and private sector development and the commercialization of small-scale producers as a means to reduce poverty and enhance gender equality. This project directly addressed these issues by comparing and contrasting alternative mechanisms, strategies, and implementation experiences in this field, and disseminating the results to both governments and the private sector in Sub-Saharan African countries. Thus, the outcomes of the research will contribute to the enhanced effectiveness of strategies that address poverty reduction priorities in trade and private sector development, and interventions geared toward the commercialization of small farm agriculture.

Responsibility: Agriculture and Rural Development—Steven Jaffee (Sjaffee@worldbank.org) and John Lamb (Jlamb@worldbank.org); Poverty Reduction and Economic Management, International Trade—Michael Jensen; and Development Research Group, Finance and Private Sector Development—Xavier Gine. With Luz Diaz Rios; Spencer Henson, University of Guelph and Research Fellow, Institute of Development Studies, University of Sussex; John Cranfield, University of Guelph; Jose Blandon, University of Guelph; George Kwadzo, University of Ghana; Ramatu M. Al-Hassan, University of Ghana; Johnny Muguisha, University of Makerere; Gabriel Elepu, University of Makerere; Gelson Tembo, Independent Consultant in Zambia; John Keyser, Independent Consultant in Zambia; John Humphrey, Institute of Development Studies, University of Sussex; Julius Okello, ICRISAT/CGIAR, Kenya; Paul Siegel; Yolanda Strachan; and Matthew Edwardsen, Forest Service.

Project Code: P100393.

Completion date: September 30, 2009.

Countries: Focus on Ghana, Kenya, Uganda, Zambia. However, additional Sub-Saharan African countries will also gain value from the results.

Publications

Henson, S., et al. 2008. "Linking African Smallholders to High-Value Markets: Practitioner Perspectives on Benefits, Constraints, and Interventions." Policy Research Working Paper 4573. World Bank Agriculture and Rural Development Department, World Bank, Washington, D.C. http://imagebank.worldbank.org/server/WDSContentServer/IW3P/IB/2008/03/24/000158349_20080324130750/Rendered/PDF/wps4573.pdf

Diaz, L., et al. Forthcoming. "Not Yet Up to Standard: The Legacy of Two

Decades of Private, Governmental, and Donor Efforts to Promote Ugandan Horticultural Exports." *Agriculture and Rural Development*, Discussion Paper.

Capacity-Building Activity to Train Users of a Methodology Developed in the Study “Macro-Micro Feedback Links of Irrigation Water Management”

This research project aimed to develop capacity-building activities to enhance the impact and utility of a methodology to improve macro-micro feedback links in irrigation water management. The methodology was developed and demonstrated in an initial study based on the case of Morocco. This project, focused on South Africa and Turkey, further developed and expanded the methodology.

South Africa and Turkey face severe water problems that are exacerbated by equity, growth, and resource sustainability issues. Both countries engaged in various macro and micro-economic policy reforms that directly and indirectly affect the water and agricultural sectors as well as the entire economy.

In the case of South Africa, the policy issues include: addressing equity in water allocation, both in agriculture and in the peri-urban areas; securing and valuing water-environment relationships; establishing institutions to allow the trade of water in and between sectors; developing international trade programs in which South Africa is the major supplier of grains for the African continent and a trader with the United States and the European Union; and evaluating labor policies that regulate labor movement and the migration of laborers from other countries.

For Turkey, the major issues include: opening trade and removing protection, both in the framework of the World Trade Organization Agreement on Agriculture and European Union membership; prioritizing investment between irrigation and other sectors; implementing adjustments to comply with European Union Water Framework Directives and the shift to volumetric pricing in irrigated agriculture; and subsidizing reform, including changes in the structure of budgetary transfers to farmers.

The analytical framework relied on the computable general equilibrium (CGE) methodology, aligned with a farm-level model that was built into the CGE. A tractable empirical model of macro-micro linkage approach using data from Morocco was extended to apply to Turkey and South Africa.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org). With Ariel Dinar, University of California; Xinshen Diao; James Thurlow, International Food Policy Research Institute; Terry Roe, University of Minnesota; Yacov Tsur, Hebrew University of Jerusalem; Erol Cakmak, Sirin Saracoglu, and Hasan Dudu, Middle East Technical University; Rashid Hassan; and Chumi Singo, CEEPA University of Pretoria, South Africa.

Project Code: P100519.

Completion date: June 2008.

Countries: South Africa, Turkey.

Land Tenure in Ethiopia

Although many African countries have recently adopted highly innovative pro-poor land legislation, lack of implementation implies that the potentially far-reaching impact on productivity, poverty reduction, and governance is rarely realized. Similarly, although a large theoretical literature discusses the possible inefficiency of sharecropping contracts, all of these estimates are conditional on contracts actually being entered into and may thus miss out on the potentially much larger inefficiencies from non-realized land market transactions.

This research project is using a representative household survey from Ethiopia where, over a short period, certificates to more than 20 million plots were issued. In addition, the analysis is based on household level fixed-effect estimates from about 8,500 plots operated by households who own and share-crop land in the Ethiopian highlands.

The findings so far reveal some evidence in support of Marshallian inefficiency. However, the magnitude of the effects is small compared with the losses resulting from the fact that households are not able to attain their desired operational holding size. The rapid speed, participatory nature, and low cost of Ethiopia's land certification, together with the positive results from this process and the absence of bias in favor of the wealthy or lack of access to information by the poor demonstrate that large-scale and rapid delivery of land certificates in a participatory way is possible. Users' positive assessment of the process, readiness to pay to replace lost certificates, high demand—and willingness to pay modest sums—for a spatial reference, and their positive assessment of likely impacts suggest that the way in which Ethiopia implemented land certification responded to local needs. In addition, the analysis identified a range of other process improvements.

The project results have been presented to decision makers at various workshops in Addis and Washington.

The DFID-World Bank collaborative program on land tenure, the Norwegian ESSD TF, and the GAP Trust Fund provided support for the project.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org) and Daniel Ali. With T. Alemu, Addis Ababa University; S. Holden, Norwegian University of Life Sciences; and J. Zeevenbergen, Delft University of Technology.

Project Code: P101783.

Completion date: Ongoing.

Countries: Ethiopia.

Publications

Deininger, Klaus, D. Ali, and T. Alemu. "Impacts of Land Certification on Tenure Security, Investment, and Land Market Activity: Evidence from Ethiopia." Policy Research Working Paper. World Bank, Washington, D.C.

———. "Productivity Effects of Land Rental Market Operation in Ethiopia: Evidence from a Matched Tenant-landlord Sample." Policy Research Working Paper. World Bank, Washington, D.C.

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Deininger, K., D. Ayalew, and T. Alemu. 2007. "Assessing the Functioning of Land Rental Markets in Ethiopia." Policy Research Working Paper. World Bank, Washington, D.C.

Deininger, K., D. Ayalew, S. Holden, and J. Zevenbergen. "Rural Land Certification in Ethiopia: Process Implications." In J.P. Colin, E. Leonard, and P.Y. Le Meur (eds.), *Les Politiques d'enregistrement des droits Fonciers Du Cadre Légal Aux Pratiques Locales*. Paris.

Deininger, Klaus, S. Holden, and H. Ghebru. "Impact of Land Certification on Land Rental Market Participation in Tigray Region, Northern Ethiopia." Policy Research Working Paper. World Bank, Washington, D.C.

———. 2009. "Impacts of Low-cost Land Certification on Investment and Productivity." *American Journal of Agricultural Economics* 91(2): 359–73.

The Economics of Integrated Pest Management in Developing Countries: Evidence from Vietnam

Indiscriminate and irrational use of chemical pesticides in agriculture has caused serious problems for human health and the environment in many developing countries during the past three decades. Concerns about the sustainability of chemical-based pest control techniques have prompted the widespread introduction of integrated pest management (IPM), an ecologically-based approach to the control of harmful insects and weeds.

IPM appears to work best when all neighboring farmers practice it. Externality problems make it difficult for individual farmers to successfully realize the full benefits of IPM without collective adoption. Neighbors' continued reliance on chemicals to kill pests will also kill beneficial parasites and predators, and expose IPM farmers and local ecosystems to chemical spillovers from adjoining fields. From a policy standpoint, successful adoption of IPM may therefore depend on the level of

institutional support for collective action. However, before any widespread promotion of integrated pest control methods is possible in developing countries, policymakers require more information and analysis on the effectiveness of alternative methods, productivity, profitability, health, and the environmental impacts of chemical-based and IPM agriculture (under individual adoption as well as collective action). Lack of data has hindered a full accounting of IPM's relative impact on farm profitability, health, and local ecosystems in developing countries.

Since the adoption of Agenda 21 during the 1992 Rio Earth Summit, the promotion of IPM has been one of the World Bank's priorities, supported by Operational Policy 4.09 (OP 4.09) of the World Bank's Safeguard Policies. Although IPM has been adopted under OP 4.09, the Bank has limited experience and technical knowledge of IPM. The problem is especially compounded by the fact that current evidence on the economics of IPM in developing countries is largely anecdotal, and systematic econometric evaluation is scarce.

This research project drew on new survey data from Vietnam in an effort to close the gap and contribute to the global debate on the comparative economics of IPM and "traditional" agriculture. The project used stochastic production frontier estimation with primary farm-level data on agricultural production. The construction of the database is complete; the data are yet to be analyzed.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Susmita Dasgupta (SDasgupta@worldbank.org). With Craig Meisner and Siobhan Murray.

Project Code: P106444.

Completion date: June 30, 2009.

Countries: Vietnam.

New Options to Deepen Access to Low-Income Areas

What policy instruments are available for policy makers to increase access to telecommunications services in rural and low-income areas? Are there some instruments that are more effective than others? What implementation arrangements should be considered for each of the recommended mechanisms?

This research project reviewed the available instruments to increase access to telecommunications services in rural and low-income areas and discussed implementation considerations. It presented a comprehensive list of available instruments, provided a basic evaluation framework, and made recommendations for implementation.

Policy options and financing mechanisms were gathered

from existing applications around the world and from theoretical proposals that have yet to be applied. The classification of policy options followed Navas-Sabater's gap analysis. The evaluation criteria focused on the overall effectiveness of the mechanisms. Data sources included country cases and statistics from the World Bank and the International Telecommunications Union.

The project analyzed 12 policy options and six funding mechanisms for universal access strategies. Policy makers would have to analyze the various options presented against the relevant criteria to identify the mechanisms that could best be adapted to their particular country situation. Overall, seven policy options and four financing mechanisms are worth considering by policy makers.

Responsibility: Office VP MENA and Global Information Cluster, Policy Division (IBRD Telecom and Inf)—Juan Navas-Sabater (jnavassabater@worldbank.org), Philippe Dongier, and Arturo Munte-Kunigami.

Project Code: P106907.

Completion date: June 23, 2009.

Countries: Global.

Publications

Munte-Kunigami, Arturo, and Juan Navas-Sabater. 2009. "Options to Increase Access to Telecommunications Services in Rural and Low-Income Areas." World Bank, Washington, D.C.

Options for Cleaner Energy in Developing Countries: The Electrification of Africa

This research project set out to identify the potential for various sources of clean electricity in Africa, estimate the cost of production and conveyance for both renewable and conventional electricity, make comparisons across energy sources, and identify possible investment paths. It evaluated supply and cost estimates in relation to realistic demand estimates utilizing the best available information on potential household and non-farm energy use in rural areas. In this research, the objective was realized through the development and application of a new analytical method and tool applied to Kenya.

The project developed and applied a new GIS-based analytical method and modeling tool to explicitly analyze electricity development options in a place-based way. Although it is not at the resolution needed for specific project appraisal, this tool can provide a valuable means for doing sector-wide strategic planning for energy development.

The data were obtained by combining a number of spatial files on location and potential capacity of renewable energy, other spatial data on locations of conventional electricity

production and transmission, and cost estimates from institutions such as the IEA for anticipated ranges of unit costs.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org), Uwe Deichmann, and Govinda Timilsina. With Craig Meisner; Murray Siobhan; and David Wheeler, Center for Global development.

Project Code: P108622.

Completion date: October 2009.

Countries: Africa with particular emphasis on Kenya.

Publications

Bhattacharyya, Subhes C., and Govinda R. Timilsina. 2009. "Energy Demand Models for Policy Formulation: A Comparative Study of Energy Demand Models." Policy Research Working Paper 4866. World Bank, Washington, D.C.

An African Green Revolution: Finding Ways to Boost Productivity

Agricultural productivity growth and the adoption of green revolution technologies for enhancing agriculture have been much lower historically in Africa compared with other low-latitude regions. This research project is exploring what explains observed output, input, investment, and technology choices in African agriculture, and why productivity growth has been low. In particular, the study is investigating competing hypotheses that potentially explain technology choices and resulting differences in agricultural productivity in Africa, and their implications for policy and public investment. The study is empirically testing the importance of climate, resource endowments, market conditions, and household constraints on choice. When possible, it is making direct comparisons with Asia and Latin America.

This first hypothesis is that on-farm technology choice is largely determined by natural endowments. That is, once soil, climate, water availability, and related pests and diseases are taken into account, the technologies that farmers use tend to be optimal. This implies that although comparisons with Asia are frequently made, Green Revolution technologies are not widely feasible in Africa. Moreover, because agro-climatic conditions are more varied in Africa, a large number of new technologies are needed to strengthen African agriculture. For policy, this implies a greater investment in new technologies and dissemination.

The second hypothesis is that technology adoption is largely explained by institutions, policy, and public investment. Under this hypothesis, there are a number of existing technologies that would improve productivity and profitability in many

places in Africa; however, the technologies are not adopted because of weak property rights, poor security conditions, and weak supporting markets for outputs and important inputs—especially fertilizer. Poor infrastructure and high transport costs exacerbate the problem. Formal and informal markets for credit and insurance are weak. The probability of theft or appropriation is high. For policy, this implies that African agriculture can be strengthened by emphasizing public investments in infrastructure and institutional reform.

The third hypothesis is that weak knowledge systems explain low-productivity technology choices. Under this theory, because farming households in Africa are poorly educated, they are unable or unwilling to adopt existing technologies that are more profitable. With low investments in education, agricultural technology, and extension, farmers are not aware of more profitable choices. For policy, this implies a greater investment in education, research and development, and extension.

Responsibility: Development Research Group, Infrastructure and Environment Team—Donald F. Larson (dlarson@worldbank.org), Klaus Deininger, and Daniel Ali. With Daniel Zerfu, Addis Ababa University, Ethiopia; Keijiro Otsuka, FASID; Jonna Estudillo, FASID; Tomoya Matsumoto, GRIPS; Takashi Yamano, GRIPS; Yoko Kijima, FASID; Yuko Nakano, FASID; Kei Kajisa, FASID, IRRI; Robert Mendelsohn, Yale University; Niggol Seo, Yale University; Jinxia Wang, Center for Chinese Agricultural Policy, Chinese Academy of Sciences; Aliou Diagne, African Rice Center; Peter Hazell, Imperial College at Wye; Derek Byerlee, World Bank (retired); and Ibrahim Bamba, WARDA.

Project Code: P109438.

Completion date: June 2010.

Countries: Sub-Saharan Africa.

Land Policies in India and the Impact of Empowerment

This research project aimed to provide evidence on the functioning of land markets, the impact of land reforms, and policy interventions that could help to improve the security of land tenure and transferability as well as the use of land as collateral in credit markets in India. Although the importance of land access and well-functioning land markets is widely recognized, the performance of land markets in India is hampered by numerous restrictions.

The project used panel data techniques on a nationally representative panel data set of about 7,000 households spanning 1982–99, complemented by state-level information on land reform implementation and restrictions on rental markets and a range of other secondary data sources.

The research found that, contrary to the original intentions,

rental restrictions negatively affected productivity and equity by reducing the scope for efficiency-enhancing rental transactions that benefit poor producers. The simulations suggested that, by doubling the number of producers with access to land through rental, the liberalization of rental markets could have far-reaching impacts. Over time, the performance of land rental and sales markets has changed considerably, implying that, compared with earlier government-mandated reform that was virtually the only way of improving land access by the poor, opportunities for market-based land access are increasing. This is important in view of the fact that, although land reforms had a significant and positive impact on income growth and accumulation of human and physical capital, the observed impact seemed to have declined over time, implying scope for review of associated policies and consideration of actions to ensure the sustainability of the benefits.

The research was presented at the India Policy Forum; an NCAER conference; and the Planning Commission, Ministry of Rural Development, Ministry of Urban Development.

The DFID-World Bank collaborative program on land policies and the KCP provided support for the project.

Responsibility: Development Research Group, Rural Development Team—Klaus Deininger (kdeininger@worldbank.org) and South Asia, Agricultural and Rural Development—Edward Cook. With S. Jin; T. Olsen; H.K. Nagarajan, National Council for Applied Economic Research, New Delhi, India; S. Kohler, University of Florence; and A. Goyal.

Project Code: P110490, P099485, P083545.

Completion date: June 2007.

Countries: India.

Publications

- Deininger, K., S. Jin, and H.K. Nagarajan. 2007. “Determinants and Consequences of Land Sales Market Participation: Panel Evidence from India.” Policy Research Working Paper 4323. World Bank, Washington, D.C.
- . 2007. “Wage Discrimination in India’s Informal Labor Markets: Exploring the Impacts of Caste and Gender.” Policy Research Working Paper. World Bank, Washington, D.C.
- . 2008. “Equity and Efficiency Impacts of Rural Land Rental Restrictions: Evidence from India.” *European Economic Review* 52(5): 892–918.
- . 2009. “Determinants and Consequences of Land Sales Market Participation: Panel Evidence from India.” *World Development* 37(2): 410–21.
- Deininger, Klaus, and Yanyan Liu. 2009. “Determinants of Repayment Performance in Indian Micro-credit Groups.” Policy Research Working Paper 4885. World Bank, Washington, D.C.
- . 2009. “Economic and Social Impacts of Self-Help Groups

in India.” Policy Research Working Paper 4884. World Bank, Washington, D.C.

———. 2009. “Longer-Term Economic Impacts of Self-Help Groups in India.” Policy Research Working Paper 4886. World Bank, Washington, D.C.

World Bank. 2007. *India: Land Policies for Growth and Poverty Reduction*. New Delhi: World Bank and Oxford University Press.

Climate Change, Agricultural Productivity, and Rural Poverty in India

South Asian agriculture, a sector that supports a large part of the world’s poor, is expected to be especially hard hit by global warming, with cereal crop yields falling between 15 and 30 percent. The repercussions throughout the rural economy are likely to be profound. Yet, the impact of climate change on poverty in any one country, let alone one as important as India, has never before been quantitatively assessed using micro-data.

Understanding the socio-economic consequences of climate change is a prerequisite for the integration of adaptation activities into poverty reduction efforts. This study will provide estimates of the long-run impact of climate change on poverty and income distribution in rural India. The results from the study will inform the policy debate in India by allowing for a much finer delineation of climate risks and vulnerabilities than exists to date. The methodological and substantive lessons from India will be distilled for application across other countries and regions.

Past work on climate change adaptation in India focuses on the productivity impacts in agriculture, but does not trace out the distributional consequences. This study not only refines and extends earlier work, but also provides the first micro-data-based estimates of the impact of climate change on household living standards (consumption), poverty, and inequality at the national and state levels.

The empirical analysis assumes that rural incomes consist of two components, net revenue from agricultural activities and off-farm earnings. Climate change, consequently, affects income through changes in land productivity and changes in returns to labor. The first stage of the analysis estimates the impact of climate on the land and labor productivity of rural households using a variant of the Ricardian approach. The second stage predicts climate-induced income change using the first-stage results and the projections of location-specific climate trends. These predicted income changes can be calculated for each household along the baseline distribution of welfare (consumption).

The study uses the following data sources: 1) the 59th (2003)

round of India’s National Sample Survey (NSS), a nationwide agricultural survey of more than 50,000 rural households; 2) the 61st (2004–05) round of the NSS, providing earnings and expenditure data for nearly 80,000 rural households across all of India; 3) historical climate data from hundreds of Indian weather stations; 4) detailed district-level data on soil, irrigation, and other agronomic variables; and 5) disaggregated climate projections for India through mid-century.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Hanan Jacoby (Hjacoby@worldbank.org); and Poverty Reduction and Economic Management Network, Poverty Reduction Team—Emmanuel Skoufias and Mariano Rabassa.

Project Code: P111235.

Completion date: June 30, 2010.

Countries: India.

Publications

Jacoby, H., E. Skoufias, and M. Rabassa. 2009. “On the Distributional Implications of Climate Change: A Methodological Framework and Application to Rural India.” BBL presentation, World Bank, March 19.

Non-Traditional Crops, Traditional Constraints: Are Smallholders Sharing the Benefits of High-Value Export Crop Production?

The objective of this research project was to analyze the dynamics of non-traditional agricultural export adoption, the resulting changes in household income strategies, and the role that the adoption has played in alleviating rural poverty among smallholders in the central highlands of Guatemala. The analysis estimated the long-term effects of the adoption of non-traditional exports on changes in household consumption and asset status as well as livelihood orientation and participation in alternative non-farm income generating activities.

The project took advantage of a unique panel dataset collected by the Food and Agricultural Organization of the United Nations in collaboration with the World Bank and the Instituto de Nutrición de Centro América y Panamá (INCAP). The survey, carried out in 2005, revisited the same households of a 1985 baseline study by the International Food Policy Research Institute and INCAP. The analysis employed difference-in-differences estimation to explore the long-term effects of interest and, given the diverse patterns of involvement in non-traditional exports over time, explored the heterogeneity of impact based on a classification of households that took into account the timing and duration of the adoption of non-traditional exports.

The results showed that although, on average, welfare levels improved for all households irrespective of adoption status and duration, the extent of improvement varied across groups, with long-term adopters exhibiting the smallest increase over the two decades, in spite of some early gains. Conversely, early adopter leavers who withdrew from production of non-traditional exports after reaping the benefits of the boom period of the 1980s were found to have fared better and showed greater improvements in durable asset position and housing conditions than any other category.

Over time, household reliance on off-farm income and access to non-farm employment, particularly self-employment and blue collar work, increased in the surveyed communities, irrespective of non-traditional export adoption status. However, the extent of change varied across groups. The results support the hypothesis that smallholders who adopted non-traditional exports early but withdrew from cash-crop production in the face of adverse medium-term production and marketing conditions may have shown greater improvements in asset position and living conditions over time. They may have been able to better take advantage of the emerging, relatively profitable off-farm opportunities by relying on the assets accumulated in the non-traditional exports boom era.

The research findings were presented at the 111th EAEE-IAAE Seminar at the University of Kent, Canterbury, UK (June 2009).

Responsibility: Development Research Group, Poverty Team—Calogero Carletto, (gcarletto@worldbank.org). With Talip Kilic.

Project Code: P111817.

Completion date: May 21, 2009.

Countries: Guatemala.

Publications

- Carletto, C., T. Kilic, and A. Kirk. 2009. "Non-Traditional Export Crops in Guatemala: Short-Term Tool or Long-Term Strategy for Poverty Alleviation?" World Bank, Washington, D.C. Mimeo.
- Kilic, T., and C. Carletto. 2009. "Non-Traditional Export Crops and Household Livelihood Strategies: Panel Data Evidence from Guatemala." World Bank, Washington, D.C. Mimeo.

Living Standards Measurement Study: Integrated Surveys on Agriculture

The Living Standards Measurement Study: Integrated Surveys on Agriculture (LSMS-ISA) is a new initiative funded by the Bill & Melinda Gates Foundation to improve household level data on agriculture in Sub-Saharan Africa.

Agricultural development is an essential engine of growth, and an effective mechanism for combating poverty and food

insecurity, because it often results in greater benefits accruing to the poorest segments of the population. In most Sub-Saharan African countries, the vast majority of people suffering from poverty and food insecurity are rural dwellers and other vulnerable groups, including women, who rely heavily on farm activities.

Despite the importance of the agricultural sector and its critical role in meeting the Millennium Development Goals, serious weaknesses in agricultural statistics persist. Of the 44 countries in Sub-Saharan Africa rated by the Food and Agricultural Organization, only two are considered to have high standards in data collection while standards in 21 countries remain low. The scope of coverage and completeness also vary. Knowledge about agriculture and its impact on welfare and equity is limited by the lack of available, high quality, and consistent data on rural households.

Under the LSMS-ISA initiative, the World Bank will support governments in six African countries to generate household panel data with a strong focus on agriculture. The project is modeled on the integrated household survey design of the Living Standards Measurement Study. In addition to the goal of producing policy-relevant agricultural data, the project emphasizes the design and validation of innovative survey methods, the use of technology for improving survey data quality, and the development of analytical tools to facilitate the use and analysis of the data collected.

Given the fact that surveys are yet to be fielded in the countries of interest, policy-relevant research findings cannot be reported at this stage.

The project's main output will be the production of multi-topic panel household surveys with extensive modules on agriculture in six countries. These surveys will be conducted in each country at least twice within the duration of the project. The project includes a number of field validations on survey methods to improve the quality of survey data as well as training and dissemination activities to expand the use in policy-making of agricultural data and survey data in general. All data generated will be made publicly available. The project will also develop and implement a Computer Assisted Personal Interview application for Ultra Mobile Personal Computers for the paperless collection of the household surveys, as well as other analytical tools to facilitate the use and analysis of the data collected.

The over-arching objective of the project is to improve the understanding of agriculture in Sub-Saharan Africa—specifically, its role in poverty reduction and how innovation and efficiency can be fostered in the sector. This goal will be achieved by developing and implementing an innovative model for collecting agricultural data in the region. The focus

will be on overcoming some of the main technical and institutional shortcomings of the past and existing systems.

Responsibility: Development Research Group, Poverty Team—Calogero Carletto (gcarletto@worldbank.org), Kinnon Scott, Kathleen Beegle, Diane Steele, Kristen Himelein, and Talip Kilic.

Project Code: P114487.

Completion date: December 31, 2015.

Countries: Six countries in Sub-Saharan Africa.

Environment and Natural Resources Management

Markets for Environmental Resources

This on-going research project focuses on the role markets play as instruments for managing environmental resources. Two of the studies draw on experiences in the United States and the European Union with cap-and-trade systems in which firms are allowed to trade emission permits. The first study focuses on the longer-established sulfur dioxide system in the United States, while the second study examines on the early effects of the European Union's Emission Trading System, a cap-and-trade system designed to manage greenhouse gas emissions.

Both studies are based on econometric analysis of power-sector panel data and consider substitution possibilities between emissions, permits, fuel choices, and fixed investment in power generation capacity.

The studies illustrate how past investments under earlier policies limited the ability of electricity producers to nimbly respond to changes in fuel and permit prices. This feature of energy systems—that past policies are embodied in current capacity—speaks to the need to start early down low-carbon development paths. Moreover, the European example illustrates the importance of introducing sources of flexibility into programs designed to lower carbon emissions in order to avoid high costs to consumers. One way of doing so is to open cap-and-trade systems to tradable permits such as those created under the Kyoto Protocol's Clean Development Mechanism and Joint Implementation programs.

Under the Kyoto Protocol, countries that have pledged to limit their greenhouse gas emissions can partly rely on investments in carbon-reducing projects in other countries, including developing countries where emissions are not limited. Although several international treaties are in place to manage environmental resources, this project-based feature of the Kyoto Protocol is unique.

The second cluster of research focuses on the institutional arrangements that underlie the Protocol's project programs—the Clean Development Mechanism and Joint Implementation—and analyzes outcomes from the programs and preceding pilot efforts. Because the effects of climate change are global and related policies are forward looking, policy makers must reach a shared view on the consequences of alternative policies.

The research describes the unique institutions that integrate research findings from the natural and social sciences to form a common foundation for international policy makers, the

new institutions governing the emerging carbon markets, and related research. It also examines the determinants of project investment under early pilot projects, and looks at what motivates countries to co-operatively engage in the Clean Development Mechanism.

Responsibility: Development Research Group, Rural Development Team—Donald F. Larson (dlarson@worldbank.org). With Ariel Dinar and Philippe Ambrosi, World Bank; Timothy Considine, Rebecca Entler, Shilpa Rao, and Nazia Mohammed, Pennsylvania State University; Shaikh Mahfuzur Rahman, University of Maryland; and Gunnar Breustedt, University of Kiel.

Project Code: P081180.

Completion date: Ongoing.

Countries: United States and European Union.

Publications

Considine, Timothy J., and Donald F. Larson. 2009. "Substitution and Technological Change under Carbon Cap-and-trade: Lessons from Europe." Policy Research Working Paper 4957. World Bank, Washington, D.C.

Dinar, Ariel, Shaikh Mahfuzur Rahman, Donald F. Larson, and Philippe Ambrosi. 2008. "Factors Affecting Levels Of International Cooperation in Carbon Abatement Projects." Policy Research Working Paper 4786. World Bank, Washington, D.C.

Larson, Donald F., Philippe Ambrosi, Ariel Dinar, Shaikh Mahfuzur Rahman, and Rebecca Entler. 2008. "A Review of Carbon Market Policies and Research." *International Review of Environmental and Resource Economics* 2(3): 177–236.

Larson, Donald F., and Gunnar Breustedt. 2009. "Will Markets Direct Investments Under the Kyoto Protocol? Lessons from the Activities Implemented Jointly Pilots." *Environmental and Resource Economics* 43(3): 433–56.

The Policy Nexus of Agriculture and Climate Change

This four-year multi-country study developed multipliable analytical methods and procedures to assess quantitatively how climate affects current agricultural systems in Africa. It also aimed to predict how these systems may be affected in the future by climate change under various global warming scenarios, and to suggest what role adaptation could play. The project was implemented in 11 African countries, covering all key agro-climatic zones and farming systems in Africa.

The research findings suggest that future farm incomes in Africa are climate sensitive, and will be severely threatened in the event of extreme climate change scenarios. The impacts of climate change will not be evenly distributed across Africa. Farms in some countries or regions will benefit, while those in other zones will lose. Farmers will be able to tolerate—or perhaps take advantage of—mild or moderate climate change scenarios because of various adaptation measures. Adaptation may include switching crops, switching livestock varieties, or switching between crops and livestock. Under certain climatic conditions, livestock varieties may provide more flexibility to certain farmers and could help offset losses in crop income. Irrigation, where possible, is an important adaptation measure.

The study findings that were published in CEEPA Discussion Papers are available at http://www.ceepa.co.za/climate_change/index.html. An additional effort was conducted to synthesize the various findings at the regional and country levels into one framework, which is not technical in nature. This resulted in the book *Climate Change and Agriculture in Africa: Impact Assessment and Adaptation Strategies* (<http://www.earthscan.co.uk/?tabid=1497>).

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Ariel Dinar (ariel.dinar@ucr.edu).

Project Code: P084595.

Completion date: June 30, 2008.

Countries: Burkina Faso, Cameroon, Ghana, Niger and Senegal in West Africa; Egypt in North Africa; Ethiopia and Kenya in East Africa and South Africa, Zambia, and Zimbabwe in Southern Africa.

Publications

Dinar, Ariel, Rashid Hassan, Robert Mendelsohn, James Benhin, and others. 2008. *Climate Change and Agriculture: Impact Assessment and Adaptation Strategies*. Earthscan, U.K.

The Impacts of Sea Level Rise

Sea level rise (SLR) due to climate change is a serious global threat to the scientific evidence is now overwhelming. The continued growth of greenhouse gas emissions and associated global warming could well promote SLR of 1 to 3 meters in this century, and with the rapid breakup of the Greenland and West Antarctic ice sheets, might produce a 5m SLR.

This research project has assessed the consequences of continued SLR for 84 developing countries. Geographic Information System (GIS) software has been used to overlay the best available, spatially-disaggregated global data on several critical impact elements (land, population, agriculture,

urban extent, wetlands, and GDP) with the inundation zones projected for 1 to 5m SLR. The results reveal that even a 1m rise would turn 56 million people in the developing world into environmental refugees; and accompanying economic and ecological damage would be severe for many. At the country-level, results are extremely skewed, with severe impacts limited to a relatively small number of countries. For these countries (e.g., Vietnam, Egypt, and Bahamas), however, the consequences of SLR are potentially catastrophic. For many others, including some of the largest (e.g., China), the absolute magnitude of potential impacts are very large.

At the other extreme, many developing countries experience limited impacts. Among regions, East Asia and Middle East/North Africa exhibit the greatest relative impacts. To date, there is little evidence that the international community has seriously considered the implications of SLR for population location and infrastructure planning in developing countries. The information provided by this research could help spur vulnerable countries to develop national adaptation plans now in order to avoid future losses.

Project results were presented at an in-depth briefing for journalists at the Legislators Forum on Climate Change, covered by Reuters, Associated Press, Dow Jones, International Herald Tribune, Associated Press-Australia, The Sydney Morning Herald, and other publications; the International Monetary Fund, Washington, D.C. (February 2006 and May 2007); the Conference on Climate Change and International Development: Impacts and Responses, organized by Friends of the Earth, ActionAid International, Oxfam, and others, Washington, D.C. (April 2007); the 16th Annual Conference of the European Association of Environmental and Resource Economists, Sweden (May 2008).

Research results have been used for IDA allocation; influenced selection of countries for GFDRR programming; and been quoted in the LAC flagship report on “Climate Change: Low Carbon, High Growth.”

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Susmita Dasgupta (sdasgupta@worldbank.org) and David Wheeler. With Craig Meisner, Benoit Laplante, Jianping Yan, and Jillian Kingston.

Project Code: P088889.

Completion date: June 2006.

Countries: Global.

Publications

Dasgupta, Susmita, Benoit Laplante, Craig Meisner, David Wheeler, and Jianping Yan. 2007. “The Impact of Sea-Level Rise on Developing Countries: A Comparative Analysis.” Policy Research Working Paper 4136. World Bank, Washington, D.C.

———. 2009. “The Impact of Sea-Level Rise on Developing Countries: A Comparative Analysis.” *Climatic Change* 93(3): 379–88.

Identification of Flood Hazard Hotspots

Previous global analyses of areas at risk of natural disasters (the World Bank’s Disaster Risk Hotspots, UNDP/UNEP’s Disaster Risk Index) developed risk indices based on aggregate data and impact patterns. This research project aimed to estimate geographically defined disaster risks using event-specific information. Rather than relating aggregate impacts and damages at the country or regional level, events for each disaster type were modeled using event-specific information on the characteristics of the event (e.g., storm track and wind speed), characteristics of the area affected by the event (e.g., population, economic assets), and recorded damages in terms of number of people killed or affected and economic losses. The work performed under this project refined the methodology and compiled data used in a larger global analysis for a United Nations/World Bank report on disaster risk reduction.

Better information on global patterns of risk—both in terms of geographic distribution and regarding the determinants of disaster losses—will allow quantification of exposure in terms of population and assets at risk, and will contribute to the identification of promising hazard risk mitigation interventions.

This study was the first global assessment to employ a micro approach across hazards—modeling event-specific loss information rather than nationally aggregate data. The study used spatial analysis and statistical/econometric methods and numerous geographically referenced data sets. The main source of disaster loss data was CRED/EMDAT (www.emdat.be).

This work contributed to a freely available hazards database available at <http://preview.grid.unep.ch/index3.php?preview=map>.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Uwe Deichmann (UDeichmann@worldbank.org). With Pascal Peduzzi, University of Geneva.

Project Code: P089739.

Completion date: March 30, 2008.

Countries: Global.

Publications

UNISDR. 2009. Risk and Poverty in a Changing Climate, 2009 Global Assessment Report on Disaster Risk Reduction (Ch. 2, “Global Risk Update”) Geneva: United Nations. <http://www.preventionweb.net/english/hyogo/gar/report/index.php>

Improving Indoor Air Quality for Poor Families: Proposal for a Controlled Experiment in Bangladesh

The World Health Organization’s Global and Regional Burden of Disease Report (2004) estimated that acute respiratory infections from indoor air pollution (pollution from burning wood, animal dung, and other bio-fuels, kill a million children annually in developing countries, inflicting a particularly heavy toll on poor families in South Asia (42 percent of total deaths) and Africa (28 percent). Although the health effects of indoor air pollution are severe, to date the design of cost-effective pollution reduction strategies has been hindered by lack of information about actual indoor air quality in poor households. Data have been scarce because monitoring in village environments is difficult and costly.

This research project has conducted 24-hour indoor monitoring in a set of controlled experiments in Bangladesh. The experiments were confined to structural arrangements (building materials, cooking locations, window/door configurations, etc.) and fuels (kerosene, firewood/twigs/leaves, agricultural residues, and cow dung) that are common among poor households in Bangladesh. The objectives of the research project were to investigate the potential of “clean household” programs—variations in construction materials, space configurations, cooking locations, and use of doors and windows—and their cost effectiveness for mitigation of indoor air pollution in rural areas.

Findings of the research highlight: pollution from the cooking area is transported into living spaces rapidly and completely; and it is important to factor in the interaction between outdoor and indoor air pollution. Hence, the optimal cooking location should take “seasonality” into account. Among fuels, seasonal conditions seem to affect the relative severity of pollution from wood, dung, and other biomass fuels. However, there is no ambiguity about their collective impact. All are far dirtier than clean (LPG and kerosene) fuels. The analysis also concludes that if cooking with clean fuels is not possible, then building the kitchen with permeable construction material and providing proper ventilation in cooking areas will yield a better indoor health environment.

This research has been presented at the World Bank-DECRG seminar series (September 2008); George Washington University Medical School (December 2008); and State Resource Center-Department of Health and Family Welfare, Government of West Bengal, India (December 2008).

This research has been highlighted as “simple measures” to improve “killer in the kitchen” by the UN office for the Coordination of Human Affairs, and has been featured as a key publication on the ESMAP website during Energy week 2009.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Susmita Dasgupta (sdasgupta@worldbank.org) and David Wheeler. With Subrata Ghosh, Deta Consultants; Pritthijit Kundu; Mainul Huq; and M. Khaliquzzaman.

Project Code: P093601.

Completion date: June 2007.

Countries: Bangladesh.

Publications

Dasgupta, S., M. Huq, M. Khaliquzzaman, and D. Wheeler. 2007. “Improving Indoor Air Quality for Poor Families: A Controlled Experiment in Bangladesh.” Policy Research Working Paper 4422. World Bank, Washington, D.C.

———. 2008. “Improving Indoor Air Quality for Poor Families: A Controlled Experiment in Bangladesh.” ESMAP Report 335/08.

———. 2009a. “Improving Indoor Air Quality for Poor Families: A Controlled Experiment in Bangladesh.” *Indoor Air* 19: 22–32.

———. 2009b. “Improving Indoor Air in Rural Bangladesh: Results of Controlled Experiments.” ESMAP Knowledge Exchange Series Note 13.

Understanding and Improving Environmental Governance in Developing Countries

This research project is studying environmental governance in developing countries and exploring how it could be improved. The project is collecting and analyzing information about environmental governance in various countries; testing new instruments, such as environmental information disclosure and community environmental dialogue; and summarizing and disseminating experiences and results.

Preliminary findings show that information disclosure and stakeholder dialogue can be effective strategies for improving environmental governance.

Project findings were presented at various conferences including those held in Qingdao, China (July 2006); Beijing, China (March 2007); and Yale University (May 2008).

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

Project Code: P101452.

Completion date: June 2010.

Countries: Global.

Publications

Roumasset, James, Kimberly Burnett, and Hua Wang. 2008. “Environmental Resources and Economic Growth in China.” In Loren Brandt and Thomas G. Rawski (eds.), *China’s Great Transformation: Origins, Mechanisms, and Consequences of*

the Post-Reform Economic Boom. Cambridge: Cambridge University Press.

Wang, Hua. 2007. “Stakeholder Dialogue: A New Approach for Sustainable Development in China.” Development Research Group, World Bank, Washington, D.C.

Wu, Changhua, and Hua Wang. 2007. “China: Seeking Meaningful Decentralization to Achieve Sustainability.” In Albert Breton, Giorgio Brosio, Silvana Dalmazzone, and Giovanna Garrone (eds.), *Environmental Governance and Decentralization: Country Studies*. Cheltenham: Elgar.

Natural Disaster Management in Vietnam

How does Vietnam’s economy cope with the increasing frequency of natural disasters? What is the role of market integration in the transition of the rural economy following climate change? What is the impact of climate change and natural disasters on households’ livelihoods? This research project addresses these questions.

It looks specifically at the role of infrastructure in affecting the extent of rural transformation. The analysis uses data on natural disasters from rainfall stations and other secondary sources; data on household livelihoods from the Living Standards Measurement Surveys, data on prices from the country’s statistics office, and data on production and productivity from statistical yearbooks. The methodology relies on the estimation of a structural model of inter-provincial trade with productivity shocks.

The work on spatial analysis has inspired the country office to start geo-referencing all its projects. The project is currently under development.

Responsibility: Development Research Group, Poverty Team—Quy-Toan Do (qdo@worldbank.org). With Trung Dang Le, CAF, General Statistics Office, Vietnam; Tung Phung, IPSARD; and Trang Thi Le, National Economics University, Vietnam.

Project Code: P103757.

Completion date: December 2009.

Countries: Vietnam.

Mitigating Climate Change by Avoiding Lock-ins to High-Carbon Energy Systems

This research project investigated various aspects of climate change mitigation, in particular by studying transition paths to renewable energy systems.

The project addressed four specific issues. The first was the benefits of different policies for mitigating greenhouse gases (GHGs), local pollution, and congestion in large urban areas, focusing on Beijing, Mexico City, and São Paulo. The analysis

involved innovative city-specific modeling and externality calculations. The second was the economic and environmental consequences of various climate change mitigation policies, such as the carbon tax and project-based mechanisms. This was new research on specific technologies and their general equilibrium consequences. The third was energy efficiency in India. The fourth was influences on participation and project choice for the Clean Development Mechanism (CDM) of the Kyoto Protocol. This part of the study exploited a novel data set on actual projects in the CDM pipeline.

Ideally, policy on urban transport would attempt to price both congestion and GHG emissions; fuel taxes alone can accomplish a fair amount in addressing both concerns. High fuel taxes are required to make the largest impact, but lower taxes can still generate significant congestion-reduction and pollution-reduction benefits. “Locking in” of inefficient driving and fuel use patterns from road expansion and land uses that hamper expanded mass transport are potentially significant constraints to be addressed in realizing these potential gains.

The findings showed that overall the scale of carbon-market investment through planned CDM projects exceeds earlier expectations. But the geographic dispersion of investment is uneven and important opportunities for abatement remain untapped in some sectors. Incentives to participate in the CDM are higher for developed than developing countries, perhaps reflecting the existence of specific emission limitation targets for the former. Participation incentives also are increased by a country’s prior experience with project-based offset mechanisms, the amount of cumulative prior CDM experience by all countries, and the approach of the Kyoto commitment period. These influences are in addition to the expected negative influence of project implementation costs.

The findings indicate that there is limited flexibility in Europe’s power generating system because of the types of irreversible investments that were made under previous policies. This feature of energy systems—that past policies are embodied in current capacity—speaks to the need to start early on low-carbon development paths. Moreover, the fact that power systems are inflexible in the short run speaks to the need to introduce other sources of flexibility into programs designed to lower carbon emissions in order to avoid high costs to consumers.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org), Govinda Timilsina, Donald Larson, Ashish Shrestha, and Maureen Cropper; Environment Department—Philippe Ambrosi; Social Development Department—Hari B. Dulal; and Off. VP MENA and Global Infr. Cluster, Policy

Division- IBRD Oil, Gas and Mining—Soma Bhattacharya. With Ariel Dinar, University of California Riverside; Shaikh Mahfuzur Rahman; Timothy Considine, Pennsylvania State University; Rebecca Entler, Pennsylvania State University; Ian Parry, RFF, Great Britain; Subhes Bhattacharya, CEPMLP—The University of Dundee, India; G. Cornelis van Kooten, University of Victoria, Canada; Alex Anas, SUNY-Buffalo; Sigi Zheng, Tsinghua University, China; Scott Barrett, Columbia University; Sara Haji Amiri, RAND, India; and Stephen Seres, Government of Canada.

Project Code: P104079.

Completion date: October, 2009.

Countries: Global. Focus on India, Brazil, China.

Publications

- Anas, Alex, and Govinda R. Timilsina. 2009. “Effects of Taxing Traffic Externalities on Car Travel, Fuel Consumption and CO2 Emissions in São Paulo.” World Bank, Washington, D.C. Draft.
- Anas, Alex, Govinda R. Timilsina, and Sigi Zheng. 2009. “An Analysis of Various Policy Instruments to Reduce Congestion, Fuel Consumption and CO2 Emissions in Beijing.” Draft.
- Barrett, Scott, and Michael Toman. 2009. “Together or Apart? Different Approaches to International Climate Negotiations.” Draft.
- Bhattacharya, Soma, and Maureen L. Cropper. 2009. “Options for Energy Efficiency in India and Barriers to Their Adoption: A Scoping Study.” Draft.
- Bhattacharya, Subhes, and Govinda Timilsina. 2009. “Energy Demand Models for Policy Formulation: A Comparative Study of Energy Demand Models.” Policy Research Working Paper 4866. World Bank, Washington, D.C.
- Considine, Timothy, and Donald F. Larson. 2009. “Substitution and Technological Change under Carbon Cap and Trade: Lessons from Europe.” Policy Research Working Paper 4957. World Bank, Washington, D.C.
- Dinar, A., S.R. Mahfuz, D. Larson, and P. Ambrosi. 2009. “Factors Affecting Levels of International Cooperation in Carbon Abatement Projects.” Paper presented at ISA’s 50th Annual Convention, New York City, NY, February 15–18.
- Dinar, Ariel, Shaikh Mahfuzur, Donald Larson, and Philippe Ambrosi. 2008. “Factors Affecting Levels of International Cooperation in Carbon Abatement Projects.” Policy Research Working Paper 4786. World Bank, Washington, D.C.
- Larson, Donald F., Philippe Ambrosi, Ariel Dinar, Shaikh Mahfuzur Rahman, and Rebecca Entler. 2008. “Carbon Markets, Institutions, Policies, and Research.” Policy Research Working Paper 4761. World Bank, Washington, D.C. Published in 2008 as “A Review of Carbon Market Policies and Research.”

International Review of Environment and Resource Economics 2(3): 177–236.

Rahman, S.M., A. Dinar, and D. Larson. 2009. “Global and Cross Country Adoption of the Clean Development Mechanism: Incidence, Extent and Growth.” Paper presented at the 17th Annual Conference of the European Association of Environmental and Resource Economists, Amsterdam, The Netherlands, June 24–27.

Rahman, S.M., D. Larson, and A. Dinar. 2009. “The Costs of Emissions Abatement through the Clean Development Mechanism.” Paper presented at the AAEA & ACCI Joint Annual Meeting, Milwaukee, Wisconsin, July 26–28.

Timilsina, Govinda R. 2007. “Atmospheric Stabilization of CO₂ Emissions: Near-term Reductions and Intensity-based Targets.” Policy Research Working Paper 4352. World Bank, Washington, D.C. Published in *Energy Policy* 36(6): 1927–36.

———. 2007. “The Role of Revenue Recycling Schemes in Environmental Tax Selection: A General Equilibrium Analysis.” Policy Research Working Paper 4388. World Bank, Washington, D.C. Published in 2009 as “Carbon Tax under the Clean Development Mechanism: A Unique Approach to Reducing GHG Emissions in Developing Countries.” *Climate Policy* 9(2, March): 139–54.

———. 2008. “A General Equilibrium Analysis of Demand Side Management Programs under the Clean Development Mechanism of the Kyoto Protocol.” Policy Research Working Paper 4563. World Bank, Washington, D.C. Published in 2008 in *International Journal of Energy Sector Management* 2(4): 570–93.

Timilsina, Govinda R., and Hari B. Dulal. 2008. “Fiscal Policy Instruments for Reducing Congestion and Atmospheric Emissions in the Transport Sector: A Review.” Policy Research Working Paper 4652. World Bank, Washington, D.C.

———. 2009. “A Review of Regulatory Instruments to Control Environmental Externalities from the Transport Sector.” Policy Research Working Paper 4867. World Bank, Washington, D.C. Published in 2009 as “Regulatory Instruments to Control Environmental Externalities from the Transport Sector.” *European Transport* (41, July): 80–112.

Timilsina, Govinda, and Ian Parry. Forthcoming. “Pricing Passenger Travel in Mexico City for Reducing Vehicular Emissions and Traffic Congestion.” Policy Research Working Paper. World Bank, Washington, D.C.

Timilsina, Govinda R., and Ashish Shrestha. Forthcoming. “Transport Sector CO₂ Emissions in Asia: Underlying Factors and Policy Options.” Policy Research Working Paper. World Bank, Washington, D.C.

van Kooten, G. Cornelis, and Govinda Timilsina. 2009. “Wind

Power Development: Economics and Policies.” Policy Research Working Paper 4868. World Bank, Washington, D.C.

Measuring the Health Effects of Indoor Air Pollution in Developing Countries: The Case of Bangladesh

According to the World Health Organization, acute respiratory infections from indoor air pollution (pollution from burning wood, animal dung, and other biofuels) is estimated to kill a million children annually in developing countries. Indoor air pollution inflicts a particularly heavy toll on poor families in South Asia (42 percent of total deaths) and Africa (28 percent). However, the design of cost-effective indoor air pollution reduction strategies has been hindered by lack of information about actual respirable particulate concentrations and their impact on health in poor households.

To date, the high costs of monitoring air quality and conducting medical tests in villages have limited research efforts. Extrapolation of air-pollution related health studies conducted in developed countries is not an option, given the significant difference in pollution levels in developed and developing countries. Hence, lack of research on the exposure-response relationship has been highlighted as one of the serious knowledge gaps in understanding the health impacts of indoor air pollution in developing countries.

In this research project, a scheme for an epidemiological cross-section study in Bangladesh—based on monitored air quality data and clinical data on lung capacity—has been attempted to reduce the knowledge gap.

The project used secondary data on the exposure of household members to particulate pollution (computed from particulate—PM₁₀—concentration in indoor and ambient air and time activity patterns of household members) and secondary clinical data on lung capacity (“peak expiratory flow” estimates) in a multiple regression framework to analyze the respiratory health effects of indoor air pollution.

The study finds a striking and completely unexpected difference between male and female “peak expiratory flow” responses to indoor air pollution. For males, peak expiratory flow declines with total PM₁₀ exposure, at a decreasing marginal rate; however, total exposure to indoor air pollution has no effect on the peak expiratory flow of females. A possible explanation is that families assign more kitchen tasks to healthier females, in order to equalize health risks across family members. But this is purely speculative. In the final analysis, this surprising result poses an important question for further research.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Susmita Dasgupta

(SDasgupta@wprldb.org). With David Wheeler, Independent Consultant; and Mainul Huq, Development Policy Group, Bangladesh.

Project Code: P106164.

Completion date: June 30, 2009.

Countries: Bangladesh.

Publications

Wheeler, David, Susmita Dasgupta, and Mainul Huq. 2008.

“Measuring the Health Effects of Indoor Air Pollution in Developing Countries: The Case of Bangladesh.” World Bank, Washington, D.C. Mimeo.

Stockpiles of Obsolete Pesticides: Threat to Public Health and Biodiversity

Obsolete pesticides have accumulated in almost every developing country or economy in transition over the past several decades. The Food and Agriculture Organization (FAO) estimates that there are a total of approximately 440,800 to 551,000 metric tons of obsolete pesticides across these countries. Public health and environmental authorities are eager to reduce health threats by removing and decontaminating stockpiles, but there are many sites, cleanup can be costly, and public resources are scarce.

To help decision makers set priorities, this research project has developed cleanup priority indices for Tunisia, which has more than 1,900 metric tons of obsolete pesticides that are spread across numerous sites.

To the best of our knowledge, systematic research on this problem is nonexistent. The FAO has developed an operational cleanup strategy recently focusing mostly on the hazard characteristics of chemicals.

The methodology developed integrates information on populations at risk, the extent of critical eco-regions and biodiversity, their proximity to pesticide stockpiles, and the relative toxic hazards of each site.

What emerges from the results on Tunisia is a strategy for sequentially addressing all 197 sites to rapidly reduce potential health and environmental damage in a cost-effective way.

Significant amounts of obsolete pesticides have been stockpiled in developing countries over the years. For example, every African country has a stockpile of obsolete pesticides, amounting to an estimated 51,794 tons in total. A Therefore, the step-by-step methodology of risk assessment and the new GIS-based tool for “hot spot” analysis developed in this research project is expected to have wider applicability for any country with significant stockpiles.

AFTEN has already encouraged dissemination of the

methodology in Mali, where inventories of obsolete pesticide stockpiles under the ongoing Africa Stockpiles Program, Project1 (ASP-P1), is now complete.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Susmita Dasgupta (SDasgupta@wprldb.org); and Environment—Abdelaziz Lagnaoui. With Craig Meisner, Norma Adams, and David Wheeler.

Project Code: P106278.

Completion date: June 30, 2009.

Countries: Tunisia (and cross checking of the findings in Mali).

Publications

Dasgupta, S., C. Meisner, and D. Wheeler. 2009. “Stockpiles of Obsolete Pesticides and Cleanup Priorities: A Methodology and Application for Tunisia.” Policy Research Working Paper 4893. World Bank, Washington, D.C.

Blankespoor, B., S. Dasgupta, W. Dhouibi, A. Lagnaoui, C. Meisner, and H. Ben Salah. 2009. “Stockpiles of Obsolete Pesticides: Threat to Ecosystem and Biodiversity.” World Bank, Washington, D.C. Draft (work in progress).

Climate Change and Rural Development in South America

This research project gathered and disseminated research findings regarding climate change and rural development in Latin America.

The findings suggested that there are several weaknesses in South American countries on climate change issues. First, local information on climate change is not available. Second, there is very little communication between researchers and decision makers on this subject. Third, there is little awareness of the negative impacts of climate change in the medium and long terms. And fourth, the research institutes must increase their commitment to working on climate change.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org). With Ariel Dinar (Emeritus); and PROCISUR/IICA, Montevideo Uruguay.

Project Code: P106351.

Completion date: December 2007.

Countries: Latin America.

Publications

Link to access the synthesis publication: http://www.procisur.org.uy/online/cyber_categoria.asp?grupo=9

Link to access information on the workshop/list of participants, etc. <http://www.procisur.org.uy/online/informa.asp?inicio=70>

Link to access the PROCISUR Annual Report 2007: <http://www.procisur.org.uy/data/documentos/148642.pdf>

Published reports on Chile and the region in Chilean Journal of Agricultural Research (formerly Agricultura Tecnica): <http://www.inia.cl/at/agritec.htm>

Options for Cleaner Energy in Developing Countries: Transportation in India

The adverse consequences for India of increased motorization include more road congestion, conventional pollution, greenhouse gas emissions, and foreign oil dependence. This research project used recent data on Indian private vehicle purchases, costs, and their characteristics as well as fuel costs and other survey information on driving behavior to assess how these factors influence people's choice of vehicle.

Along with its newfound mobility, India is dealing with the negative consequences of increased reliance on motorized transportation. This has led to much focus on possible fuel economy regulation to address market failure due to concentrated market power in vehicle production, consumer myopia, or technological constraints.

The analysis used standard econometric strategies (hedonic price function and technical frontier for fuel economy) to calculate break-even options in fuel choice and vehicle fuel economy given observed costs and driving behavior. The data were obtained from surveys of driving behavior and car purchases combined with a proprietary data set on vehicle characteristics.

The analysis suggests that the Indian new passenger vehicle market is providing fuel economy at a reasonable price. This result indicates that neither consumer myopia nor market power is preventing an efficient outcome. Therefore, market intervention in fuel economy choices is not necessary from this perspective.

The findings of this research project indicate that policies to increase fuel economy will not deliver a significant "win-win" in terms of savings in fuel cost for drivers. This is because there is a trade-off against other factors influencing private car ownership and use. Policy-induced increases in vehicle fuel economy thus will need to be evaluated in terms of their capacity and cost-effectiveness to address other policy concerns, relative to the cost of altering consumer decisions.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org) and Environment Department—Urvashi Narain. With Randy Chugh; Maureen Cropper, University of Maryland; and Kabir Malik.

Project Code: P107124.

Completion date: June 2009.

Countries: India.

Publications

Chugh, Randy, Maureen Cropper, and Urvashi Narain. 2009. "Demand for Fuel Economy in the Indian Passenger Vehicle Market." World Bank, Washington, D.C. Draft.

Global Warming and Developing Countries: An Economy-wide Perspective

The primary objective of this research project is to integrate assessments of the impacts of climate change and evaluate their economy-wide consequences, incorporating as well potential adaptation to climate change policies.

The project is attempting to fill in a number of gaps in existing research. First, the focus of this research has been to integrate bottom-up analysis into a consistent economy-wide framework. Second, it is filling in the gaps in the research for a more representative sample of developing countries.

The main analytical approach is a dynamic computable general equilibrium model. A country pilot was developed for Ethiopia using country-based data (developed in collaboration with the Ethiopian Development Research Institute). The global model was developed internally based largely on the Purdue-developed Global Trade Analysis Project (GTAP) database. The global model is also in a class of models referred to as Integrated Assessment Models because it has been linked to a climate module with interactions between model-derived emissions and temperature changes and subsequent damage estimates feeding back into the economy.

First, compared with most existing scenarios of economic and emissions growth, the project's baseline scenario suggests that the global economy is on a much higher emissions path than the prevailing view. This implies that the damages from climate change are likely to be observed sooner than previously thought and that developing countries will have to enact adaptation policies immediately. Second, decarbonizing future growth will not be easy, even in the context of an efficient and equitable global agreement to limit future greenhouse gas emissions. Third, due to high and carbon intensive growth, limiting warming to 2°C suggests an immediate need to invest in new clean technologies.

The global work could provide guidance for countries seeking an efficient and equitable global agreement in the forthcoming climate negotiations to be held in Copenhagen in December 2009. The country work should help to identify some of the key impacts at the country level from higher temperatures and related effects from global warming. The

costs of adaptation to climate change are also likely to result in economy-wide effects that could be elucidated by the use of detailed multi-sector analysis.

KCP and DFID provided funding for the project.

Responsibility: Development Prospects Group—Dominique van der Mensbrugghe (dvandermensbrugg@worldbank.org) and Latin America, Economic Policy sector—Denis Medvedev and Maurizio Bussolo. With Jianwu He, Development Research Center of the State Council; Sherman Robinson; Dirk Willenbockel, Institute of Development Studies, Sussex; Channing Arndt, University of Copenhagen; Hashim Ahmed, Ethiopian Development Research Institute; Roberto Roson, University of Venice; and Rafael De Hoyos.

Project Code: P108465.

Completion date: December 31, 2009.

Countries: Ethiopia and Global.

Publications

Bussolo, Maurizio, Rafael de Hoyos, Denis Medvedev, and Dominique van der Mensbrugghe. 2008. "Global Climate Change and Its Distributional Impacts." Paper presented at the 11th Annual Conference on Global Economic Analysis, Helsinki, June.

Medvedev, Denis, and Dominique van der Mensbrugghe. 2008. "Climate Change in Latin America: Impacts and Mitigation Policy Options." World Bank, Washington, D.C.

———. 2009. "The Costs of Greenhouse Gas Mitigation Post-2012: Exploring Options with the World Bank's ENVISAGE Model." World Bank, Washington, D.C.

van der Mensbrugghe, Dominique. 2009. "Climate Change Policy Options for Asian Economies: Findings from an Integrated Assessment Model." Paper for the annual meeting of the Integrated Assessment Modeling Consortium, Tsukuba, Japan.

———. 2009. "The Environmental Impact and Sustainability Applied General Equilibrium (ENVISAGE) Model." World Bank, Washington, D.C.

World Bank. 2008. "Ethiopia: A Country Study on the Economic Impacts of Climate Change." Report No. 46946-ET. Environment and Natural Resource Management, Sustainable Development Department, Africa Region and Development Prospects Group, World Bank, Washington, D.C.

Vulnerability of Hydropower Generation and Water Supply Arrangements in Transboundary Basins

This research project combined detailed, basin-specific, GIS-based analyses of potential climate change impacts; uncertainty regarding those impacts; and international political economy analysis of how different agreement structures

might perform under stress. The project assessed the potential impact that uncertain future climate change could have on the function and stability of international water resource sharing agreements and the associated impacts on hydro-electric uses of water.

The analysis used econometric models to estimate the likelihood of the failure of water allocation arrangements in light of climate history, potential future climate change effects, and the role that various institutional arrangements can play in mitigating such failure. GIS-based data were used to assess the climate change impacts on water availability, while empirical measures of different variables from the international political economy literature were used to represent institutional factors.

The project systematically compared existing allocation mechanisms with currently available river flow modeling techniques, based on traditional hydrological data and remote sensed data. The study showed that current methods do not fully satisfy the required information to assess the vulnerability of flow-related allocation mechanisms. In particular, they lack the necessary capability and accuracy to predict changes in flow variability and extremes, and river regulation or in-situ water abstraction has a substantial impact on in-stream flows. Presently, for most of the allocation and river types, a more qualitative approach is therefore needed that considers hydrological conditions associated with past treaty challenges, or that reflects increased hydrological stress associated with extremes. This approach was tested in the Jordan River Basin.

The project also investigated whether particular mechanisms help mitigate inter-country tensions over shared water. This component of the project utilized a corpus of documented international water treaties pertaining to water quantity or allocation, hydropower, and flood-control (those issues affected by water variability), and the Basins at Risk events database to test particular hypotheses regarding the viability, or resiliency, of treaties on water variability. Generally, the results of the statistical analysis found that treaty mechanisms that are flexible and binding, with respect to flow variability, correspond with a decrease in the frequency and intensity of country complaints. Particular institutional mechanisms (e.g., enforcement, conflict resolution/dispute resolution, and drought adaptation) also matter in further reducing country grievances due to flow variability and consequent treaty compliance problems.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org). With Ariel Dinar; Brian Blankespoor; Weather Predict (North Carolina, USA); and Oregon State University.

Project Code: P108623.

Completion date: June 2009.

Countries: Global.

Publications

- Ambec, S., and A. Dinar. 2009. "Hot Stuff: Would Climate Change Alter Transboundary Water Sharing Agreements?" Paper presented at the ISA's 50th Annual Convention, New York City, NY, February 15–18. Also presented at the 17th Annual Conference of the European Association of Environmental and Resource Economists, Amsterdam, The Netherlands, June 24–27.
- Blankespoor, B., and A. Basist. 2009. "Estimating Flow Probabilities by Surface Wetness to Address Compliance Thresholds in Water Treaties in Basins: Essequibo, Maroni, Rio Grande, Red, and Zambezi." World Bank, Washington, D.C. Draft.
- Dinar, Ariel, Brian Blankespoor, Shlomi Dinar, and Pradeep Kulukurasuriya. 2009. "The Impact of Water Supply Variability on Treaty Cooperation among International Bilateral River Basin Riparians." World Bank, Washington, D.C. Draft.
- Dinar, S., O. Odom, A. McNally, and B. Blankespoor. 2009. "Climate Change and State Grievances: The Resiliency of International River Treaties to Increased Water Variability." World Bank, Washington, D.C. Draft.
- Odom O., and A.T. Wolf. 2008. "Defining and Redefining Needs in International Water Law." World Bank, Washington, D.C. Draft.
- Stahl, K., L. De Stefano, A. McNally, A. Basist, M. Zentner, B. Blankespoor, and A. Wolf. 2008. "Past and Future Streamflow in the Jordan River Basin: Case Study Testing Methods to Assess Water Treaty Vulnerability." World Bank, Washington, D.C. Draft.
- Stahl, K., L. De Stefano, A. McNally, M. Zentner, and Aaron T. Wolf. Undated. "Integrating Approaches to Model Future Streamflow Change and Transboundary Water Allocation Requirements." World Bank, Washington, D.C. Draft.
- Zentner, Matt, Kerstin Stahl, and Alan Basist. 2008. "Estimating Flow Probabilities to Address Compliance Thresholds in Water Treaties: Methodology." World Bank, Washington, D.C. Draft.

Biofuel Production Costs: Focus on Africa

Understanding costs is essential to decision making at the individual, firm, and national levels. This research project examined the costs of producing biofuels at different scales of plant, with different production systems, and different feedstocks. The analysis focused on costs in the Africa region, but production costs were examined for other major producers, including Brazil and the United States.

It is important to understand production costs because many firms seem to be rushing into biofuels without a full understanding of the production costs or the factors that determine them. Governments and local communities in African countries are being asked to grant land on long-term leases to companies for biofuels. If the biofuels are not economically

viable, local communities that have provided long-term land leases to biofuels producers for little more than the promise of employment opportunities may be left without access to their land or the promised jobs.

The project also examined the volatility of production costs and the factors that determine it. If the production costs of biofuels are very volatile, as appears to be the case, then dependence on biofuels production has implications for employment and the macro economy, as well as the profitability of biofuels producing firms. Conversely, if there are good prospects for profitable industries that provide employment and growth, then it is important for governments to understand those opportunities.

Responsibility: Africa Region, Agricultural and Rural—Donald Mitchell (Dmitchell@worldbank.org).

Project Code: P111406.

Completion date: October 2009.

Countries: Africa region, Brazil, United States.

Health and Climate Change

This research project quantified the impact of extreme rainfall and temperature events on the incidence of diarrhea, malnutrition, and mortality in young children in Sub-Saharan Africa. Extreme weather events are known to have serious consequences for human health and are predicted to increase in frequency as a result of climate change. Africa is one of the regions that risks being most seriously affected.

Some previous papers concentrate on the links between water levels and disease, rather than directly on rainfall levels, although the two are related. Others study single countries and take a household level approach. This study combines sub-national data from Sub-Saharan Africa for health indicators with the variability in rain and temperature in a panel in order to simulate the additional health cost as a proportion of GDP caused by increased climate variability in 2020.

The panel data set is constructed from Demographic and Health Surveys for 108 regions from 19 Sub-Saharan African countries between 1992 and 2001, and climate data from the Africa Rainfall and Temperature Evaluation System from 1980 to 2001. The results show that both excess rainfall and extreme temperature significantly raise the incidence of diarrhea and weight-for-height malnutrition among children under the age of three. But rainfall and temperature have little impact on long-term health indicators, including height-for-age malnutrition and the under-five mortality rate.

The researchers used the results to simulate the additional health cost as a proportion of GDP caused by increased climate variability. The projected health cost of increased diarrhea

attributable to climate change in 2020 is in the range of 0.2 to 0.5 percent of GDP in Africa.

Responsibility: Environment Department—Sushenjit Bandyopadhyay (sbandyopadhyay@worldbank.org). With Limin Wang, China.

Project Code: P112294.

Completion date: June 30, 2009.

Countries: Sub-Saharan Africa.

Publications

Wang, Limin, and Sushenjit Bandyopadhyay. 2009. “The Health Impact of Extreme Weather Events in Sub-Saharan Africa.” Environmental and Resource Economics Seminar Series. BBL (May 7). World Bank, Washington, D.C.

Wang, Limin, Shireen Kanji, and Sushenjit Bandyopadhyay. Forthcoming. “The Health Impact of Extreme Weather Events in Sub-Saharan Africa.” Policy Research Working Paper. World Bank, Washington, D.C.

Economic and Environmental Impacts of Biofuels

The overall objective of this study is to examine the economic development and environmental quality consequences of large-scale deployment of biofuels, including impacts on land-use change, food supply, climate change mitigation, and poverty. Several developing countries have set targets for supplying energy from biofuels. However, the 2007–08 food crisis has generated some concerns regarding the expansion of biofuels. Although there is no clear consensus on the cause of the food crisis, analysts suggest that the expansion of biofuels production is one of the key reasons for the increase in global food prices. Moreover, the environmental friendliness of biofuels (for example, the degree of carbon neutrality, the impact on land-use and carbon release, and water dependence) has also been questioned. Some studies have attempted to address these issues; yet a comprehensive study examining all the issues related to biofuels at the global level is still lacking. This situation has created the dilemma for the World Bank Group and client countries as to whether to develop policies and strategies to support the large-scale development of biofuels.

This project is developing a dynamic computable general equilibrium (CGE) model for the global economy to investigate the aforementioned issues. The model explicitly represents all types of biofuel feedstocks and conversion technologies. Moreover, the model incorporates 18 types of land classified as agro-ecological zones in different countries and regions around the world. The data are taken from the GTAP database, which is the most common database for global CGE models. The researchers are working to calibrate the land-use

module and run policy simulations. The project also includes a number of background studies.

The study has developed an analytical model that can be used regularly in analyzing long-term policy and strategic issues related to energy, environment, international trade, and climate change. The study results will establish a framework that will allow the World Bank to contribute to the policy dialogue on biofuel-related matters. The study is expected to impact client countries by shedding light on the critical issue of biofuels, particularly on whether proactive actions should be taken for the large-scale deployment of biofuels.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael A. Toman (mtoman@worldbank.org) and Govinda R. Timilsina (gtimilsina@worldbank.org); and Development Prospects Group—Dominique Van Der Mensbrugge (dvandermensbrugge@worldbank.org). With John C. Beghin, Iowa State University; David Zilberman, University of California, Berkeley; Caesar B. Cororaton, Philippines; Simon Mevel, France; Ashish Shrestha, Nepal; Krishna Paudel, Louisiana State University; Miguel Alberto Carriquiry, Iowa State University; Jay J. Cheng, North Carolina State University; and Omar Osvaldo Chisari, Universidad Argentina de la Empresa.

Project Code: P113535.

Completion date: March 2010.

Countries: Global.

Publications

Carriquiry, M., and X. Du. Advanced Biofuel Technologies: Economics and Policy. Draft Report.

Cororaton, C. B. Global Income Distribution Dynamics in Analyzing the Impact of Biofuel Policies on Poverty: The Analytical Model. Draft Report.

Mevel, S. Splitting the GTAP Database to Explicitly Represent Biofuels Feedstocks and Technologies in the CGE Model. Draft Report.

Mevel, S., G.R. Timilsina, and D. Van Der Mensbrugge. The Global General Equilibrium Model for Biofuels Analysis—TECHNICAL MANUAL. Draft Report.

———. The Global General Equilibrium Model for Biofuels Analysis—USER MANUAL. Draft Report.

Paudel, K.P. Global Land Resources Assessment for Biofuel Production. Draft Report.

Rajagopal, Deepak, Gal Hochmany, Govinda Timilsina, and David Zilberman. Quantifying the Role of Biofuels in the Global Food Crisis. Draft Paper.

Timilsina, G.R., and A. Shrestha. How Much Hope Should We Have for Biofuels? Paper submitted to an international conference for presentation.

Opportunities for Financing the Destruction of Unwanted Ozone Depleting Substances through the Voluntary Carbon Market

This project has three main objectives. First, it aims to describe opportunities for funding the destruction of unwanted ozone depleting substances (ODS) through the voluntary carbon market. Second, it will develop or recommend a methodology or broader criteria for validation and verification of ODS disposal. And third, it will highlight specific case studies that illustrate elements of the recommended methodology and/or criteria. The study will also elaborate on the structure and operational procedures for the proposed unwanted ODS disposal projects that maximize the amount of ODS destroyed.

The study will include short and concise analyses on voluntary carbon markets, rules of voluntary markets and other carbon markets, as well as dedicated work on ODS destruction and destruction credits (options, costs, demand).

As the complete phase-out date for CFCs, halon, and other chemical substances under the Montreal Protocol on Substances that Deplete the Ozone Layer approaches for Article 5 countries (developing countries), an increasing number of CFC equipment and products are being decommissioned. If left unmanaged, ODS from these outdated products could place an increasing threat to ozone layer protection as they will eventually be emitted. Moreover, these chemicals also have extremely high Global Warming Potential (GWP), presenting a concomitant threat to the climate.

The study will use scoping assessment and comparative technical and financial feasibility assessments of voluntary carbon mechanisms and markets. It will also use case studies, evaluate existing and proposed methodologies against specific criteria, and generate recommendations.

The analysis will be based on the reports of the Technical and Economic Assessment Panel of the Montreal Protocol, studies commissioned by the Parties to the Protocol and the MLF on ODS banks, ODS disposal methodologies and criteria (existing and in draft form), completed/ongoing projects, survey and consultations with key stakeholders, and other studies related to carbon markets. In addition, regional workshops will be held for developing countries to disseminate the results of the studies and help them put the concepts into practice.

To date, the study process has been successful in galvanizing the interest of the international community in developing approaches to finance ODS destruction through voluntary markets. A steering committee was set up which is made up of the key players in the voluntary market who are currently considering ways to expand their carbon offset programs to include ODS destruction, as well as in the MP community. This will

significantly increase future market fluidity, demand and accessibility for developing countries while giving credibility to the asset.

Study objectives and results to date have been presented at the following workshops: the 13th Annual Financial Agents Workshop, Washington DC, 7–8 April 2009; Southeast Asia ODS Officers Network Meeting, Bangkok, 27–30 April 2009; Joint Meeting of the South Asia and West Asia ODS Officers Networks, Bahrain, 9–14 May 2009.

Responsibility: Environment, GEF Coordination Team—Steve Gorman (sgorman@worldbank.org); Environment, Montreal Protocol—Viraj Vithoontien, and Sandra Siles; and Environment, Carbon Finance—Julie Godin; reviewers and steering committee members Philippe Ambrosi (Environment) and Jiang Ru (East Asia Social, Environment and Rural Sustainable Development). With ICF International (Team lead: Mark Wagner).

Project Code: P114440.

Completion date: March 2010.

Countries: Global.

State and Trends of the Carbon Market — 2009

This project produced a report on the State and Trends of the Carbon Market. The report presents in an unbiased and transparent manner the activity of the various segments of the global carbon market (volumes transacted, prices, contract provisions, asset classes and hosting countries, and buyers' origin and type) and their interactions. The report also identifies the most notable trends in this market. A significant part of the research project was devoted to data collection, through interviews of market players and a survey of carbon-related information, to update the World Bank's confidential project-based transaction database.

The report shows that despite the turmoil in the financial world, the global carbon market doubled to US\$126 billion (€86 billion) in 2008. Approximately US\$92 billion (€63 billion) of this overall value is accounted for by transactions of allowances and derivatives under the EU Emissions Trading Scheme for compliance, risk management, arbitrage, raising cash, and profit-taking purposes. The second largest segment of the carbon market is the secondary market for Certified Emission Reductions, which is a financial market with spot, futures, and options transactions in excess of US\$26 billion (€18 billion), representing a five-fold increase in both value and volume over 2007. Not as welcome is the news that the value of transactions financing actual project-based emission reductions fell 12 percent to an estimated US\$6.5 billion (€4.5 billion) in 2008. The drop resulted from a complex set of

factors related to difficulty in obtaining financing for climate-friendly projects during the financial crisis, regulatory delays, and uncertainty surrounding the future of the market under a new global climate change agreement, which is expected to take effect in 2012. On top of that, the first significant transactions of Assigned Amount Units (AAUs, the allowances issued to Parties to the Kyoto Protocol) occurred in the end of 2008 and early 2009, further eroding any residual demand for offsets, given their large potential volumes with minimal risk.

The EU recently approved a package of post-2012 commitments to reduce emissions, with a promise to reduce even more if other countries join an international agreement to be negotiated in Copenhagen later in 2009. The United States is also considering a comprehensive climate policy. These two proposals together will present an opportunity to scale up developing country supply of carbon.

The “State and Trends of the Carbon Markets—2009” was presented at Carbon Expo 2009, a Carbon business fair for leading greenhouse gas market players with the support of the World Bank and the International Emissions Trading Association. After its release at the CarbonExpo, it received wide press coverage—both in general newspapers and financial and Carbon industry-related publications. The report has been used extensively for capacity-building workshops on carbon finance organized by the Carbon Finance Unit at the World Bank and the World Bank Institute.

Responsibility: Environment, Carbon Finance—Philippe Ambrosi (pambrosi@worldbank.org), Neeraj Prasad (Nprasad@worldbank.org), Alexandre Kossoy, Anita Gordon, and Sidney Nakahodo; and Africa, Environment and NRM—Karan Capoor. With Lenny Hochschild, Marco Terruzzin, and Jason Song, Evolution Markets, White Plains, New York.

Project Code: P115748.

Completion date: June 2009.

Countries: Global.

Publications

Capoor, K., and P. Ambrosi. 2009. State and Trends of the Carbon Markets 2009. Carbon Finance Unit, World Bank, Washington, D.C. http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2009_FINAL.pdf

Implications of Inertia, Irreversibility, and Uncertainty for Climate Change Mitigation Policy

The objective of this research project was to develop a framework to better understand the economics of greenhouse gas mitigation efforts under conditions of uncertainty and inertia.

Inertia arises in the context of both climate change and its natural system consequences, and efforts to mitigate greenhouse gases through measures that involve elements of sunk costs under uncertainty.

The project focused on three topics. The first was inertia related to irreversible, lumpy investment lock-in and its interaction with and implications for climate policy. The second was how to assess the efficiency of policy measures in the presence of inertia. And the third was analysis of the “quasi option value” concept on irreversibility of climate impacts, and extending the analysis to cases with less rigid inertia in climate policy.

This study was distinctive in addressing both climatic and investment inertia and quasi-option values, and in including numerical simulations to provide more concrete findings. The analysis used discrete and continuous time stochastic optimization theory combined with numerical simulation experiments. **Responsibility:** Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org) and Jon Strand. With Sebastian Miller, University of Maryland and IDB (Chile); and Nils Framstad, University of Oslo (Norway).

Project Code: P116107.

Completion date: June 2009.

Countries: Global.

Publications

Framstad, Nils. 2009. “A Stochastic Optimization Model of Optimal Investment with Climate change Risks and Economic Inertia.” World Bank, Washington, D.C. Draft.

Miller, Sebastian. 2009. “A Simple 2 x 2 Model of Inertia and Irreversible Investment under Uncertainty of a Catastrophic Event.” World Bank, Washington, D.C. Draft.

Implications of the Economic Crisis for Natural Resources and the Environment

This research project provided new insights on how large-scale financial crises can plant the seeds for follow-on crises in natural resource intensive sectors of the real economy. The project thus helped to identify priority lines for further investigation to avert the follow-on effects that compound initial impacts on poverty. In particular, it focused on how the current crisis might engender natural resource degradation, and how natural resource and commodity markets are bound up with other factors in the conditions leading to the crisis.

The research identified three new structural factors that have influenced the financial crisis and world recession of 2008–09: (i) the incorporation of highly populated countries

in the growth process; (ii) the increasing scarcity of the environment and certain natural resources; and (iii) the unprecedented concentration of wealth and income in the advanced economies over the past three decades. These structural changes have significantly tightened the links between world growth and commodity demand, caused the world supply of commodities to become increasingly inelastic, and rendered economic growth more dependent on looser monetary policies, respectively.

These factors may make the recovery from the crisis much more difficult, implying a deeper and more protracted crisis than most previous ones. In addition, the impact of the current crisis is likely to exacerbate environmental scarcities in the developing world, and may eventually force a tightening of environmental policies in response to such degradation. This, in turn, may make the supply curve of commodities even steeper in the future, which would reinforce the sensitivity of commodity prices to world economic growth.

The research highlights not only the risk of future natural resource degradation from the crisis, but also the inter-dependence of various financial and commodity-market factors in affecting the crisis. Policies for addressing this part of the real economy thus assume added significance in restoring long-term growth.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Michael Toman (mtoman@worldbank.org) and Jon Strand. With Ramón López, University of Maryland.

Project Code: P116254.

Completion date: June 2009.

Countries: Global.

Publications

López, Ramón. 2009. "The World Economic Crisis: Commodity Prices and Environmental Limits." World Bank, Washington, D.C. Draft.

Globalization and International Capital Flows

This research project consists of studies on several sets of issues related 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. The analysis of specific crisis episodes uses household survey data to gain a better understanding of the distributional effects of financial crises.

One line of research studies the effects of financial globalization on developing countries, with particular attention to the relation between globalization, financial development, contagion, and crises. The research finds that accessing international financial markets enables firms to lengthen debt maturities, increase the liquidity of assets, finance growth opportunities, and expand.

Another line of research studies foreign direct investment in emerging market economies. The analysis finds that both domestic factors (trade openness, financial depth, and macroeconomic stability) and global factors (world interest rates, world growth, and credit spreads) are significant drivers of foreign direct investment.

Another line of research focuses on understanding cross-country differences in holdings of domestic and foreign assets. Further, a project component on openness and vulnerability tries to shed light on the question as to whether international integration increases a country's external vulnerability. The analysis attempts to answer these questions using cross-country and over-time empirical evaluation.

Responsibility: Development Research Group, Growth and Macroeconomics Team—Sergio Schmukler (sschmukler@worldbank.org), Aart Kraay, Norman Loayza, and Luis Servén. With Maria Soledad Martinez Peria, Augusto de la Torre, César Calderón, Juan Carlos Gozzi Valdez, David Dollar, Daniel Kaufmann, Daniela Klingebiel, Richard Newfarmer, and Neeltje van Horen. With Rui Albuquerque, University of Rochester; Fernando Broner and Jaume Ventura, Universitat Pompeu Fabra; Klaus Schmidt-Hebbel, Central Bank of Chile; Marina Halac, University of California at Berkeley; Ross Levine, Brown University; Eduardo Levy Yeyati, Universidad Torcuato Di Tella; Tatiana Didier and Guido Lorenzoni, Massachusetts Institute of Technology; Stijn Claessens, Gil Mehrez, Paolo Mauro, and Esteban Vesperoni, International Monetary Fund; Graciela Kaminsky, George Washington

University; Hiro Kawai, University of Tokyo; Philip Lane, Trinity College; and Pablo Zoido-Lobaton, OECD.

Project Code: PO53639.

Completion date: June 2015.

Countries: Global.

Publications

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- de la Torre, Augusto, Maria Soledad Martinez Peria, and Sergio Schmukler. 2008a. "Bank Financing to SMEs: Drivers and Obstacles." Policy Research Working Paper 4788. World Bank, Washington, D.C.
- . 2008b. "Bank Financing to SMEs in Argentina and Chile."
- . 2008c. "Bank Involvement with SMEs: Beyond Relationship Lending." Policy Research Working Paper 4649. World Bank, Washington, D.C.
- . Forthcoming. "Banks and Small and Medium Enterprises: Recent Business Developments." In *Global Finance*. Bloomsbury Publishing.
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“Unexploited Gains from International Diversification: Patterns of Portfolio Holdings around the World.”

Gozzi, Juan Carlos, Ross Levine, and Sergio Schmukler. Forthcoming. “Patterns of International Capital Raisings.” *Journal of International Economics*.

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Joint versus Individual Liability

Some claim that group liability was the key innovation that led to the explosion of the micro-credit movement. By providing incentives for peers to screen, monitor, and enforce each other’s loans, group liability improved repayment rates and lowered transaction costs in lending to the poor. Others argue that group liability creates excessive pressure and discourages good clients from borrowing, jeopardizing both growth and sustainability. Therefore, it remains unclear whether group liability improves the lender’s overall profitability and poor people’s access to financial markets.

This research project worked with a bank in the Philippines to conduct two field experiments to examine these issues. First, working with 169 previously formed group liability centers of approximately 20 women, the project converted half to individual-liability centers (treatment) and kept the other half as-is with group liability (control). After one year, there was no increase in defaults; there was higher outreach due to more new clients joining the treatment groups.

Second, the project tested whether the individual liability model would perform as well when groups were initially formed under individual liability. In addition, the project introduced a hybrid design in which centers started as group liability but were told that conditional on successful repayment, they would convert to individual liability in the future.

In pre-existing areas, there was no increase in default after three years. In expansion areas, there was no change in default but fewer groups were created after two years.

The findings suggest that an expansion of individual lending products with an initial period of group liability (or in some cases, shifting from group liability to individual liability) should help deepen outreach and provide more flexible microfinance products for the poor. The project strengthened the lender’s monitoring and evaluation unit and helped to improve the questionnaire development skills of two local survey firms.

The project findings were presented at the following conferences and seminars: NEUDC; BREAD-AIID; Economic Science Association; the University of California at Berkeley, the Center for Global Development, Chicago-GSB, George Washington University (Washington, D.C.), Georgetown University (Washington, D.C.), Paris-Jourdan, the University of California at Santa Cruz, Stanford University, Toulouse University, Tufts University, the University of Washington, the World Bank, and Yale University.

The project received support from the National Science Foundation (United States) and the Bill and Melinda Gates Foundation.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Xavier Gine (xgine@worldbank.org). With Dean Karlan, Yale University; and Tomoko Harigaya, IPA, Japan.

Project Code: P086550, P106804, P110751.

Completion date: April 2007.

Countries: Philippines.

Publications

Gine, X., T. Harigaya, D. Karlan, and B.T. Nguyen. 2006. “Evaluating Microfinance Program Innovation with Randomized Control Trials: An Example from Group Versus Individual Lending.” http://siteresources.worldbank.org/DEC/Resources/Evaluating_Microfinance_program_Innovation_with_Randomized_Control_Trails_An_Example_from_Group_Versus_Individual_Lending.pdf.

Gine, X., and D. Karlan. 2009. “Group versus Individual Liability: A Field Experiment in the Philippines Microcredit Lending Groups.” http://siteresources.worldbank.org/DEC/Resources/GroupversusIndividualLiability_May09.pdf. A previous version appeared as “Peer Monitoring and Enforcement: Long Term Evidence from Microcredit Lending Groups with and without Group Liability” http://siteresources.worldbank.org/DEC/Resources/Peer_Monntoring_and_Enforcement_Jan_08.pdf.

Access to Finance and Poverty Alleviation

There is substantial evidence on the positive effect of financial development on economic growth. The objective of this research project was to assess the impact of financial development, and specifically access to finance on poverty alleviation at both the country and the household levels. One of the project's goals was to understand the determinants of household access to financial services and the effects of such access.

The project conducted a cross-country analysis over 1960–2005. It found that financial development disproportionately helps the poor. Greater financial development—as measured by credit by financial intermediaries to the private sector divided by GDP—induces the incomes of the poor to grow faster than average per capita GDP growth, which lowers income inequality. The results indicate that financial development helps the poor beyond the effect of finance on aggregate growth. Indeed, half of the impact of financial development on the poor works through aggregate growth and about half operates through reductions in income inequality.

The project also examined changes in national poverty rates. Although subject to more qualifications because of greater data limitations, the findings show that greater financial development is associated with poverty alleviation, even when controlling for average growth and many other country traits. In sum, these findings suggest that financial development is particularly beneficial to the poor. Hence, finance is thus not only pro-growth, but also pro-poor. But what is behind the aggregate level of financial development? The aggregate relationship between finance and poverty alleviation raises questions about the micro-mechanism and channels through which finance has a poverty-alleviating effect.

To begin to answer these questions, the project started putting together a database of existing household surveys, harmonizing financial information. This stock-taking exercise assembled all of the LSMS surveys containing financial access data and created a pooled database. The Microdata for Financial Studies database was created based on 111 household surveys from 45 developing and transition countries in selected years in the 1990s.

Based on this pool of data, the project made preliminary estimates of how household usage of formal credit, or of a bank account, is linked to the household's education, employment status, and level of consumption. But this exercise also revealed how little is known on a comprehensive basis and confirmed the need for new studies. It also revealed that financial access questions included in the existing household surveys have been few, poor quality, and difficult to compare. Hence, the results of this project are being used to develop

an extensive core questionnaire on finance that can be incorporated into future household surveys.

The project findings were presented at an international conference in Washington, D.C. (March 2009).

The research papers can be found at: <http://go.worldbank.org/V7IJJ2VI70>.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Asli Demirgüç-Kunt (ademirguckunt@worldbank.org) and Robert Cull. With Thorsten Beck and Patrick Honohan.

Project Code: P088338.

Completion date: September 30, 2007.

Countries: Global.

Publications

Al-Hussainy, Edward, Thorsten Beck, Asli Demirguc-Kunt, and Bilal Zia. 2008. "Household Use of Financial Services." World Bank, Washington, D.C.

Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine. 2007. "Finance, Inequality and the Poor." *Journal of Economic Growth*, 12(1).

Demirguc-Kunt, Asli, and Ross Levine. 2009. "Finance and Inequality: Theory and Evidence." Policy Research Working Paper 4967. World Bank, Washington, D.C.

Finance Research Program FY 2005–2007

The finance research program for 2005 to 2007 was organized around two broad areas: access to financial services, and finance for the poor. The first is a crucial part of the investment climate facing firms and households; the second directly addressed the empowerment aspects of poverty. The research project also included work on finance, growth and stability, bank supervision, foreign entry, and failure resolution.

Research on access to financial services studied small and medium enterprises; developed indicators of access to financial services; conducted a case study of corporate governance, firm valuation, and access to finance in Russia; studied access to foreign debt financing and access to foreign equity financing; and analyzed the costs of raising finance in debt and equity markets.

Work on financial sector policy and the poor attempted to identify and clarify the major dimensions of financial sector policy as it affects the poor at a conceptual level, summarizing existing findings and exploring available data and potential for future research. Research on pro-poor innovations by microfinance institutions evaluated the impact of some new financial products by microfinance institutions. Work on the impact of institutions and government policies on microfinance

institutions sought to understand the reasons for the success and failure of microfinance institutions given their varied performance.

Finally, research on the determinants of entrepreneurship and escaping poverty studied entrepreneurship to gain a better understanding of its determinants. This was important because often households need to exercise their own entrepreneurial abilities to escape poverty. A database was created with existing household surveys, harmonizing financial information for 45 developing countries to examine household factors that distinguish entrepreneurs. The underlying surveys came from the Microdata for Financial Studies database, which contains data from 111 household surveys from 45 developing and transition countries in selected years over the 1990s. Analysis of this data is ongoing.

First, the project continued on the broad range of issues related to the relationship between finance and growth. Second, the project studied the effects of bank regulation and supervision on access, efficiency, and fragility. Supervisory approaches vary significantly across countries—from emphasis on powerful official supervision for enhancing corporate governance of banks to strengthening disclosure requirements and legal liabilities of bank directors and auditors to thus foster the capacity of private agents to monitor banks. Third, the research tried to understand the process of foreign bank participation and its implications for developing countries. Fourth, the project analyzed the resolution of corporate financial distress.

Project findings were presented at the first United Nations conference on the Year of Micro-credit (2005), and a conference on Entry, Entrepreneurship, and Financial Development that was organized with the Berkley Center for Entrepreneurial Studies and the New York University Stern Global Business Institute (January 2005).

Responsibility: Development Research Group, Finance and Private Sector Team—Asli Demirguc-Kunt (ademirguc-kunt@worldbank.org). With Thorsten Beck, Robert Cull, Xavier Gine, Patrick Honohan, Leora Klapper, Inessa Love, David McKenzie, Maria Soledad Martinez Peria, Bilal Husnain Zia, L. Colin Xu, Sergio Schmukler, Luc Laeven, Stijn Claessens, Enrica Detragiache, and George Clarke. With Raghu Rajan, University of Chicago; Meghana Ayyagari, George Washington University; Jim Barth, Auburn University; F. Buera, Northwestern University; Jerry Caprio, Williams College; Bernard Black, University of Texas; Edward Kane, Boston College; Dean Karlan, Yale University; Asim Ijaz Khawaja, Harvard University; S. Klonner, Cornell University; Christian Leuz, University of Chicago; Ross Levine, Brown University; Vojislav Maksimovic, University of Maryland; Atif Mian, University of Chicago; Jonathan Murdoch, New

York University; George Panos, University of Aberdeen; R. Townsend, University of Chicago; J. Vickery, Federal Reserve Bank of New York; Chris Woodruff, University of California, San Diego; Peter Wysocki, Massachusetts Institute of Technology; D. Yang, University of Michigan; Reena Aggarwal, Georgetown University; and Andrei Rachinsky, University of Texas.

Project Code: P089138.

Completion date: June 2007.

Publications

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The Impacts of Credit on Urban Micro-Enterprises in the Northeast of Brazil: CrediAmigo Meets ECINF

The CrediAmigo program of Banco do Nordeste do Brasil (BNB) was launched in 1998. It offers loans to established micro-entrepreneurs for financing their working capital and fixed asset needs. Loans are collateral-free, but are extended to small groups of three to five borrowers who guarantee each other’s loans (group liability).

The objectives of this research project were to assess the impacts of increased supply of credit on credit utilization, and the impacts of credit utilization on firm performance.

The spatially uneven development of the Brazilian economy has raised many economic and social concerns. Primary among these is the belief that high levels of inequality may compromise economic efficiency and growth. Credit and insurance market failures, for example, may prevent poorer households from investing in and contributing to the economy at an optimal level, thereby undermining efficiency and growth.

As a consequence, many of the efforts of the Brazilian government to date have focused on fostering the availability of financial services and expanding access to microfinance in the northeast region of the country. A primary example of such efforts is the Banco do Nordeste do Brasil (BNB)—a state-owned development bank created in 1952 to promote the development of the northeast region of Brazil—aimed at expanding access to credit in the region.

The project investigated how access to formal and informal credit affects micro firm performance—measured by profits—using a combination of administrative data from the CrediAmigo program and detailed micro-enterprise data surveys on the informal urban economy (ECINF) of the Brazilian National Statistical Institute in 1997 and 2003.

The analysis employed the difference-in-differences estimator. It compared differences between the treatment and control groups (i.e., the northeast region compared with all other regions) before and after the start of the CrediAmigo program. This estimator offers the advantage that any time invariant pre-program unobserved heterogeneity between the

treatment and control groups is eliminated in the estimation of impacts.

The econometric analysis yielded several findings for the municipalities in the northeast region. First, there was no significant impact on overall utilization of credit (independent of source). Second, utilization of formal credit (credit from banks) as a primary source increased by 1.8 percent. Third, formal credit did not appear to replace credit from suppliers as a primary source. Fourth, there was a significant increase in profits among those who utilized credit (from any source). And sixth, there was a significant increase in re-sales of merchandise and expenditures for restocking merchandise.

The study also estimated the impact of credit on profits, using a comparison group selected using the method of propensity score matching (using data from the ECINF 2003). The impact on profits was positive but not statistically significant, irrespective of the sample used or the gender of the micro-entrepreneur.

The results of the study were presented in draft form to the CrediAmigo/Banco do Nordeste do Brasil administration (November 2008).

Responsibility: Poverty Reduction and Economic Management, Poverty Reduction Group—Emmanuel Skoufias (eskoufias@worldbank.org); Latin America and Caribbean, Poverty Sector—Pedro Olinto; Africa, Sustainable Development Front Office—Susana Sanchez; and Human Development Network, Social Protection Team—Philippe Leite. With Francisco Haimovich, IADB; Dean Karlan, Yale University; Tebaldi Edinaldo, University of New Hampshire; and Alinne Veiga, University of Southampton, UK.

Project Code: P095149.

Completion date: October 2009.

Countries: Brazil.

Remittances and Financial Development

Remittances to developing countries have become the second largest type of financial flow after foreign direct investment. Yet researchers have given little attention to the question of whether remittances promote financial development and the use of financial services in recipient countries.

This research project is investigating the link between remittances and financial development by conducting two case studies. Using data from a nationally representative rural panel survey for El Salvador, the first case study examines the effect of a household receiving remittances on: (i) the probability that the household has a bank deposit account, (ii) the likelihood that the household has an outstanding loan, and (iii) the probability that it has applied for a loan in a given period.

The second case study focuses on Mexico. Combining municipality-level information from the 2000 Mexican Census with data from the Comisión Nacional Bancaria y de Valores, the study examines the impact of remittances on four measures of financial development across Mexican municipalities: (i) the ratio of commercial bank deposits to GDP, (ii) the number of commercial bank deposit accounts per capita, (iii) the ratio of commercial bank loans outstanding to GDP, and (iv) the number of commercial branches per capita.

Financial development has been shown to promote faster growth and to lower poverty. By examining the link between remittances and financial development, this research project will help uncover a potential new channel through which remittances can affect the economies that receive these flows.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Asli Demirgüç-Kunt (ademirguckunt@worldbank.org) and Soledad Martinez Peria. With Christopher Woodruff and Noemi Soledad Lopez.

Project Code: P100513.

Completion date: June 2010.

Countries: El Salvador, Mexico.

Publications

Martínez Pería, M.S., Y. Mascaró, and F. Moizeszowicz. 2008. “Do Remittances Affect Recipients’ Financial Development?” In P. Fajnzylber and J. H. Lopez (eds.), *Remittances and Development: Lessons from Latin America*. Washington, D.C.: World Bank.

Demirguc-Kunt, A., E. López Córdova, M.S. Martínez Pería, and C. Woodruff. 2009. “Remittances and Banking Sector Breadth and Depth: Evidence from Mexico.” Policy Research Working Paper 4983. World Bank, Washington, D.C.

Barriers to Banking

Theory suggests that financial market frictions or barriers that prevent broad access can be a critical mechanism for generating persistent income inequality or poverty traps. However, the data on who has access to which financial services remain thin and inadequate. This research project contributes to closing this gap in the literature. Using information from 209 banks in 62 countries, the project developed new indicators of barriers to banking services around the world, showing their correlation with existing measures of outreach, and exploring their association with other bank and country characteristics suggested by theory as potential determinants.

Barriers to banking services could in principle arise as a result of banks’ rational business decisions. The analysis

explored the association between barrier indicators and several bank and country characteristics.

The analysis shows that barriers to banking are lower in economically and financially developed economies. Barriers are also negatively correlated with financial outreach and positively correlated with financing obstacles as reported by firms. However, some barriers—including fees on consumer and small and medium enterprise loans relative to GDP per capita—seem to be more constraining than others. On the one hand, the fees associated with international wire transfers and the use of ATM cards seem orthogonal to most other outreach indicators. On the other hand, several measures—including minimum balances for checking and savings accounts, annual fees and documentation requirements associated with these accounts, and the number of delivery channels for lending products—are highly correlated with other outreach measures and thus seem to constitute true hurdles to accessing formal banking services.

The analysis shows that although customers in predominantly government-owned banking systems face lower deposit barriers, they face higher lending barriers. Contrary to conventional wisdom, a larger share of foreign bank ownership is associated with lower barriers in deposit services.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Asli Demirgüç-Kunt (ademirguckunt@worldbank.org), Thorsten Beck, and Soledad Martinez Peria. With Subika Farazi and Ning Jiang.

Project Code: P101515.

Completion date: FY09.

Countries: Global.

Publications

Beck, T., A. Demirgüç-Kunt, and M.S. Martinez Peria. 2008.

“Banking Services for Everyone? Barriers to Bank Access and Use around the World.” *World Bank Economic Review* 22(3): 397–430.

Martinez Peria, M.S. 2009. “Bank Financing to SMEs: What Are Africa’s Specificities?” *Private Sector and Development* (1, May): 5–7.

Foreign Banking

This research project aimed to uncover differences between foreign ownership by banks from developing countries and by banks from high-income countries. The project involved building a large database on entry by foreign banks.

The project provided an overview of developments in foreign banking in developing countries between 1995 and 2006. It also examined differences in terms of impact on the local

banking markets of entry by banks from developing countries versus entry by banks from developed countries. The project specifically treated foreign banks as heterogeneous with respect to their origin.

The main output of the project was a comprehensive database with bank-level information on ownership, including origin of the owner when the bank was foreign owned, and a large number of financial variables and bank characteristics for the vast majority of banks in all countries in the world. The database spans 1995–2006. The main source of information was Bankscope, but information was also collected using the Web sites of individual banks, parent banks, central banks, and other internet sources.

The research findings indicated that developing countries have become more important with respect to cross-border investments in other developing countries, although their share in total foreign banks in developing countries remained stable in 1995–2006. Banks from a greater set of developing countries have become investors and are expanding into a larger number of host countries (mostly within their region). Although foreign banks from developing countries still play a marginal role in the global banking system, their overall importance in the domestic banking systems of small, low-income countries is rising.

The data cover a sample of 4,074 banks from 103 developing countries and 35 high-income countries, and span the period 1995–2006.

Project findings have been presented at the University of Amsterdam (June 2006); Utrecht University (June 2006); Rabobank of the Netherlands (June 2006); American University (September 2006); LACEA—Mexico City (November 2006); Financial Instability, Supervision and Central Banks Conference—Helsinki (June 2007); and the 13th Dubrovnik Economic Conference—Dubrovnik (June 2007).

Responsibility: Development Prospects Group, International Finance Team—Mansoor Dailami (Mdailami@worldbank.org), Neeltje van Horen, Tugba Gurcanlar, and Joaquin Mercado. With Stijn Claessens, International Monetary Fund.

Project Code: P105173.

Completion date: November 2007.

Publications

Claessens, S., and N. van Horen. 2007. “Location Decisions of Foreign Banks and Competitive Advantage.” Policy Research Working Paper 4113. World Bank, Washington, D.C.

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Claessens, S., N. Van Horen, T. Gurecanlar, and J. Mercado. 2008. “Foreign Bank Presence in Developing Countries 1995–2006: Data and Trends.” World Bank, Washington, D.C. Mimeo.

Micco, A., U. Panizza, and M. Yañez. 2007. "Bank Ownership and Performance. Does Politics Matter?" *Journal of Banking and Finance* 31: 219–41.

Van Horen, N. 2007. "Foreign Banking in Developing Countries; Origin Matters." *Emerging Markets Review* 8: 81–105.

Gender and Financial Data

This research project carried out a survey experiment in Ghana that showed that the choice of respondent had a significant effect on reported use of financial services. It also showed that question type affected reported rates of usage more for some products than for others. The purpose of the project was to replicate a previous experiment in Ghana to determine whether the results were consistent in other locations. The overall goal of the research was to provide evidence on the most accurate and cost effective means of collecting data on household and individual use of financial services.

The experiment was designed to "piggy-back" on a recent national household survey to save money and to increase the total amount of information that could be obtained. Two different models of questions were asked (a short version that focused more on the institutions used, and a detailed, product-by-product questionnaire). The results showed that randomly selected adults were the least able to provide accurate data, which was expected. However, the work also showed the unexpected result of there being little difference between full enumeration (all adults responding for themselves) and the head of household responding for all. This is important for understanding the comparability of surveys that vary on this dimension.

Most of the funds went into the fieldwork costs of the survey in Timor Leste. The survey piggy-backed on the 2006–07 national Living Standards Survey of Timor, re-visiting a subsample of the households to apply a finance experiment (in collaboration with other research efforts on justice, vulnerability, and land investments). The analysis of the Timor data is underway. Several factors—such as fieldwork problems, the social structure of households in Timor, and the incredibly small number of households with any use of financial services—may limit the findings from this experiment.

Cognitive testing of finance questions was carried out in Jamaica as an important step in developing the questionnaire for a planned experiment, piggy-backing on the 2008 Survey of Living Conditions. The findings of this work showed that the overall level of understanding of financial instruments and services is quite low. A particularly intriguing finding was that people use different cognitive processes concerning insurance compared with other financial services. This highlighted what

had been discovered in Ghana. The results of the cognitive testing have been incorporated into questionnaires for Jamaica.

Funding was provided by the Norwegian-Dutch Trust Fund for Mainstreaming Gender.

Responsibility: Development Research Group, Poverty Team—Kinnon Scott (Kscott1@worldbank.org) and Kristen Himelein; and Finance and Private Sector Development Team—Robert Cull. With Jarold Cosby, Brock University; Mekong Economics; and Statistical Institute of Jamaica.

Project Code: P106079.

Completion date: September 2009.

Countries: Timor Leste, Jamaica.

Publications

Cosby, Jarold. 2009. "Financial Services and Products: Cognitive Interviews." World Bank, Washington, D.C.

Research on Financial Indicators

This research project collected new data on access to financial services in 54 countries, mostly in Africa, and analyzed global trends in access to financial services.

The project used data from a survey of regulators and a survey of financial institutions for basic statistical analysis.

The largest contribution of the study was new data. Banking the Poor collects information from two sources: central banks and leading commercial banks in each surveyed country. It explores associations between countries' banking policies and practices and their levels of financial access, measured in terms of the number of bank accounts per thousand adults.

Proceedings from the work in FY08 were published as the book *Banking the Poor*, which was released in early FY09. *Banking the Poor* finds that the surest way to increased access is job growth that leads to more income. But it also finds that more complexity and costs such as monthly fees are linked to lower access. Access is not enhanced by loading up accounts with features that enhance convenience, such as overdraft provision. Instead, these features appeal to people who are already banked. Even mobile banking in its current form is primarily aimed at existing clients. By contrast, the availability of a basic "no-frills" bank account with minimal charges is linked to greater access.

Funding was provided by DFID.

Responsibility: Consultative Group to Assist the Poor, Market Intelligence—Nataliya Mylenko (nmylenko@worldbank.org) and Independent Evaluation Group, Corporate Global and Methods—Anjali Kumar; Consultative Group to Assist the Poor, Market Intelligence—Maximilien Heimann, Clyde Jake Kendall, Alejandro Ponce Rodroquez, and Valentina Saltane;

South Asia, Finance and Private Sector Development—Mehnaz Safavian; Financial and Private Sector Development Vice Presidency—Simeon Djankov and Securities Markets—Ying Lin; Treasury, Banking and Debt Management—Farah Dib. With Sushma Narain, CESGM, INDIA; Joanna Pascual; Vikram Pathania; and Konstantinos Tsioumis.

Project Code: P106774.

Completion date: June 30, 2009.

Countries: 54 countries in Africa, Asia and Latin America.

Publications

World Bank. 2009. *Banking the Poor*. Washington, D.C.: World Bank.

Research Program in Finance and the Private Sector, FY08–FY10

A well-functioning financial system and a vigorous private sector are important drivers of growth and poverty reduction. In the financial sector, this research project focuses on understanding how an effective financial system contributes to economic development and identifying which policies work best to improve the efficiency, stability, and reach of the financial system in developing countries. This is a three-year research program financed by the Research Committee. It emphasizes two issues of significant policy interest: access to financial services and risk management.

In the private sector, the program focuses on understanding the determinants of firm entry, exit, and performance, which are central to understanding the microeconomics of the growth process. The research program explores the determinants and consequences of entrepreneurship and innovation, informality, and corporate governance.

The following is a brief description of what is covered under these headline topics.

Access to financial services. Ultimately the research seeks to evaluate the impact of firms' financing constraints and households' inability to access financial services on economic growth and poverty alleviation, and to identify ways to improve this access, ranging from microfinance innovations to making improvements in the functioning of mainstream financial institutions and systems.

Risk management. The research program investigates the impact of supervision strategies as well as the impact of compliance with Basel Core Principles on bank stability, the interaction of bank insolvency resolution and deposit insurance policies, and the impact of financial globalization on bank efficiency and access to financial services. It has also initiated work in the area of capital market development and insurance.

Entrepreneurship and innovation. The program studies the

determinants of entrepreneurship as well as the rate at which firms across developing countries innovate and adapt their organizations to meet market conditions. The research led to the development of a global database on entrepreneurship and uses this data as well as investment climate firm surveys and individual country databases to investigate the role of different policies in influencing entrepreneurship and the innovation process.

Informality. The research on determinants and consequences of informality includes coupling the detailed business environment data collected by the World Bank with analysis of detailed firm-level, cross-country data, and the development and analysis of new in-depth single country surveys.

Corporate governance. The work in this area investigates the impact of the institutional development and business environment on firms' governance structures, and how internal and external governance affects firm performance. The research focuses on detailed firm surveys in China and Russia, countries in which many firms have experienced rapid changes in corporate governance.

Business environment and reforms. The research here has two focuses. The first is to identify binding constraints to firm growth, which has important policy implications for the priority of reform efforts. Second, it uses natural and randomized experiments to evaluate the impact of reform efforts and inform policy advice on which reforms work, which do not, and why.

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Financial Literacy and the Use of Financial Services

The World Bank provides advice on how best to promote financial access for currently unbanked households and small businesses. This research project is evaluating the effectiveness of providing financial literacy training to household

heads and financial incentives for them to open bank savings accounts.

The analysis is based on a randomized evaluation coupled with a nationally-representative baseline survey.

The main result so far is that financial literacy training en masse is not effective in inducing households to open bank accounts. Training targeted at households with low levels of education and financial literacy, however, is effective. In contrast, financial incentives have a very significant impact in encouraging people to open bank savings accounts.

The research has been presented at Oxford University’s Bank of Indonesia Conference and two World Bank conferences.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Bilal Zia (bzia@worldbank.org).

Project Code: P107619, P115099.

Completion date: FY 10.

Countries: Indonesia and India.

Publications

- Cole, Shawn, Thomas Sampson, and Bilal Zia. 2009. “Financial Literacy, Financial Decisions, and Demand for Financial Services: Evidence from India and Indonesia.” Harvard Business School Working Paper. Link: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1374078.

Biometric and Financial Innovations in Rural Malawi

The incomes of Malawian smallholder farmers are severely constrained by the inability to finance crucial inputs such as fertilizer and improved seeds, particularly for export crops. Credit supply in rural areas is limited by the absence of ready means to sanction unreliable borrowers and, conversely, to reward reliable borrowers with expanded credit. A central problem is the absence of a system that would allow borrowers to be uniquely identified. Currently, defaulters can largely avoid sanction by simply applying for new loans under different names.

This project aims to demonstrate the potential benefits of biometric technology for Malawian farmers’ financial access. In particular, the project explores whether fingerprinting of borrowers coupled with the use of fingerprint-based credit history databases can improve repayment.

Study participants were smallholder farmers applying for input loans for growing a cash crop, paprika. Farmers were randomly allocated to either: 1) a control group, or 2) a treatment group that was fingerprinted as part of the loan application. Both treatment and control groups were given a presentation on the importance of credit history in ensuring future

access to credit. For the subgroup of farmers with the highest ex ante default risk, fingerprinting led to substantially higher repayment rates. By contrast, fingerprinting had no impact on repayment for farmers with low ex ante default risk. Additional evidence indicates that, in the high-default-risk subgroup, fingerprinting resulted in higher repayment due to reductions in adverse selection (smaller loan sizes) and lower moral hazard (e.g., less diversion of fertilizer from the paprika crop).

The findings suggest that biometric technology can be cost-effective in deepening outreach for the poor and could be used as a basis for the establishment of a credit bureau in Malawi.

The project findings were presented at the following conferences and seminars: World Bank (Washington, D.C.), University of California at San Diego, Nuffield College (Oxford University), Chancellor University (Malawi), and the University of Maryland.

The project received support from USAID's BASIS AMA CRSP research facility (United States) and USAID Malawi.

Responsibility: Development Research Group, Finance and Private Sector Development—Xavier Gine (xgine@worldbank.org). With Jessica Goldberg, University of Michigan; and Dean Yang, University of Michigan.

Project Code: P110887, P115688.

Completion date: June 2009.

Countries: Malawi.

Publications

Gine, X., J. Goldberg, and D. Yang. 2009 "Identification Strategy: A Field Experiment on Dynamic Incentives in Rural Credit Markets." http://siteresources.worldbank.org/DEC/Resources/Identification_Strategy_May_09.pdf.

Financial Literacy and Investment Choice

The objective of this research project is to study the impact of financial education in effectively de-biasing household and small business decision-makers against commonly held financial biases. The project will conduct experiments and exploit gender differences within the household, between husband and wife, on these margins. It will evaluate whether financial education has a differential effect based on the gender of the household head.

This research fits in well with ongoing experimental work on intra-household bargaining. The analysis will use randomized evaluation in lab and field settings, coupled with surveys.

The researchers are in the process of piloting the experiments on sample households from partner financial institutions in the Philippines and India.

Responsibility: Development Research Group, Finance and

Private Sector Development Team—Bilal Zia (bzia@worldbank.org). With Fenella Carpena.

Project Code: P111634.

Completion date: FY 2011.

Countries: Philippines, India.

Impact Evaluation of the Thailand Village Fund

To evaluate the Thai Village Fund (TVF) program, this research project is assessing the impacts of investment in the TVF on household and village welfare. In particular, it is exploring if the program promotes income growth and diversification and consumption smoothing, how it compares with other successful programs—like the Bank of Agriculture and Agricultural Cooperatives (BAAC)—and how cost-effective it is, whether these village funds can evolve into village banks and, ultimately, substitute BAAC lending in the long run.

This research involves analyzing both cross-sectional and panel data to examine the impacts of TVF as well as the BAAC. With cross-sectional data, one important technique is propensity score matching, which compares households of similar characteristics with and without a program. Propensity score matching provides average treatment effects of both BAAC and TVF programs. A comparison of BAAC and TVF can be made in terms of their relative effects not only on consumption, but also on income by source (such as farm and non-farm).

The analysis uses panel data (from 2002 and 2004) and household fixed-effects to implement the so-called difference-in-difference technique, which can control for both household and village-level endogeneity biases. Furthermore, it controls for initial conditions by applying propensity score matching on the base year and then implementing difference-in-difference analysis on a panel based on the common support.

The data come from four sources: a) the socioeconomic surveys of 2002 and 2004, including a panel component; b) the Village Fund Secretariat, at both the provincial and national levels; c) information on villages that has been geared by the National Statistics Office from the census and from administrative sources; and d) a new survey of village fund committees.

The preliminary findings show that borrowing from TVF and BAAC results in growth in income, expenditure, and ownership of durable goods. Borrowing from both has a higher impact than the sum of the impacts of borrowing from the individual sources. One policy conclusion is that if the government wants to expand the TVF, the most productive approach would be to target poorer farming communities.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Shahidur Khandker (Skhandker@worldbank.org).

Project Code: P113321.

Completion date: March 31, 2010.

Countries: Thailand.

Publications

Boonperm, Jirawan, Jonathan Haughton, and Shahidur R. Khandker. 2009. "Does the Village Fund Matter in Thailand?" World Bank, Washington, D.C. Mimeo.

Access to Banking Services in Mexico

The project will study the economic effects of promoting financial access for low-income groups. Recently, a number of banks targeted to low-income households have opened in Latin America, such as Wal-Mart Bank in Mexico, and Banco Azteca in several countries. Granting licenses to these banks has been somewhat controversial since it encountered some resistance from the public and interest groups.

Most previous research on the link between access to finance and economic development has been done at the country level. Cross-country studies tend to face identification issues, implying that they do not necessarily establish a causal impact of increasing access to finance on economic outcomes. This research project uses a unique within-country event to evaluate the effects of increased access to financial services for low-income individuals on entrepreneurial activity, employment, and income. Specifically, it evaluates the economic effects of Banco Azteca's opening of branches in October 2002 in all of the existing stores of its parent company—a large retailer of consumer goods, Grupo Elektra. Almost overnight, Banco Azteca established the second largest network of branches in the country. This set a world record of a bank opening more than 800 branches at once.

The analysis exploits cross-time and cross-municipality variation in the opening of Banco Azteca in Mexico to measure its effects on economic activity with a difference-in-difference strategy. The fact that new branches were set up in all pre-existing retail stores helps to control for potential selection in placing branches that could bias the results. Moreover, the empirical analysis controls for different time trends across municipalities with and without Azteca branches.

The project uses data from the Mexican Bank Supervision Commission on bank branches, savings accounts, and loans by bank and by municipality. It also uses household survey data from Mexico (the labor market survey, ENE, and the income and expenditure survey, ENIGH) to look at outcomes such as business ownership, employment, income, and household savings. So far the project findings indicate that the opening of Banco Azteca led to a 7.6 percent increase in the number

of informal business owners. Total employment increased by 1.4 percent, and average income went up by about 7 percent.

The project findings have been presented at the following conferences: LACEA Annual Meeting, Rio de Janeiro (November 2008); Financial Access: Evidence from Household Surveys, World Bank, Washington, D.C. (March 2009); and Female Entrepreneurship: Constraints and Opportunities, World Bank, Washington, D.C. (June 2009).

Responsibility: Development Research Group, Finance and Private Sector Development Team—Miriam Bruhn (mbruhn@worldbank.org) and Inessa Love. With Kiyomi Cadena.

Project Code: P113543.

Completion date: March 31, 2010.

Countries: Mexico.

Publications

Bruhn, Miriam, and Inessa Love. 2009. "The Economic Impact of Banking the Unbanked: Evidence from Mexico." Policy Research Working Paper. World Bank, Washington, D.C.

Money or Ideas

This research project is using a randomized experimental design to assess the impact of a program to provide business training to poor rural women. The program is assisting the women in identifying business opportunities in their local environment; understanding markets for inputs and outputs; obtaining basic entrepreneurial skills, such as bookkeeping; and assisting them with their needs for financial capital through micro enterprise loans. The study is being conducted with the Pakistan Poverty Alleviation Fund, a World Bank funded organization in Pakistan, which supports nongovernmental organizations working with the poor, and the National Rural Support Program, the largest community based development program in rural Pakistan.

The key outcome of interest is the extent to which such training and credit access improves the economic opportunities of women. To see this, the project will measure new business start-ups and business expansions, changes in business profitability, and women's labor market activity. In addition, it will examine the ways in which such an intervention can impact other aspects of a woman's wellbeing, including her ability to influence household decisions regarding the allocation of resources, investment in children, and her own mobility.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Xavier Gine (xgine@worldbank.org) and Rural Development Team—Ghazala Mansuri (Gmansuri@worldbank.org).

Project Code: P114817.

Completion date: June 2010.

Countries: Pakistan.

Understanding Stock Market Reactions

Recent events in the markets have left observers wondering why, as the U.S. crisis unraveled, some countries have witnessed larger drops in their stock markets than others, with some of them down on average 50 percent or more over the past 12–18 months. For example, countries like Brazil, Indonesia, and Russia have suffered huge losses in their stock markets. Others, like China and the United Arab Emirates, have not been as affected. This research project seeks to understand these differences across countries.

An extensive literature has analyzed the extent of correlation across financial markets. The current crisis, which is proving to be one of the most severe in modern history, offers a new opportunity to revisit this subject. To our knowledge ours will be the first study looking into correlations during the current crisis.

The analysis estimates an international CAPM model in which the returns in each country are affected by the returns in the United States. The analysis will examine how the correlation between the U.S. and domestic market returns is affected by the following factors: the regulatory environment in the banking sector; pre-crisis bank vulnerability indicators; Pre-crisis non-financial vulnerability indicators; measures of real-estate price run-up; measures of capital market openness; the extent of overall financial development; other macroeconomic variables; Variables capturing ties to the U.S. economy.

The project has already produced some interesting findings. Correlations between the United States and other countries are stronger among those countries that are more financially developed (in particular, those that have larger and more liquid stock markets) and more financially open (i.e., that have higher levels of capital flows). Other banking sector and macro vulnerabilities, such as lower bank capital and liquidity ratios and higher country and political risks, also seem to matter.

The project findings will be presented at the LACEA 2009 conference in Buenos Aires, Argentina.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Asli Demirguc-Kunt (Ademirguckunt@worldbank.org), Inessa Love, and Maria Soledad Martinez Peria; and Latin America Region, Chief Economist's Office—Tatiana Didier. With Jeehon Park, George Washington University.

Project Code: P115263.

Completion date: June 2010.

Countries: Global.

Reducing Barriers to Savings in Malawi

What are the key barriers to savings in rural areas of developing countries? In particular, what is the relative importance of access to banking services, transaction costs, self-control problems, and sharing norms (requirements to share assets in a social network) in explaining low levels of formal savings? If barriers to formal savings can be reduced or eliminated, what would be the impact of enhanced savings on agricultural input use, farm output, human capital (educational and health) investments, and overall well-being in rural households?

This project seeks to shed light on these questions using a field experiment among farmers in rural Malawi. In partnership with local financial institutions that are expanding operations in rural areas, the researchers will randomize offers of savings accounts to farm households, alongside randomization of complementary interventions intended to establish the relative importance of various barriers to savings in a formal institution. In the midst of a financial crisis and the tightening of credit, savings products may be very beneficial to smooth consumption or invest in productive purposes. The project received support from USAID's BASIS AMA CRSP research facility.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Xavier Gine (xgine@worldbank.org). With Jessica Goldberg, University of Michigan; and Dean Yang, University of Michigan.

Project Code: P115688, P116747.

Completion date: June 2010.

Countries: Malawi.

Youth Entrepreneurs in Bosnia-Herzegovina

This research project is evaluating a business training and crisis prevention program for youth entrepreneurs in Bosnia-Herzegovina. The project has partnered with a local microfinance institution and is using their clients to conduct the study. The analysis is based on randomized trials. The experimental approach will be complemented with baseline and follow-up surveys and administrative data from the partner microfinance institution.

Responsibility: Development Research Group, Finance & Private Sector Development Team—Bilal Zia (bzia@worldbank.org) and Miriam Bruhn. With Adnan Mesic and Sabnia Donglaic, Bosnia.

Project Code: P116357.

Completion date: FY 2010.

Countries: Bosnia-Herzegovina.

Governance, Political Economy, and Public Sector Management

The Impact of Institutions on Development

A central issue in development is the conditions under which governments pursue public policies in the interests of citizens. This ongoing research project is investigating these issues, examining the role of formal political and administrative institutions in shaping government incentives, the dynamics of competition for political office, and the ability of citizens to act collectively in pursuit of their interests. This work is closely tied to governance reform efforts, particularly those related to the “demand side,” aimed at increasing government responsiveness to citizens.

Earlier research under this project concluded that the inability of political actors to make broadly credible commitments to citizens reduces their incentives to make government policies in the broad public interest. Recent research has shown that these same conditions both reduce government capacity to suppress insurgency and increase citizen dissatisfaction with the government, making internal conflict more likely.

The current research focuses on the sources of credible commitment, with a particular emphasis on collective action by citizens: when citizens are collectively organized, they can better hold political decision makers accountable for their commitments.

Political parties are the most common vehicle through which collective action by broad groups of citizens can be organized and are the main focus of the current research under this project. Research on decision-making in non-democracies has yielded substantial evidence that investment is significantly higher and the risk of expropriation lower in non-democracies with institutionalized ruling parties (those that allow collective action by members). Recent work has shown that political party strength has a substantial influence on the degree to which Indian legislators exert effort to increase their personal popularity by providing services to their local constituents. Ongoing work includes a nearly completed effort to gather comprehensive data on all political parties in more than 80 countries; analyses of the effect on public policies, including the response to disaster risk, of institutionalized political parties; and an effort to identify the degree to which ethnic appeals affect party loyalty in Africa.

Other work is using experimental methods to examine how historical legacies of discrimination, such as caste divisions, influence the ability of caste members to act collectively. Early results from experiments in India indicate that low caste

identity, in and of itself, has a substantially negative effect on collective action by low caste members.

These more recent findings from the project have been presented at the American Political Science Association; International Society of New Institutional Economics; Hertie School of Governance, Berlin; Columbia University; Duke University; Harvard University; University of Essex; University of Michigan; and New School of Economics, Moscow.

Responsibility: Development Research Group, Growth and Investment Team—Karla Hoff (khoff@worldbank.org); Philip Keefer (pkeef@worldbank.org); and Stuti Khemani (skhemani@worldbank.org). With Herbert Kitschelt, Duke University; and Scott Gehlbach, University of Wisconsin.

Project Code: P060358, P108876.

Completion date: Ongoing.

Countries: Global.

Publications

Fehr, Ernst, and Karla Hoff. 2009. “Caste and Punishment: The Legacy of Caste Culture in Norm Enforcement.” IZA Discussion Paper No. 4343.

Keefer, Philip. 2008. “Insurgency and Credible Commitment in Autocracies and Democracies.” *World Bank Economic Review* 22(1): 33–61.

———. 2009. “A Review of the Political Economy of Governance: From Property Rights to Voice.” In Todd Landman and Neil Robinson (eds.), *Sage Handbook of Comparative Politics*. Sage Publications Ltd.

Keefer, Philip, and Stuti Khemani. 2009. “When Do Legislators Pass on Pork? The Role of Political Parties in Determining Legislator Effort.” *American Political Science Review* 103(February): 199–12.

Local Governance in India

This research project’s objective is to conduct a comprehensive analysis of democratic village governments (gram panchayats) in rural India. The project conducted a survey of 500 villages and 8,000 households in 2002. Much of the analysis is based on this survey. In 2004, the project revisited the villages and did a small survey focusing on village sanitation. In 2004–06, it recorded and transcribed public village meetings from the full sample.

The project findings show that affirmative action for disadvantaged groups and women works by improving targeting of

private transfers to scheduled castes and tribes. Programs that provide private benefits—such as toilets, housing, and transfers to the poor and disadvantaged—are more likely to reach discriminated castes when the gram panchayat has a president from a seat that is reserved for someone from a disadvantaged caste. This suggests that caste reservations are effective in including disadvantaged groups in the purview of local government. The findings also show that reserving presidencies for women candidates is conditioned by the institutional environment. That is, it is more effective in villages that are not dominated by upper castes that have a more mature panchayat system, and where women have some political experience.

Additional findings point to the importance of village literacy, more-educated politicians, fiscal decentralization, and the level of inequality in the villages.

Ongoing work includes an in-depth analysis of village meetings, an analysis of social institutions at the village level, and a randomized trial of an intervention to strengthen village governments.

Project findings have been presented at seminars at the World Bank, Washington, D.C.; the University of California—Berkeley; Yale University, New Haven, Connecticut; London School of Economics; Harvard University; the University of Maryland; the Institute of Social and Economic Change, Bangalore; and Delhi School of Economics, Delhi.

Responsibility: Development Research Group, Poverty Team—Vijayendra Rao (vrao@worldbank.org). With Radu Ban, London School of Economics; Tim Besley, London School of Economics; Rohini Pande, Harvard University; Paromita Sanyal, Harvard University; and SRI-IRMB, Delhi, India.

Project Code: P072187, P088179.

Completion date: Ongoing.

Countries: India.

Publications

Ban, Radu, Monica Das Gupta, and Vijayendra Rao. Forthcoming. “Capture or Poor Information?” *Journal of Development Studies*.

Ban, Radu, and Vijayendra Rao. 2007. “The Political Construction of Caste.” World Bank, Washington, D.C.

———. 2009. “Is Deliberation Equitable? Evidence from Village Democracies in India.” Policy Research Working Paper 4928. World Bank, Washington, D.C.

———. Forthcoming. “Tokenism vs. Agency? The Impact of Women’s Reservations on Village Democracies in South India.” *Economic Development and Cultural Change*.

Besley, Tim, Rohini Pande, and Vijayendra Rao. 2007. “The Political Economy of Gram Panchayats in South India.” *Economic and Political Weekly*.

Kadekodi, Gopal K., Ravi Kanbur, and Vijayendra Rao. 2007.

“Assessing the Karnataka Model of Development.” In Gopal K. Kadekodi, Ravi Kanbur, and Vijayendra Rao (eds.), *Challenges of Karnataka’s Development*. New Delhi: Academic Foundation Press.

Rao, Vijayendra. 2007. “Symbolic Public Goods and the Coordination of Collective Action: A Comparison of Local Development in India and Indonesia.” In Pranab Bardhan and Isha Ray (eds.), *Contested Commons: Conversations between Economists and Anthropologists*. Blackwell Publishers.

Rao, Vijayendra, and Paromita Sanyal. Forthcoming. “Dignity through Discourse: Poverty and the Culture of Deliberation in Indian Village Democracies.” *Annals of the American Academy of Political and Social Science*.

Governance Assessments and Reforms

This research project has two main components. One component is investigating the validity of widely-used datasets on the quality of governance, including the CPIA and Worldwide Governance Indicators, among others. The other component is investigating the effectiveness of “best practice” advice on anti-corruption policies and institutions. The analysis relies heavily on Global Integrity’s datasets on anti-corruption policies in about 90 countries. Corruption outcomes are measured using firm surveys and expert judgments.

Responsibility: Development Research Group, Public Services Team—Stephen Knack (sknack@worldbank.org).

Project code: P076813.

Completion date: June 2010.

Countries: Global.

Publications

Langbein, Laura, and Stephen Knack. 2007. “Measuring Corruption: A Critique of Indicators in Eastern Europe and Central Asia.” *Journal of Public Policy* 27(3, December): 255–91.

———. Forthcoming. “The Worldwide Governance Indicators: Six, One, or None?” *Journal of Development Studies*.

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

This research project developed an economic theory of secession and conducted applied econometric analysis to identify the determinants of secession-motivated political violence. The empirical tests were 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 studied all cases of secession (successful

or not) during the period after World War II, building on an existing database. The starting point was 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 policy makers than for ordinary citizens. These relationships are used as the basis for explaining the conditions for the development of secessionist movements.

The project created an impressive data base, coding different types of autonomy demands (from the mildest ones to violent secessionist demands); the availability of different types of natural resources by region that are thought to be particularly propitious to encourage autonomy or secessionist demands; and, for the first time ever, a database of regional inequality (Ginis) and average incomes for second-tier administrative units in more than 80 countries. These data will be made available to researchers in 2010.

Responsibility: Development Research Group, Poverty Team—Branko Milanovic (bmilanovic@worldbank.org). With Nicholas Sambanis, Yale University.

Project Code: P077354.

Completion date: July 2008.

Countries: Global.

Publications

Sambanis, Nicholas, and Branko Milanovic. 2007. "Explaining the Demand for Sovereignty." Paper presented at the American Political Science Association meeting in Chicago, September 4. Submitted for publication to International Organizations.

Political Economy of Public Services

This is an ongoing research program that examines theoretically and empirically the political constraints that impede public spending from effectively delivering basic services to poor citizens, even when politicians depend on the support of poor voters to win office. The aim of the research is to identify institutions and interventions that might weaken these constraints.

The main hypothesis about the nature of political distortions that structures the research program is that public policies allocate too many resources to transfers that provide private benefits to individual households, at the expense of broad public services from which many would benefit simultaneously.

This is not the same as the "capture" of public benefits by "elites" or by organized interest groups, although doubtless some transfers are so captured. Instead, it is based on the observation that political campaigns in developing democracies focus overwhelmingly on jobs, subsidies, and cash and in-kind transfers that are programmatic in nature, with eligibility criteria that facilitate wider-spread provision, rather than merely clientelistic targeting. In contrast, key public goods for development, such as preventive health services, sanitation, and quality education, are not politically salient.

New theoretical work has argued that such populist policies are prominent even when, or particularly when, large numbers of poor citizens are active voters with weak attachments to political parties. In the broad framework underpinning such theory, inefficiencies are driven by political market imperfections, such as lack of information about service quality, lack of credibility of political promises to improve service quality, and fragmentation of voters on social and ideological grounds.

One part of the research program focuses on the role of decentralization to locally elected governments in overcoming political incentive problems. New theoretical results indicate that when decentralization is an endogenous choice of politicians facing greater electoral pressure, the selected fiscal institutions are more likely to promote clientelistic spending by local governments at the expense of broad public goods. This result can be mitigated by interventions that promote yardstick competition across local jurisdictions in the delivery of broad public goods. New empirical work is currently planned in the Philippines and India to examine whether voters evaluate local governments through yardstick comparisons, how they might be better enabled to do so, and what impact this would have on final service delivery and development outcomes.

The published 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. Ongoing work is gathering new survey data in the Philippines on local political and institutional environments, and on citizen knowledge and expectations of public policies. Other work is compiling available large household surveys in India that allow estimation of service delivery outcomes at a suitably disaggregated level (the district) to enable merging with micro political data on electoral competition.

The research findings have been presented at Barcelona Institute of Economics, University of Barcelona, University of California—Berkeley, AFD-EUDN Conference on Culture and Development (Paris), International Seminar on

Intergovernmental Expenditure Assignments (Hangzhou, China), Centro Studi Sul Federalismo (Moncalieri, Italy), Annual Meetings of the American Political Science Association, Centre for Policy Research (New Delhi, India), National Institute of Public Finance and Policy (New Delhi, India), Princeton University, Georgetown University, Columbia University, Stanford University and Rockefeller Foundation (Bellagio Center, Italy), Ronald Coase Institute and Washington University, IMF Fiscal Affairs Department, CESifo's Venice Summer Institute, International Food Policy Research Institute, Andrew Young School of Policy Studies, and various seminars at the World Bank (Washington, D.C.).

Responsibility: Development Research Group, Human Development and Public Services Team—Philip Keefer (pkefer@worldbank.org), Stuti Khemani, and Waly Wane.

Project Code: P086338.

Completion date: June 2012.

Countries: Global. Focus on India, Philippines.

Publications

- Ahmad, Junaid, Shantayanan Devarajan, Stuti Khemani, and Shekhar Shah. 2006. "Decentralization and Service Delivery." In Ehtisham Ahmad and Giorgio Brosio (eds.), *Handbook of Fiscal Federalism*. Edward Elgar Publishers.
- Devarajan, Shanta, Stuti Khemani, and Shekhar Shah. 2009. "The Politics of Partial Decentralization." In Ehtisham Ahmad and Giorgio Brosio (eds.), *Effectiveness of Decentralized Strategies and Outcomes*. Edward Elgar Publishers.
- Keefer, Philip, and Stuti Khemani. 2004. "Why Do the Poor Receive Poor Services?" *Economic and Political Weekly* 39(9, February): 935–43.
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Citizen Report Cards at the Community Level—Impact Evaluation

Systematic evaluation of service delivery innovations to increase accountability can show what works, what does not, and why. The Citizen Report Card at the Community Level is a tool for increasing the accountability of public service providers.

In Uganda, the project surveyed 51 primary health care providers and almost 6,000 randomly selected households from 325 randomly selected villages. In half of the communities, community-based nongovernmental organizations disseminated report cards on health service provision.

The project conducted a randomized field experiment on increasing community-based monitoring. As communities began to more extensively monitor the provider, both the quality and quantity of health service provision improved. One year into the program, there were large increases in utilization, significant gains in weight-for-age z-scores of infants, and markedly lower deaths among children. Overall, the results suggest that community monitoring can play an important role in improving service delivery when traditional top-down supervision is ineffective.

In Lesotho, the project is studying the impact of short-term financial incentives on sexual behavior and HIV incidence among youth based on evidence from a randomized controlled field trial. The HIV/AIDS epidemic is especially acute in Lesotho, where roughly one-quarter of the population is infected by HIV/AIDS. One of the key questions is to understand why individuals get involved in short-term risky sexual behavior when the potential long-term cost of becoming HIV infected is so high. A follow-up question, which will be more

directly addressed by this study, is: What replicable and feasible interventions can affect this trade-off between short and long-run returns?

The project will conduct a randomized controlled trial (in the form of a lottery) to test whether adding a financial incentive to remain sexually-transmitted infection (STI)-negative can promote safer sexual activity. The outcome will be a measure of the impact of financial incentives on HIV incidence after two years. As a second step, the project will explore spillover effects. Positive externalities might occur through two main channels: the diffusion of information regarding HIV/STI prevention, and a lower probability to be involved in sexual relationships with positive partners. Cost information will also be collected in order to measure the cost-effectiveness of the intervention and compare it with other HIV prevention interventions.

The project findings from the Uganda study have been presented at London School of Economics, Oxford, IGIER, MIT, the World Bank, NTNU, Namur, the CEPR/EUDN conference in Paris, and the BREAD & CESifo conference in Venice.

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org), and the Post Conflict and Social Development Team. With Jakob Svensson, Stockholm University; Martina Björkman, Bocconi University; Lucia Corno, Bocconi University; Frances Nsonzi; Abel Ojoo; Anthony Wasswa; James Kanyesigye; and IIES, Stockholm University.

Project Code: P089386.

Completion date: June 2011.

Countries: Lesotho, Uganda.

Publications

Bjorkman, Martina, and Jakob Svensson. 2007. "Power to the People: Evidence from a Randomized Field Experiment of a Community-Based Monitoring Project in Uganda." Policy Research Working Paper 4268. World Bank, Washington, D.C. Forthcoming in *Quarterly Journal of Economics*.

Information Campaigns to Improve Public Services

In India, the government flagship program on elementary education, the Sarva Shiksha Abhiyan (SSA), gives a prominent role to Village Education Committees (VECs). VECs are expected to monitor the performance of public schools and report problems to higher authorities; they have the power to contract community-based teachers and receive and manage grants for school improvement.

How much do people know about such local agencies, that

is, the provisions and processes at local levels for managing services? Can people's participation be strengthened through information campaigns about local agency and development outcomes? This research project addressed such questions through the randomized evaluation of information campaigns to mobilize communities to improve education.

In a survey in March 2005, more than five years after the launch of the SSA, in the state of Uttar Pradesh, the researchers found that primary education services were in poor shape but the VEC was not playing its assigned role of mediating change. Given that the VECs were extant everywhere, but almost entirely non-functional, the study design did not involve introducing new institutions, but focused on promoting greater interest and participation in them, and evaluating whether this would be successful in improving the performance of public schools.

Starting in September 2005, activists from Pratham, India's most prominent educational NGO, began implementing three variants of a program to encourage, enable, and strengthen community participation.

The first two interventions were aimed at strengthening the model of community participation that is a widespread governance component in donor and government projects. The third intervention added to these a new component of recruiting one or more volunteers per village, and giving them a week of training in a pedagogical technique developed and used by Pratham throughout India for teaching basic reading skills. The volunteers then were encouraged to hold reading classes outside of school, with the goal of making the village a "reading village." The typical "reading course" lasted several months, with classes held every day. This intervention thus offered committed individuals the opportunity and the competence needed to directly improve learning among children.

It turned out that these interventions had no impact on participation in public schools or on the activities of the VEC, and no impact on teacher effort or learning outcomes in public schools. However, there were large effects on activity outside public schools in the third intervention—a large number of local youths volunteered to be trained in the new teaching tool offered. More than 400 reading camps were held across 55 villages, attended by almost 7,500 children (i.e., more than 130 children per village). There is evidence of very substantial progress in reading skills for the children who attended these classes.

These contrasting results of no impact on public schools but large impact on private initiative that bypasses the public system, suggest that even when citizens care about education and are willing to do something to improve it, there are substantial constraints to mobilizing them to take public action

toward public services. Public service providers have weak incentives to improve performance quality when their jobs are protected by political agents, and if information campaigns do not change those political incentives, they may not have sustainable impact.

The project findings have been presented at the South Asia Regional Conference on Education Quality in New Delhi, India (October 2007); the World Bank's office in New Delhi, India (March 2007); the Department of Politics, Princeton University, Princeton, New Jersey (February 2007); the Ministry of Foreign Affairs, Stockholm, Sweden (April 2006); the School of Foreign Service, Georgetown University, Washington, D.C. (March 2006); and at various forums at The World Bank: PREM Learning Forum, Human Development Forum, Education Learning Event, Economists Forum, and the DECRG Micro Seminar Series.

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

Project code: P090904.

Completion date: June 2009.

Countries: India.

Publications

Banerjee, Abhijit, Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani. 2007. "Can Information Campaigns Raise Awareness and Local Participation in Primary Education?" *Economic and Political Weekly* 42(15, April 14): 1365–72.

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Khemani, Stuti. 2007. "Can Information Campaigns Overcome Political Obstacles to Serving the Poor?" In Shanta Devarajan and Ingrid Widlund (eds.), *The Politics of Service Delivery in Democracies: Better Access for the Poor*. Expert Group on Development Issues, Ministry for Foreign Affairs, Sweden.

Human Rights and Basic Services

Despite recent interest in the potential of social and economic rights litigation and jurisprudence, there has been little empirical investigation of existing social and economic rights case law, let alone a structured and rigorous comparison across countries.

This research project conducted a five-country empirical

study of the causes and effects of social and economic rights litigation. It systematically and comparatively studied whether and under what conditions a legal, rights-based approach to extending social and economic rights would be feasible and advisable. In particular, the research sought to answer several questions. First, how much, and on which issues, do civil society and other actors resort to courts and the law to extend the effectiveness of social and economic rights in developing countries? Second, what conditions must be present for civil society to be able to make extensive use of legal strategies, and for these strategies to be effective? Third, what is the indirect aggregate social policy impact of legal approaches to extending social and economic rights?

The research strategy was a structured comparison of five countries: Brazil, India, Indonesia, Nigeria, and South Africa.

The research found that courts improve accountability and enhance service delivery for poor people where there are sufficient legal resources, government policy capacity, and judicial autonomy.

The research findings have been presented at the World Bank Infoshop, Harvard University Law School, Georgetown University Law School, the Universidad Torcuato de Tella in Buenos Aires, and the University of Texas at Austin.

A non-technical summary of the key findings is available at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTPUBSERV/0,,contentMDK:21503285~pagePK:64168182~piPK:64168060~theSitePK:477916,00.html>.

Responsibility: Development Research Group, Public Services Team—Varun Gauri (vgauri@worldbank.org). With Florian Hoffmann, PUC-Rio, Brazil; Jonathan Berger, South African University of Witwatersrand; Pratap Mehta, Center for Policy and Research; Chidi Odinkalu, Open Society Institute; Bivitri Susanti, Daniel Brinks, and William Forbath, University of Texas at Austin; Helen Hershkoff and Philip Alston, New York University; and Shylashri Shankar, Center for Policy and Research.

Project Code: P092076.

Completion date: September 2008.

Countries: Brazil, India, Indonesia, Nigeria, and South Africa.

Publications

Gauri, Varun, and Daniel Brinks (eds.). 2008. *Courting Social Justice: Judicial Enforcement of Social and Economic Rights in Developing Countries*. Cambridge University Press.

Public Expenditure and Service Delivery in Chad

This broad research project investigated who receives public

resources in a weak institutional environment and the presence of soft budget allocation rules. The research also focused on the role of public spending in improving the access and quality of public services. The project studied the determinants of the receipt of public resources in poor countries and how the receipt (or its lack) impacts the quality of health supply, the demand for health, and ultimately the health status of the population.

The survey covered a large area of the country with 15, or half, of the country's provinces visited. In each province, half of the districts were visited, for a total of 21 health districts that have been surveyed. All the facilities that were identified in a selected district were surveyed. The survey thus covered 281 primary health care facilities, 21 district hospitals, 2 general hospitals, 1,594 health workers, and 2,073 patients. The administrative units at the province and district levels were also surveyed, along with the Central Pharmaceutical Agency. The data collection started in early May 2004 and ended around mid-July 2004. The survey used a series of instruments for collecting data at all these different levels.

The findings show that although the bulk of the health budget is earmarked for the primary health sector, it receives only 1 percent of the public health resources. Furthermore, there is a strong link between the receipt of public resources and health output in terms of number of patients treated. The likely channel through which this happens is a decrease in the price of pharmaceuticals. Indeed, facilities that are recipients of public resources charge a significantly lower mark-up on a random list of important drugs than facilities that do not receive any resources from the administration.

Ongoing research is analyzing how, in countries with a weak institutional environment, public resources seldom fully contribute to the development of the country because of the hurdles between the resources and their initial intended beneficiaries.

The survey instruments and data are available at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTPUBSERV/0,,contentMDK:20634412~pagePK:64168182~piPK:64168060~theSitePK:477916,00.html>.

The project findings have been presented at conferences at the World Bank, Washington, D.C. (April and November 2006); and Oxford University, Oxford, United Kingdom (March 2006 and March 2007).

Responsibility: Development Research Group, Human Development and Public Services Team—Waly Wane (wwane@worldbank.org). With Bernard Gauthier, HEC Montreal, Centre d'Etudes et de Recherche pour la Dynamique des Organisations, Chad.

Project Code: P094472.

Completion date: June 2009.

Countries : Chad.

Publications

Gauthier, Bernard, and Waly Wane. 2008. "Bypassing Health Providers: The Quest for Better Price and Quality of Health Services in Chad." Policy Research Working Paper 4462. World Bank, Washington, D.C.

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Decentralization and Local Participation

This research project examined the impact of community-driven development fostered by community mobilization on the accountability of local governments under decentralization.

A decentralized allocation of development funds could be subject to capture by local elites in the face of entrenched local inequalities. Community-driven development initiatives that empower otherwise marginalized groups could be viewed as a valuable check on such capture. Alternatively, they could create redundant parallel structures that could potentially undercut decentralization efforts. Hence, the project's main research question was: Can community driven development initiatives make the gains from decentralization more equitable, efficient, and sustainable?

The analysis was based on a list of 240 villages of which 150 were randomly selected for the study. The project completed a baseline census in all 150 selected villages and used the information to refine the random allocation of villages to program and control groups.

The project used the census data and program uptake information to look at issues of program targeting and exclusion. The findings are expected to contribute to the assessment of whether community-driven development has created organizations that are complementary institutions. The findings will help to determine whether the institutions enhance the quality of local governance or of competing structures that undermine the efficacy of local governments.

Responsibility: Development Research Group, Sustainable Rural and Urban Development, and Poverty Team—Ghazala Mansuri (gmansuri@worldbank.org), and Finance Team—Xavier Gine. With RCons Survey Firm, Pakistan.

Project Code: P098260.

Completion date: September 2007.

Countries: Pakistan.

Limited Access Orders and Integration of Political and Economic Systems

The first step to more effective development policies is a more realistic understanding of how societies actually behave and, in particular, how developing societies differ from developed ones. This project sought to understand more about the political economy of countries and how it sets the opportunities and constraints for policy reform. The research took a new tack with the integration of political and economic considerations.

The approach recognized that developing states are organized to prevent violence, along with other goals. They do so through systematic creation of political, economic, and social rents, arranged in such a way that powerful individuals and organizations have an incentive to cooperate, or at least to restrain violence. Limited access order creates limits on access to valuable political and economic functions as a way to generate rents that motivate the control of violence. In limited access orders, the political system manipulates the economy to create rents as a means of solving the problem of violence as well as reinforcing the dominance of the elites. By contrast, open access order, which prevails in developed economies, relies on competition, open access to organizations, and the rule of law to hold society together. Societies with open access order use competition and institutions to make it in the interests of political officials to observe constitutional rules, including consolidated political control over all organizations with the potential for major violence.

Taken together, these ideas suggest that development policies often fail because they try to transplant elements of open access order—such as competition, markets, and democracy—directly into limited access orders. These reforms threaten the rent creation that holds the society together and in many cases challenge the very logic on which the society is organized.

The research has been presented in workshops at the World Bank; the University of Maryland School of Public Policy; SOAS (University of London) in collaboration with the U.K. Department for International Development, London; the Democracy and Governance Unit at USAID; and the research department of the French Development Agency.

The critical next step in this research agenda is to test the framework by having country experts apply it in depth to a selection of developing countries. These studies will not only check and amplify the hypotheses about the equilibrium conditions implied by the framework, but will also provide evidence for how limited access order societies change and why. The Governance Partnership Facility has agreed to fund this next step, which will begin in early FY10.

Responsibility: Independent Evaluation Group, Country

Evaluation and Regional Relations (FY 06–08) and (subsequently) Public Sector Group in Latin America and the Caribbean—Steven Webb (swebb@worldbank.org). With Douglass North, Washington University, St Louis; John Wallis, University of Maryland; and Barry Weingast, Stanford University.

Project codes: PO98417, P104345.

Completion date: June 2008.

Countries: Global.

Publication

North, Douglass C., John Joseph Wallis, Steven B. Webb, and Barry R. Weingast. 2007. “Limited Access Orders in the Third World: A New Approach to the Problems of Development.” Policy Research Working Paper 4359. World Bank, Washington, D.C.

The Impact of Citizen Report Cards at the Community Level

Identifying and implementing incentives that give rise to a strong relationship of accountability between service providers and beneficiaries is viewed by many as critical for improving service delivery. How to achieve this, however, is less understood. This research project is evaluating one possible tool to increase the accountability of public service providers.

The project conducted a randomized field experiment on increasing community-based monitoring. It implemented surveys of 51 primary health care providers and almost 6,000 randomly selected households from 325 randomly selected villages in the catchment areas—the community. Half of the communities were randomly assigned to a treatment group. Local nongovernmental organizations (community-based organizations), using participatory techniques, distributed report cards to the communities in the treatment group—the intervention. Based on the information provided on various dimensions of primary health service provision—including patterns of utilization, service quality indicators (wait time, staff absenteeism, and equipment available), availability of drugs, and fees and user charges, each community held community meetings, followed by a staff meeting and an interface meeting where representatives from the community and the staff got together to agree on how to improve the provision of public health services.

The project findings show that as communities begin to more extensively monitor the provider, both the quality and quantity of health service provision improves. One year into the program, there have been large increases in utilization, significant weight-for-age z-score gains in infants, and markedly lower deaths among children. The findings on staff behavior

suggest that improvements in the quality and quantity of health service delivery resulted from an increased effort by the staff to serve the community. Overall, the results suggest that community monitoring could play an important role in improving service delivery when traditional top-down supervision is ineffective.

The project findings have been presented at London School of Economics, Oxford, IGIER, MIT, the World Bank, NTNU, Namur, CEPR/EUDN (conference in Paris), and BREAD & CESifo (conference in Venice).

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org), Jakob Svensson, and Ritva Reinikka. With Jakob Svensson, Stockholm University; Martina Björkman, Bocconi University; Frances Nsonzi; Abel Ojoo; Anthony Wasswa; and James Kanyesigye, Stockholm University.

Project Code: P099138.

Completion date: June 2010.

Countries : Uganda.

Publications

Bjorkman, Martina, and Jakob Svensson. 2009. "Power to the People: Evidence from a Randomized Field Experiment of a Community-Based Monitoring Project in Uganda." Policy Research Working Paper 4268. World Bank, Washington, D.C. Forthcoming in Quarterly Journal of Economics.

Development Impact Evaluation Initiative (DIME)

The Development Impact Evaluation (DIME) initiative is a World Bank-wide collaborative effort involving thematic networks, regional units, and the research group under the guidance of the Bank's Chief Economist. It is oriented at: (1) increasing the number of Bank-supported impact evaluations, particularly in strategic areas and themes; (2) increasing the ability of staff to design and carry out such evaluations in close collaboration with government agencies in developing countries; and (3) building a process of systematic learning on effective development interventions based on lessons learned from completed evaluations.

DIME seeks rigorous evidence of impact from strategic development programs. A key aspect of the initiative is to organize clusters of impact evaluations of priority interventions in a coordinated fashion across countries in different regions of the world. DIME evaluations involve the participation of relevant government agencies and local researchers. This involvement not only helps ensure ownership, but also builds local capacity through a learning-by-doing approach. Evaluations involve

both experimental and non-experimental methods. Household surveys are the main source of data.

The current list of themes includes: conditional cash transfers, early childhood development, education service delivery reforms, HIV/AIDS prevention and treatment, local development, malaria control programs, pay-for-performance in health, rural roads, rural electrification, urban upgrading, and youth employment and service programs.

Beyond the results of the individual evaluations, the main result of DIME has been the sharp increase in the quantity of impact evaluations and the broad interest and demand for this kind of research work across regions and sectors. Results from impact evaluations powerfully contribute to knowledge about "what works" to produce key development outcomes. Particularly when used strategically to test the effectiveness of specific approaches in addressing key development challenges, impact evaluations constitute the preferred approach to assessing results.

The first synthesis report has been published—PRR on Conditional Cash Transfers. Reducing present and future poverty (by Ariel Fiszbein and Norbert Schady) that can be found at: <http://www.worldbank.org/ccts-report>.

The research findings have been presented at the following conferences and workshops: DIME BB Seminar: National Emergency Rural Access Program (NERAP) of Afghanistan, Preliminary Socio-Economic Baseline Report (March 2009); DIME BB Seminar: Transactional Sex, Sexual Networks, and Risk-Coping: Evidence from Western Kenya (April 2009); DIME BB Seminar: \$14 a month in Malawi: An Overview of the Evaluation of the Mchinji Cash Transfer (May 2009); and DIME BB Seminar: Impact Assessments in Finance and Private Sector Development: What have we learned and what should we learn? (July 2009).

All papers can be downloaded from the DIME website that can be found by at: <http://go.worldbank.org/4PMJ8QVZQ0>, or by typing DIME on the internet browser.

DIME has a database of Impact Evaluations being carried out by WB staff or related to WB projects. It can be accessed free of charge at the DIME website at: <http://go.worldbank.org/4PMJ8QVZQ0>, or by typing DIME on the internet browser.

Responsibility: Development Economics Vice Presidency, Operations and Strategy—Arianna Legovini (alegovini@worldbank.org) and Niall Keleher; Development Economics Research Group—Norbert Shady, Xavier Gine, Stuti Khemani; Latin America and Caribbean, Poverty Sector—Pedro Olinto, Renos Vakis; South Asia Sustainable Development, Transport—Susanne Holste; Agriculture and Rural development—Mio Takada; Human Development Network, Education Team—Harry Patrinos, AFT PREM,

Public Sector Reform and Capacity—Vivek Srivastava; AFT Sustainable Development, Transport—Gael Raballand; AFT PREM front Office—Markus Goldstein; AFT Sustainable Development, Agricultural and Rural—Jane Hopkins; and East Asia and Pacific, Social, Environmental and Rural Sustainable Development—Julien Labonne.

Project Code: P101090.

Completion date: June 30, 2011.

Countries: Global.

Publications

- Abou-Ali, Hala, Hesham El-Azony, Heba El-Laithy, Jonathan Houghton, and Shahidur R. Khandker. "Evaluating the Impact of Egyptian Social Fund for Development Programs." Policy Research Working Paper 4993. World Bank, Washington, D.C.
- Banerjee, Abhijit V., Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani. 2008. "Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India." Policy Research Working Paper 4584. World Bank, Washington, D.C.
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- Barrera-Osorio, Felipe, Marianne Bertrand, Leigh Linden, and Francisco Perez-Calle. 2008. "Conditional Cash Transfers in Education: Design Features, Peer and Sibling Effects Evidence from a Randomized Experiment in Colombia." Policy Research Working Paper 4580. World Bank, Washington, D.C.
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- Berlinski, Samuel, Sebastian Galiani, and Marco Manacorda. 2007. "Giving Children a Better Start: Preschool Attendance and School-age Profiles." Policy Research Working Paper 4240. World Bank, Washington, D.C.
- Cattaneo, Matias D., Sebastian Galiano, Paul J. Gertler, Sebastian Martinez, and Rocio Titiunik. 2007. "Housing, Health, and Happiness." Policy Research Working Paper 4214. World Bank, Washington, D.C.
- Cerdan-Infantes, Pedro, and Christel Vermeersch. 2007. "More Time Is Better: An Evaluation of the Full Time School Program in Uruguay." Policy Research Working Paper 4167. World Bank, Washington, D.C.
- Edmonds, Eric V., and Norbert Schady. 2008. "Poverty Alleviation and Child Labor." Policy Research Working Paper 4702. World Bank, Washington, D.C.
- Ferreira, Francisco H.G., Deon Filmer, and Norbert Schady. 2009. "Own and Sibling Effects of Conditional Cash Transfer Programs: Theory and Evidence from Cambodia." Policy Research Working Paper 5001. World Bank, Washington, D.C.
- Filmer, Deon, and Norbert Schady. 2009. "Are There Diminishing Returns to Transfer Size in Conditional Cash Transfers?" Policy Research Working Paper 4999. World Bank, Washington, D.C.
- . 2009. "School Enrollment, Selection and Test Scores." Policy Research Working Paper 4998. World Bank, Washington, D.C.
- Galasso, Emanuela, and Nithin Umapathi. 2007. "Improving Nutritional Status through Behavioral Change: Lessons from Madagascar." Policy Research Working Paper 4424. World Bank, Washington, D.C.
- Gertler, Paul, Harry Patrinos, and Marta Rubio-Codina. 2008. "Empowering Parents to Improve Education: Evidence from Rural Mexico." Policy Research Working Paper 3935. World Bank, Washington, D.C.
- Kazianga, Harounan, Damien de Walque, and Harold Alderman. 2009. "Educational and Health Impacts of Two School Feeding Schemes: Evidence from a Randomized Trial in Rural Burkina Faso." Policy Research Working Paper 4976. World Bank, Washington, D.C.
- Labonne, Julien, and Robert S. Chase. 2008. "Do Community-driven Development Projects Enhance Social Capital? Evidence from the Philippines." Policy Research Working Paper 4678. World Bank, Washington, D.C.
- . 2009. "The Power of Information: The Impact of Mobile Phones on Farmers' Welfare in the Philippines." Policy Research Working Paper 4996. World Bank, Washington, D.C.
- Linnemayr, Sebastian, and Harold Alderman. 2008. "Almost Random: Evaluating a Large-scale Randomized Nutrition Program in the Presence of Crossover." Policy Research Working Paper 4784. World Bank, Washington, D.C.
- Macours, Karen, Norbert Schady, and Renos Vakis. 2008. "Cash Transfers, Behavioral Changes, and Cognitive Development in Early Childhood: Evidence from a Randomized Experiment." Policy Research Working Paper 4759. World Bank, Washington, D.C.
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- Moura, Mauricio. 2009. "How Land Title Affects Child Labor." Policy Research Working Paper 5010. World Bank, Washington, D.C.
- Mu, Ren, and Dominique van de Walle. 2007. "Rural Roads and Poor Area Development in Vietnam." Policy Research Working Paper 4340. World Bank, Washington, D.C.
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Ecuador.” Policy Research Working Paper 4645. World Bank, Washington, D.C.

Pandey, Priyanka, Sangeeta Goyal, and Venkatesh Sundararaman. 2008. “Community Participation in Public Schools: The Impact of Information Campaigns in Three Indian States.” Policy Research Working Paper 4776. World Bank, Washington, D.C.

Paxson, Christina, and Norbert Schady. 2007. “Does Money Matter? The Effects of Cash Transfers on Child Health and Development in Rural Ecuador.” Policy Research Working Paper 4226. World Bank, Washington, D.C.

Schady, Norbert, and Jose Rosero. 2007. “Are Cash Transfers Made to Women Spent Like Other Sources of Income?” Policy Research Working Paper 4282. World Bank, Washington, D.C.

Skoufias, Emmanuel, Mishel Unar, and Teresa Gonzalez-Cossio. 2008. “The Impacts of Cash and In-kind Transfers on Consumption and Labor Supply: Experimental Evidence from Rural Mexico.” Policy Research Working Paper 4778. World Bank, Washington, D.C.

Wagstaff, Adam. 2007. “Health Insurance for the Poor: Initial Impacts of Vietnam’s Health Care Fund for the Poor.” Policy Research Working Paper 4134. World Bank, Washington, D.C.

Wagstaff, Adam, Magnus Lindelow, Jun Gao, Ling Xu, and Juncheng Qian. 2007. “Extending Health Insurance to the Rural Population: An Impact Evaluation of China’s New Cooperative Medical Scheme.” Policy Research Working Paper 4150. World Bank, Washington, D.C.

Governance Structure

This research project seeks to better understand the relationship between political accountability and the quality of public service delivery. It is focusing on how to design funding structures that strengthen accountability for better public service delivery.

The project will examine the impact of electoral rules and other political institutions.

The data sources include the Database on Political Institutions and citizen surveys.

Preliminary results suggest that structures matter for the quality of service delivery. The research findings could influence policy advice on methods of funding public services, including health and education.

Responsibility: Development Research Group, Public Service Delivery Team—Stephen Knack (sknack@worldbank.org) and Varun Gauri.

Project Code: P102946.

Completion date: December 31, 2015.

Countries: Global.

Publications

De Walque, Damien. 2009. “Educational and Health Impacts of Two School Feeding Schemes.” Policy Research Working Paper 4976. World Bank, Washington, D.C.

Khemani, Stuti, et al. 2008. “Pitfalls of Participatory Programs.” Policy Research Working Paper 4584. World Bank, Washington, D.C.

The Role of the Private Sector and NGOs in Service Delivery

Contracting private providers to deliver public services is a means to expand provision and use, and there is great interest in this topic from governments and donor agencies. Many forms of contracting exist. In education, for example, in some cases, governments buy inputs, specific services such as management or curriculum design, or the use of school facilities. In other cases, the government contracts with a private organization to run a public school, undertaking all the activities involved, or with a private organization to provide education to a specific student, thus buying an output.

The project examined the effects of different forms of contracting. It also examined how the private sector is affected by the creation of a regulatory framework.

Responsibility: Development Research Group, Public Service Delivery Team—Varun Gauri (Vgauri@worldbank.org), Jishnu Das, Deon Filmer, Adam Wagstaff, and F. Halsey Rogers; Poverty—Jed Friedman and Quy-Toan Do; Finance and Private Sector Development—David McKenzie; and Human Development Network, Education Team—Elizabeth King. With Hai-Anh Dang.

Project Code: P102947.

Completion Date: June 2009.

Countries: Global.

Publications

Dang, Hai-Anh. 2008. *Private Tutoring in Vietnam: An Investigation of its Causes and Impacts with Policy Implications*. Saarbrücken, Germany: VDM Verlag Dr. Mueller Publishing House.

Dang, Hai-Anh H., and F. Halsey Rogers. 2008. “The Growing Phenomenon of Private Tutoring: Does It Deepen Human Capital, Widen Inequalities, or Waste Resources?” *World Bank Research Observer* 23(2): 161–200.

Das, Jishnu, Quy-Toan Do, Jed Friedman, and David McKenzie. 2008. “The Quality of Medical Advice in Low-Income Countries.” *Journal of Economic Perspectives* 22(2): 93–114.

Das, Jishnu, and Kenneth Leonard. 2008. “Using Vignettes to Measure the Quality of Health Care.” In Samia Amin, Jishnu Das, and Markus Goldstein (eds.), *Are You Being Served:*

New Tools for Measuring Service Delivery. Washington, D.C.: Palgrave Macmillan/World Bank.

Eggleston, Karen, Li Ling, Meng Qingyue, Magnus Lindelow, and Adam Wagstaff. 2008. "Health Service Delivery in China: A Literature Review." *Health Economics* 17(2): 149–65.

Improving the Fiscal Health of Large Cities: Evidence from India

This research project developed a conceptual framework and quantitative indicators for the fiscal health of large cities in India. It sought to identify the financing gaps for large cities, the sources of such gaps, and policy options to overcome them.

The project collected primary data and took a comprehensive look at the revenue means and expenditure needs of large cities. It has provided a conceptual framework and quantitative estimates on expenditure needs, revenue means, and fiscal gaps. It also has analyzed the underlying factors contributing to the gaps.

The study collected primary data through surveys and subjected them to standard analytical and statistical analysis.

The study analyzed the fiscal problems faced by five urban agglomerations in India, namely, Delhi, Hyderabad, Kolkata, Chennai, and Pune. The main findings suggest that except for five small urban local bodies in Hyderabad, the others are not in a position to cover their expenditure needs through their present revenue collections. All the urban agglomerations have unutilized potential for revenue generation; however, with the exception of Hyderabad, all the others would fail to cover their expenditure needs, even if they were to realize their revenue potential.

In all the urban agglomerations except Chennai, larger corporations are more constrained than smaller urban local bodies. The study recommends better utilization of "own revenue" in the cities by better administration of property taxes, better implementation of other taxes, and better collection of user charges.

The option of state governments to allow local bodies to piggyback a small proportion on their value-added tax collections could also be explored. Another way to reduce the fiscal gap would be to earmark a portion of the sales proceeds from land and housing by state governments sold through their development agencies for the improvement of infrastructure in the cities. The study also recommends that the State Finance Commissions should develop appropriate norms for estimating expenditure needs, based on which transfers from the state to local governments could be decided.

The project findings were presented at a seminar at the World Bank, Washington, D.C. (April 2008).

Responsibility: World Bank Institute, Governance Group—Anwar Shah (Ashah@worldbank.org). With Govinda Rao, National Institute of Public Finance and Policy, New Delhi; Andrew Reschovsky, University of Wisconsin, Madison; Howard Chernick, Hunter College, New York; and Simanti Bandyopadhyay, National Institute of Public Finance and Policy, New Delhi.

Project Code: P103068.

Completion date: June 2008.

Countries: India (Cities of Delhi, Hyderabad, Kolkata, Chennai, Pune).

Publications

Bandyopadhyay, Simanti, and M. Govinda Rao. 2009. "Fiscal Health of Indian Cities." Policy Research Working Paper 4863. World Bank, Washington, D.C.

Is Research Pro-Poor? Empirical Economics Research and the Wealth of Countries

This project has identified the first set of estimates on the extent and correlates of empirical economics research (arguably the most important type of research for economic policy) across different countries and the role of multilateral institutions in the production of this research. Two related papers focus on the overall nature of research across countries and on the role of multilaterals.

The World Bank has made a strong commitment to lead the production of knowledge on low-income countries. As part of this agenda, the role of research is critical for understanding the extent and correlates of analytical research on different countries. It helps to identify important gaps and suggests a potential niche for the World Bank relative to academic institutions, universities, and think-tanks. Recent events underscore the relevance of this task. Countries have been hit hard by the financial crisis and are struggling with understanding the nature of the crisis and the actions that they should take to protect their populations. The optimal actions are likely to be country and time specific. One key message from the recently completed Growth Commission report was that there is no single magic remedy for growth; what is best depends on the country and the time.

There is no related research on this topic, and the data have been put together for the first time. The project researchers collected data on publications from EBSCO-HOST and correlated them with standard growth data (from WDI, etc.) First, the analysis shows that the extent of research on a country is largely driven by three factors: the wealth of the country as measured by its GDP per capita; governance, measured (for

instance) by press freedom or liberty indices; and the availability of data. Of these, the continued relevance of GDP per capita is of particular interest. The project reports that a 10 percent increase in GDP per capita leads to a 3.6 percent increase in research, controlling for governance and data availability. The research-GDP relationship shows that these vast differences are mostly driven by the wealth differences between countries.

Second, the findings show that research in multilateral institutions (primarily the World Bank) is far more pro-poor than that in academia. In contrast to the 3.6 percent increase in research for a 10 percent increase in GDP for all institutions, there is no apparent relationship between GDP per capita and research from multilateral institutions after controlling for governance and/or data availability. Nevertheless, the extent of World Bank research is too small to make a dent in the overall relationship. Given the inherent preference for research on higher-income countries in academia, this suggests a strong role for increasing research by the World Bank and incentivizing researchers to work more on countries that are currently under-researched.

This project puts data and governance at the heart of knowledge generation. It addresses the question of funding research inside the World Bank, given the Bank's willingness to take the lead in knowledge generation. The outputs are currently under revision and are planned to be disseminated in September through December 2009.

Project findings have been presented at seminars at Harvard University (September 2008) and the World Bank (November 2008). A database is forthcoming.

Responsibility: Development Research Group, Poverty Team—Quy-Toan Do (qdo@worldbank.org) and Human Development and Public Services Team—Jishnu Das. With Sowmya Srinivasan.

Project Code: P105039.

Completion date: December 2009.

Countries: Global.

Publications

Das, J., and Q-T. Do, with K. Shaines and S. Srinivasan. 2009. "Observing Research: Empirical Economics Research and the Wealth of Countries." World Bank. Manuscript.

Political Alternation as a Restraint on Investment in Influence

Although government turnover is often thought of as an adverse source of instability, it may also be a source of competition and spur institution building. To articulate and test such

hypotheses, this research project investigated two main concepts of government turnover—leadership turnover, or change in rulers, and ideological turnover, or change in the rulers' ideology. Refinements involved the mode, outcome, and timing of turnover. The project focused on measurement issues that arise when there are multiple institutions that share power and when parliaments are controlled by majority coalitions. The measures of turnover were illustrated by examining the post-communist world. The researchers considered the possibility that higher cumulative post-transition turnover—in terms of leadership or ideology—promoted the establishment of the rule of law.

The analysis used these measures to examine the relationship between political alternation and political outcomes. The analysis was based on public data sources: political turnover and political statements of parties, World Bank measures of governance, other public indices of governance, and published historical data. The findings showed that more frequent alternation in power in the first half-decade of transition is associated with the emergence of better governance in post-communist countries in the past decade. The results are consistent with a simple model in which more frequent political change reduces the returns to firms seeking to buy political influence and thus increases the benefits to them of rule-of-law institutions.

Presentations were made at the Political Economy of Transition Countries, CERGE, Prague (September 2004); APSA, Poster Session (September 2005); and the University of London (2007).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Karla Hoff (khoff@worldbank.org) and Poverty Team—Branko Milanovic. With Shale Horowitz, University of Wisconsin; and Jeren Kabaeva.

Project Code: P106129.

Completion date: 2008.

Countries: Post-communist countries.

Publications

Horowitz, Shale, Karla Hoff, and Branko Milanovic. 2009.

"Government Turnover: Concepts, Measures, and Applications." *European Journal of Political Research*.

Milanovic, Branko, Karla Hoff, and Shale Horowitz. 2008. "Political Alternation as a Restraint on Investing in Influence: Evidence from the Post-Communist Transition." Policy Research Working Paper 4747. World Bank, Washington, D.C.

Trends in National E-Leadership

This research project aimed to identify the functions, models,

and trends of institutions responsible for translating the vision of e-government into reality. It sought to answer questions about why e-government is important and what are the strategic issues and key functions of e-government.

The analysis was based on a review of national approaches to e-government leadership in 30 developing and developed countries. The review was shaped by three questions:

- What is the country's arrangement for e-government strategy and policy making?
- What is the country's approach to e-government governance and coordination?
- How does the country facilitate the implementation of e-government?

The basic e-government institutional functions and models identified by the research project suggest the wide range of possibilities open to governments. Governments have moved from ad hoc responses to institutionalized structures to lead and manage e-government programs. They have put increasing emphasis on engaging top political leadership in their e-government programs and have devoted increasing attention to information and communication technology-enabled process innovation and institutional reform. Moreover, some governments have changed their institutional arrangements and developed new models for e-government in response to institutional learning, technological progress, and new phases in e-government.

A key institutional design issue is the balance between, on the one hand, technological leadership to invest in sound technologies and manage complex systems development projects and, on the other hand, business and institutional leadership to ensure general management ownership and true business process and service transformation.

Responsibility: Office VP MENA and Global Infrastructure Cluster—Christine Zhen-Wei Qiang (Cqiang@worldbank.org), Philippe Dongier, Kaoru Kimura, and Siou Chew Kuek. With Nagy Hanna.

Project Code: P106441.

Completion date: June 2008.

Countries: Global.

Publications

Hanna, Nagy R., and Christine Zhen-Wei Qiang. 2009. "National E-Government Institutions: Functions, Models, and Trends." In *Information and Communications for Development 2009: Extending Reach and Increasing Impact*, 83–102. Washington, D.C.: World Bank. <http://www.worldbank.org/ic4d>.

The Impact of E-Government Experience in India

This research project assessed five electronic government (e-government) projects implemented in India primarily to identify the outcomes in terms of the quality of public service delivery and challenges associated with information and communication technology (ICT) projects in developing countries. The project aimed to provide an analytical base to help public sector agencies in developing countries make strategic investments in ICT. It measured the improvement in public service delivery of selected e-government projects in India. Based on this analysis, it offers a measurement and assessment framework for future e-government projects.

The research recognized the multiple stakeholders involved in an e-government project as well as diverse types of benefits that accrue as a result of public sector ICT investments. It measured the benefits and costs for different categories of stakeholders, namely users (citizens) and government agencies providing services.

The research used the data collected in a survey of service users (citizens) and providers (implementing agencies) conducted by the India Institute of Management, Ahmedabad, between June and September 2006. The survey of users was intended to capture the change in the cost and perceived benefits. The information on the changes in operational practices in delivering services was collected from key officials in implementing agencies. The research also included a brief review of relevant literature and reports.

The analysis of the data showed that e-government projects were generally successful in lowering the user costs to access public services and in improving perceptions about the quality of services.

The research also highlighted several success factors for e-government projects. First, it showed the importance of incorporating diverse user needs in the design of the project. Second, it reiterated the critical nature of supporting infrastructure to ensure better user experience. Finally, the analysis indicated that the five projects showed success in reducing corruption at the service delivery point—which was corroborated by the finding that the implementing agency officials felt their discretionary power was narrowed after the introduction of ICT.

Responsibility: Independent Evaluation Group, Office of Director-General—Jiro Tominaga (jtominaga@worldbank.org); Office VP MENA and Global Infrastructure Cluster—Philippe Dongier; and Deepak Bhatia. With Subhash Bhatnagar, Indian Institute of Management, Ahmedabad.

Project Code: P106989.

Completion date: March 31, 2008.

Countries: India.

Publications

Bhatia, Deepak, Subhash C. Bhatnagar, and Jiro Tominaga. 2009. "How Do Manual and E-Government Services Compare? Experiences from India." Chapter 5 in *Information and Communications for Development: Extending Reach and Increasing Impact*. Washington, D.C.: World Bank. http://siteresources.worldbank.org/EXTIC4D/Resources/5870635-1242066347456/IC4D_2009_Chapter5.pdf.

Background Work on the Policy Research Report on Local Governance and Local Development

The idea that local citizens and institutions are best placed to address and resolve local problems is one that has acquired tremendous force in recent times. It is the unifying theme that underlies many different approaches toward local governance and localized development, whether in the form of community based/driven development, decentralization of government decision making, or a more general emphasis on participation and the strengthening of local institutions.

Community participation in the development process is expected to build demand for inclusive and effective local governance; empower poor and vulnerable groups; improve the delivery of public services; increase access to resources and information, particularly for the most marginalized; and create local livelihood opportunities, including equitable access to decent work.

In line with this, both governments and donors have invested substantial resources in programs and projects that use participatory approaches in one form or another to improve development outcomes. At the same time, the decentralization of government decision making and fiscal resources to the local level has become increasingly important. Despite this tremendous investment of resources, however, we have relatively little by way of reliable evidence on the effectiveness of such efforts in engendering more accountable and inclusive governance or improved outcomes for development.

In response to this serious knowledge gap, a Policy Research Report on Local Governance and Local Development is planned with a release date of March 2010. This report will attempt to provide an overview of the field, bringing qualitative and quantitative evidence to bear on the open questions and providing guidance for policy in the area.

The report will build on several sources of evidence. First, several evaluations have been initiated by DECRG, scholars in academia, and the Social Development Department. The Development Impact Evaluation initiative has also identified

local development as one of its key areas of emphasis and encouraged a Bank-wide effort to build a stronger evidence base. Second, it is based on reviews of related literature from political science, anthropology, sociology, and development studies. Third, it uses reviews of the relevant literature in economics—both theoretical and empirical.

The report is expected to provide robust evidence on a number of questions that are critical from a policy standpoint. These include, for example: (a) the relationship between social accountability (via community participation under decentralization or in the context of CDD projects) and good governance; (b) the extent to which the capacity and prevailing culture of governance constrains the effectiveness of decentralization; (c) the role of performance based incentives and social audits in improving governance in such contexts; (d) the role of community mobilization in building the capacity for broad-based collective action; (e) the relationship between decentralization/CDD and service delivery; and (f) the impact of community based approaches to development on household welfare. It is expected that these diverse sources will help in providing robust inter-regional, inter-sector, and interdisciplinary evidence on the questions under study.

The project will produce background papers by scholars in different disciplines—on themes related to local governance and development. Project findings will be presented at a conference and four small-scale group meetings with scholars for discussion, review of evidence, and to solicit a critical review of the report.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Ghazala Mansuri (Gmansuri@worldbank.org) and Development Research Group, Poverty Team—Vijayendra Rao. With Virginia Claire Breedlove, Johns Hopkins University; Bhrigupati Singh, Johns Hopkins University; Kent H. Eaton, University of California, Santa Cruz; Shahana Chattaraj, Princeton University; Poulami Dhar Chakrabarti, Massachusetts Institute of Technology; Jens Lund, Danish Centre for Forest, Landscape and Planning, Denmark; James Dickovick, Washington and Lee University; Rachel Beatty; Arun Agrawal, School of Natural Resources and Environment, University of Michigan; Catherine Benson, University of Michigan; and Radu Ban.

Project Code: P107796.

Completion date: January 2010.

Countries: Global.

M&A Control and Thresholds for Pre-Merger Notification

The objective of this research project was twofold. First,

it analyzed the efficiency of different pre-merger notification mechanisms, whether they minimized the likelihood of accepting anti-competitive mergers or blocked social welfare-enhancing ones. Second, it analyzed the determinants of such policies from an empirical perspective.

The project compared two merger control systems currently employed worldwide: a mandatory system based on merger size threshold and a voluntary system with ex-post monitoring and fines. The voluntary system possesses two informational advantages: (i) the enforcement agency employs more information—verifiable and non-verifiable parameters—to decide the set of mergers to investigate, and (ii) the first move of merging firms reveals useful information to the agency about the competitive risk of a merger. If fines for undue omission to notify are upward limited, then a mixed mechanism is optimal, where small transactions are under a voluntary regime and large mergers are obliged to report. Remedies for fixing anti-competitive mergers act as an instrument that induces firms to notify the operation, improving further the advantage of the voluntary mechanism.

The research found evidence that economic development, government administrative effectiveness, and the pre-merger notification structures affected the probability of adopting different notification schemes. Hence, each country, when selecting a merger notification system, should consider the mechanism's specific characteristics and the country's specific conditions. The results are particularly relevant in middle-income countries because their markets do not achieve a mature state and the lack of competition seriously affects growth and innovation. Moreover, competition agencies in those countries may not have enough resources to implement sophisticated methods.

The findings were disseminated at the Chinese Academy of Social Sciences and State Council, Beijing, China; University of Toulouse, Toulouse, France (April 2008); University of Chile, Santiago, Chile (June 2008); U.S. Department of Justice (2009); European Economic Association Meeting in Barcelona (August 2009); and European Association for Research in Industrial Economics, Ljubljana (September 2009).

Responsibility: Finance Economics and Urban Department, Spatial and Economics Unit—Daniel Benitez (dbenitez@worldbank.org); Latin America and the Caribbean, Sustainable Development Department—J. Luis Guasch; and Transport Unit—Tomas Serebrisky. With Xinzhu Zhang, Research Center for Regulation and Competition, Chinese Academy of Social Sciences (CASS), China; and Aldo Gonzalez, University of Chile.

Project Code: P108021.

Completion date: September 10, 2008.

Countries: Global.

Publications

Gonzalez, Aldo, and Daniel Benitez. 2009. "Optimal Pre-merger Notification Mechanisms: Incentives and Efficiency of Mandatory and Voluntary Schemes." Policy Research Working Paper 4936. World Bank, Washington, D.C.

How Unpredictable Aid Influences Service Delivery: Results from Country Case Studies

This research project is examining the problem of aid predictability at the aggregate and sector levels. It is systematically evaluating aid predictability issues, such as: (i) the extent of unpredictability of aid; (ii) the impact of aid shortfalls and windfalls on government spending; and (iii) the impact of donor arrangements and choice of aid instrument on the predictability of aid.

Uncertainty of donor flows presents a challenge to policymakers. Unexpected changes in aid flows can impact the level of government spending, resulting in disruptive adjustments to planned expenditures. Low predictability of aid resources, especially medium-term aid flows, can also affect resource availability in planning exercises and budgetary processes and impact the composition and effectiveness of government expenditure.

The study will provide a more complete picture of the extent of unpredictability of aid and how policymakers have addressed this problem. In particular, it is exploring how unpredictable aid has actually impacted budget allocation and spending patterns in key sectors, such as health and infrastructure and roads.

The project is using financial and monitoring data from government documents, results from various studies and reports, and information obtained from interviews with government officials and staff of donor agencies to examine the observed associations between patterns of aid flows, allocations of public finance through the budget process (both formal and informal), and patterns in terms of service delivery.

Responsibility: Africa, Office of the Chief Economist—Punam Chohan-Pole (Pchohan@worldbank.org); Operations Policy, Delivery and Results Management—Vera Wilhelm; Development Research Group—Linda Lee and Sachin Shahria; and Poverty Reduction and Economic Management, Poverty Reduction—Albert Musisi (Voice Seconded). Peer reviewers: Development Research Group—Steve Knack, and Africa, PREM 3—Jan Walliser. With Edward Hedger; Nick Highton; Geoff Handley; Tim Williamson; Tony Killick; Jon Pycroft; Pedro Martins; Diana Kizza, Overseas Development

Institute; and Robert Darko Osei, Institute of Statistical Social and Economic Research.

Project Code: P114203.

Completion date: October 2009.

Countries: Uganda, Ghana, Tanzania.

Trust in Government: Empirical Research on Latin America

This project seeks to better understand the difficult question of public trust or lack thereof in public institutions. It focuses on how public trust affects individual behavior in a range of areas, from effort in the labor market and savings, to investments in future mobility, to attitudes about fiscal and other public policies.

The project will explore the links between trust in public institutions and individual behaviors on the one hand, and attitudes about relevant public policies on the other. To the extent that policies are designed to improve the performance of public institutions in Latin America and the Caribbean, understanding these underlying attitudes and how they differ both across countries and across cohorts within countries is critical.

Most other work has focused on either individual attitudes about future mobility or trust in government more generally. This project will link the two sets of themes via two novel research methods. One is the economics of happiness. The other is agent based computational modeling. The project will use data from the Latinobarometro, the Gallup World Poll, and the ECOSOCIAL survey.

The initial results suggest that high levels of individual optimism coexist with general skepticism about the system's ability to provide a context where opportunities are fairly shared. That skepticism is highest among elites.

Preliminary project findings have been presented at a conference organized by Cornell University and the University of Edinburgh (Edinburgh, 2009).

Responsibility: Latin America Region, Public Sector—Nick Manning (Nmanning@worldbank.org). With Carol Graham; Ross Hammond, Brookings Institution; and Steve Webb.

Project Code: P116239.

Completion date: June 2011.

Countries: Latin America.

Health, Population, and Nutrition

Health Care Providers and Markets in Delhi

This research project is studying the quality of medical care in seven neighborhoods of Delhi. The project has two objectives. The first goal is to find an operational definition of “quality of clinical care” that goes beyond the standard practice of noting whether clinics have pharmaceuticals on hand, certain pieces of essential equipment, or particular patterns of staff.

The second goal is to understand health demand. Part of this relates to how households treat illnesses and their expenditure on morbidities experienced during the year; the other part analyzes how households make choices about which providers to visit (and for what illnesses) and how the quality of providers themselves affects these choices.

The analysis first develops a methodology to measure the quality of care as evinced through measures of the quality of medical advice, and then relates it to downstream economic behavior. In this way, it focuses on how health systems can be strengthened through targeted interventions designed to address market failure.

The analysis measures the quality of medical care in two ways. First, it measures provider competence by administering tests of knowledge—called vignettes—to doctors in a sample. It then measures actual practice by observing doctor-patient interactions in the clinic. In some cases, it complements this information with patient characteristics obtained through exit surveys.

The research has led to several main findings. First, the quality of health care provision in Delhi is poor on average, with the provider of average quality, for example, missing the diagnosis of a case of simple tuberculosis 30 percent of the time. Second, perceptions of the public and private sector in India vary substantially, and the research finds grounds for prejudice against both. Third, 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. Fourth, there are large disparities between poor and rich neighborhoods in access to good-quality medical care.

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 findings have been presented at more than 50 forums

in the United States, India, and Paraguay. Recent presentations have been held at the Global Health Benefits Initiative (a consortium of 40 top U.S. companies) in New York, the Oxford-India Business Forum in Delhi, the Global Health seminar at Johns Hopkins University, and a seminar at Princeton University. The Institute for Socio-Economic Research on Development and Democracy (ISERDD) in Delhi carried out the survey.

Responsibility: Development Research Group, Public Service Delivery Team—Jishnu Das (jdas1@worldbank.org). With Jeffrey Hammer, Princeton University.

Project Code: P075922, P098136.

Completion date: Ongoing.

Countries: India.

Publications

Das, Jishnu, and Paul Gertler. 2007. “Practice-Quality Variation in Five Low-Income Countries: A Conceptual Overview.” *Health Affairs* 26(3): w296-w309.

Das, Jishnu, and Jeffrey Hammer. 2007. “Location, Location, Location: Residence, Wealth and the Quality of Medical Care in Delhi, India.” *Health Affairs* 26(3): w338-w351.

———. 2007. “Money for Nothing: The Dire Straits of Medical Practice in India.” *Journal of Development Economics*, 83(1): 1–36.

Das, Jishnu, Jeffrey Hammer, and Kenneth Leonard. 2008. “The Quality of Medical Advice in Low-Income Countries.” *Journal of Economic Perspectives* 22(2): 93–114.

Das, Jishnu, and Kenneth Leonard. 2008. “Using Vignettes to Measure the Quality of Health Care.” In Samia Amin, Jishnu Das, and Markus Goldstein (eds.), *Are You Being Served? New Tools for Measuring Service Delivery*. Washington, D.C.: World Bank.

Das, Jishnu, and Thomas Sohnesen. 2007. “Variations in Doctor Effort: Evidence from Paraguay.” *Health Affairs* 26(3): w324-w337.

Public Health Service Delivery

Global partners need greater clarity about what constitutes strong public health systems at the national and global level, and how to structure long-term partnerships to build them. This research project studied the gaps in donors’ approaches, examples of successful efforts to build public health systems in the developing world, and suggestions for donors.

Most donor work in the health sector focuses on the delivery of health care services: including issues related to its financing, management, and service quality. Donors and international agencies have typically neglected population-wide health services in their work with developing countries. These largely non-clinical services constitute a pure public good by reducing everyone's exposure to disease through measures such as implementing health regulations. They complement the clinical preventive and treatment services that have been the donors' main focus. Their neglect is manifested in a lack of coherent public health regulations in countries where donors have been active for decades, and the spread of diseases such as avian flu.

These services can be inexpensive but highly effective if well-designed. For example, Sri Lanka spends less than 0.2 percent of GDP on population-wide health services, while total expenditure on health is 3.7 percent of GDP. Sri Lankans experience high levels of health equity and life expectancy despite low GDP per capita and a quarter-century of civil war.

Preliminary results have been presented at the Population Association of America's 2009 annual meeting, and are scheduled to be presented at the World Bank and at the International Population Conference in Marrakech (October 2009).

Responsibility: Development Research Group, Public Services Team—Monica Das Gupta (mdasgupta@worldbank.org).

Project Code: P078144.

Completion date: June 2009.

Countries: Global.

Publications

Das Gupta, Monica, Radu Ban, and Vijayendra Rao. Forthcoming.

“The Political Economy of Village Sanitation in South India: Capture or Poor Information?” *Journal of Development Studies*. Published in 2008 as Policy Research Working Paper 4802. World Bank, Washington, D.C.

Das Gupta, Monica, and Lawrence Gostin. 2009. “Building Global Public Goods in Health: The Roles of Donors and International Agencies.” *The Lancet* 373: 1395–7. Published in 2009 as Policy Research Working Paper 4907. World Bank, Washington, D.C.

Improving the Effectiveness of AIDS Treatment while Strengthening Prevention in Free State Province, South Africa

This research study has three broad objectives: to present a broader view of treatment success for human immunodeficiency virus (HIV), to develop a more complete model of the determinants of treatment success, and to understand the nature of links between treatment and prevention.

Like all governments whose populations are suffering from a severe AIDS epidemic, the Free State province of South Africa is confronting the twin challenges of maximizing the effectiveness of antiretroviral therapy for those who are already sick, while simultaneously slowing the growth of new infections. Supported by several grants, the Centre for Health Systems Research and Development of Free State University has since 2004 been documenting, monitoring, evaluating, and facilitating the implementation of the National Treatment Plan in the Free State province.

This research project incorporates a survey of patients that started antiretroviral therapy in the first months of the launch of the treatment program as well as a survey of the health care facilities that deliver and monitor that therapy. The research funded under this contract with the Centre for Health Systems Research and Development builds on an existing project by expanding both the scope and depth of data collection activities. The partners in this research program are the Centre for Health Systems Research and Development of Free State University, Bloemfontein; the Free State Provincial Department of Health, Bloemfontein; and the World Bank (Development Research Group and South Africa Country Unit).

The project will collect longitudinal and triangulate data from biomedical records, household surveys (HIV patients and the general population), as well as health facilities and surveys. The baseline survey was scheduled to start in July–August 2007. The project aims to strengthen national capacity to identify the critical determinants of effective treatment outcomes and the most cost effective ways to deliver HIV/AIDS treatment.

The researchers have completed the baseline survey and the first follow-up survey. They have presented results from the baseline surveys at the International Aids Society Conference in Cape Town, South Africa (July 2009), and at the AIDS Impact Conference in Gaborone, Botswana (September 2009).

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org) and Mead Over. With Alok Bhargava, University of Houston; Frikkie Booysen, University of the Free State; Center for Global Development (USA); and the Centre for Health Systems Research and Development of Free State University.

Project Code: P090173.

Completion date: 2010.

Countries: South Africa.

Health Care Financing and Delivery

This research project is focusing on a variety of issues in health finance and delivery, with a strong emphasis on health insurance issues and evaluation. The project seeks to determine how best to raise health care revenues, and how to ensure that insurance coverage affords financial protection, but also access to needed services, including the organization and financing of service delivery. Much of the work is linked to analytical and advisory work in East Asia, specifically in China and Vietnam. The research was inspired by problems and challenges unearthed during analytical and advisory work.

The project is analyzing labor market and financial protection aspects of health insurance, with a strong focus on impact evaluation of programs and reforms. It is also examining how insurance interacts with other risk management strategies in dealing with health shocks.

The analysis is based on a variety of methods, including impact evaluation methods for program and health reform evaluation, regression analysis of the impacts of shocks, and critical reviews of existing studies. The data include household surveys and health facility datasets.

An important finding is that insurance sometimes affords limited financial protection and may actually increase financial risk. This is especially likely to be the case if providers primarily recommend sophisticated services to those with insurance, and providers are paid a fee-for-service and subject to limited regulation and oversight. In such settings, any extra care delivered as a result of having insurance may not be especially necessary from a medical perspective. Thus, reforms in the way providers are paid and regulated may do a better job of reducing financial risk than expanding or deepening insurance coverage.

This finding makes a case for focusing less on insurance as being a silver bullet to the problem of financial protection in health, and broadening the dialogue and range of interventions to include “the supply side” and in particular how insurance interacts with it. The work being done on social health insurance is likely to clarify further the problems associated with social health insurance, and the options to get around them.

Responsibility: Development Research Group, Human Development and Public Services Team—Adam Wagstaff (awagstaff@worldbank.org).

Project Code: P091397.

Completion date: Ongoing.

Countries: China, Vietnam.

Publications

Eggleston, K., Ling Li, Q. Meng, M. Lindelow, and A. Wagstaff.

2008. “Health Service Delivery in China: A Literature Review.” *Health Economics* 17(2): 149–65.

Lindelow, M., and A. Wagstaff. 2008. “Assessment of Health Facility Performance: An Introduction to Data and Measurement Issues.” In S. Amin, M. Goldstein, and J. Das (eds.), *Are You Being Served? New Tools for Measuring Service Delivery*. Washington, D.C.: World Bank.

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Wagstaff, A., M. Lindelow, S. Wang, and S. Zhang. 2009. “Reforming Rural China’s Rural Health System.” World Bank, Washington, D.C.

Wagstaff, A., and R. Moreno-Serra. 2009. “Europe and Central Asia’s Great Post-Communist Social Health Insurance Experiment: Impacts on Health Sector Outcomes.” *Journal of Health Economics* 28(2): 322–40.

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Research on HIV/AIDS Prevention and Treatment

The World Bank has set up a series of prospective impact evaluations of programs delivering antiretroviral treatment in countries in the Treatment Acceleration Project (TAP), as well as in Rwanda, Kenya, South Africa, and India.

The impact evaluations are measuring the impact of treatment on the welfare of patients and family members, the effects of antiretroviral treatment on HIV transmission and prevention, the determinants of treatment success, and ways to

Reproductive and Child Health and Human Development

encourage cost-effectiveness and capacity-building to reinforce the sustainability of the delivery of antiretroviral treatment. This research project is collecting longitudinal and triangulate data from biomedical records, household surveys (HIV patients and the general population), as well as health facilities and surveys.

The project is helping governments and national research institutions evaluate the impact of alternative strategies for scaling up integrated AIDS treatment. The focus is on AIDS treatment outcomes, HIV transmission, preventive behaviors, and economic and health benefits in African countries. The project is helping to strengthen national capacity to carry out high quality analytical work on the determinants of the HIV/AIDS epidemic and on the impact evaluations of HIV/AIDS prevention and treatment strategies.

This is a long-term research effort on HIV treatment and prevention, covering several countries over several years. Surveys have been prepared and launched in Mozambique, and launched and implemented in Burkina Faso and Ghana. The researchers have begun to analyze the data from the health facilities in Burkina Faso and Mozambique.

Results and preliminary findings have been presented at the World Bank (World AIDS 2007); Regional Advisory Panel Meetings in Ghana, Burkina Faso, Kenya, and Ethiopia; the International AIDS Conference in Mexico (August 2008); the Regional Advisory Panel meeting of the Treatment Acceleration Project, Ghana (January 2007); the HIV/AIDS Implementers Meeting, Kigali, Rwanda (June 2007); the Global Ministerial Forum on Research for Health in Bamako, Mali (November 2008); the International Conference on AIDS and STI in Africa (ICASA) in Dakar, Senegal (December 2008); an impact evaluation workshop on HIV/AIDS organized by Act Africa in Cape Town, South Africa (March 2009); and the AIDS Impact Conference in Gaborone, Botswana (September 2009).

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org), Varun Gauri, Mead Over, and Markus Goldstein. With Harounan Kazianga; Mposo Engwassa Ntumbanzondo; Laeticia Nikiema; Gifty Addico; Sandra Muchanga; Alok Bhargava, University of Houston; Frikkie Booyen, University of the Free State; Sabine Musange, School of Public Health; the Centre for Health Systems Research and Development of Free State University; the School of Public Health, Rwanda; the Center for Global Development; and the Institute for Economic Growth.

Project Codes: P092890, P100095.

Completion date: 2010.

Countries: Burkina Faso, Ghana, Mozambique, India, Kenya, Rwanda, South Africa.

This research project is gathering evidence-based research on how reproductive choices and demographic changes affect poverty and socio-economic outcomes in developing countries.

The project is using a variety of analytical methods, including econometric techniques, macro modeling, and some qualitative data analysis. The data sources include the Demographic and Health Surveys (DHS), a large multi-country dataset assembled for a study on “Demographic Trends, Economic Growth, and Distribution Dynamics,” secondary data sets, and specific panel datasets collected for this research.

One of the project’s studies has found that parents are more likely to stop bearing children if they have a son, so that daughters are more likely than sons to be born in larger families. And because resources per child tend to be more diluted in larger families, as compared with boys, girls tend to have fewer resources available to them.

Another study, which also uses DHS data on more than 40 countries, estimates the effect of family size on mothers’ labor supply. It uses various statistical approaches to address the methodological issue of the endogeneity of family size, and explores the heterogeneity of the effect of family size on women with different education levels.

Another study in this project evaluates the impact of India’s Apni Beti Apna Dhan program, which offers a financial incentive against son preference in north India. It finds that the program is increasing parental investments in girls’ health and improving infant girls’ survival chances.

An ongoing study has been exploring the fertility outcomes and socio-economic consequences associated with marriage in Malawi, including the incidence of HIV/AIDS and the variation in outcome by the characteristics of marriages. This study has collected four rounds of panel data on young adults.

Another ongoing study is assessing the socio-economic benefits attached to the reduction of premature adult mortality due to access to antiretroviral treatment, by evaluating the impact of treatment programs in several African countries.

Preliminary results have been presented in seminars at the World Bank and several external conferences, including the Population Association of America meetings; conferences organized by the Hewlett Foundation and the Center for Global Development; and the International Conference on AIDS and Sexual Infections in Africa (ICASA), Dakar, Senegal (December 2008).

Responsibility: Development Research Group, Public Services Team—Elizabeth King (eking@worldbank.org), Monica Das Gupta (mdasgupta@worldbank.org), Deon Filmer, Berk Ozler, Damien de Walque, Kathleen Beegle, Jed Friedman, Halsey

Rogers, Norbert Schady, Nistha Sinha, Maurizio Bussolo, and Mattias Lundberg. With Hai-Anh Dang, David Horowitz, Rafael E. De Hoyos Navarro, Natsuko Kiso, Maria Porter, and Rekha Varghese.

Project Code: P097557.

Completion date: April 2010.

Countries: Global.

Publications

Filmer, Deon, Jed Friedman, and Norbert Schady. 2008. "Development, Modernization, and Son Preference in Fertility Decisions." Policy Research Working Paper 4716. World Bank, Washington, D.C. Forthcoming in World Bank Economic Review.

———. 2009. "The Preference for Sons Does Not Always Decrease with Development." Research Brief. February 12. <http://go.worldbank.org/902I4EK2A0>.

Sinha, Nistha, and Joanne Yoong. 2009. "Long-Term Financial Incentives and Investment in Daughters: Evidence from Conditional Cash Transfers in North India." Policy Research Working Paper 4860. World Bank, Washington, D.C.

The Role of Testing in HIV/AIDS Epidemics

The first objective of this research project was to model the general equilibrium effects of HIV testing. In the model, people strategize about HIV testing, concerned to avoid the costs of testing, but eager to know their status. People understand that others think like they do, and that the availability of testing therefore affects the average HIV status of people in the sexual marketplace.

The availability of HIV testing affects both the well-being of people and the number of new infections. In a model of heterogeneous costs of testing individuals who do not care if they infect their partners, it is shown that new infections are likely to be lower if a test is made available but the level of well-being may rise or fall. The model also has lessons for what can be learned from small-scale epidemiological models that do not typically offer testing to enough people to affect the average infectiousness of the pool of partners whom the tested people may encounter.

The second objective of the project was to review critically the epidemiological literature on HIV testing. This review used information from Demographic and Health Surveys and field visits in Africa to provide evidence on how people make decisions about testing. The review argues that both quality (such as confidentiality) and price matter to the success of HIV testing programs and that well-designed programs could have an important impact on the epidemic especially if discordant

couples could be tested, a group that accounts for one-third of all the infected people in some African countries.

The project's findings will bear on the decision to set up HIV testing facilities, how they should be designed, and whether they should be subsidized.

Responsibility: Development Research Group, Sustainable Development and Urban Development Team—Hanan Jacoby ([hjacob@worldbank.org](mailto:hjacoby@worldbank.org)). With Mark Gersovitz, Department of Economics, Johns Hopkins University.

Project code: P098506.

Completion date: December 2007.

Countries: Africa.

Publications

Gersovitz, M. 2008. "HIV Testing and Equilibrium in the Sexual Market Place." Department of Economics, The Johns Hopkins University. Unpublished manuscript.

———. Forthcoming. "HIV Testing: Principles and Practice." World Bank Research Observer.

Understanding Disease Control of Highly Pathogenic Avian Influenza

The 2009 swine flu refocused world attention on emergent zoonotic diseases. The swine flu is a virus that jumped from domesticated livestock to humans, thus highlighting that the human/animal interface can be a critical dimension of public health and economic policy. Industrialized farming sees comparatively little human contact with livestock, but clearly this is not the case in developing countries. Further, livestock holdings can be an important asset for poor rural households.

The aim of this research project is to enhance the understanding of the context surrounding policies that would prevent an influenza pandemic. Such policies would reduce the probability that an earlier flu, the 2004 H5N1 avian flu, mutates into a form that is both highly pathogenic and highly transmissible among humans. Such a mutation might occur when humans are simultaneously infected with avian and human influenza, leading to reassortment (hybridization) of the viruses, or it might occur spontaneously in an animal host and jump to humans.

The likelihood of an emerging pandemic can be reduced by reducing (a) the incidence of avian flu in animals; (b) human contact with infected animals; or (c) the incidence of human influenza in human populations with high rates of contact with animals. These strategies to prevent an emerging pandemic also reduce the burdens of current disease in humans and animals by strengthening existing health systems. As a contribution to this overarching objective, this project is examining the costs and benefits of policies to reduce the incidence of

avian flu in animals, and exploring the feasibility of behavior change and other public health measures to reduce the risks of animal-human and human-human transmission.

The settings of the project activities are in the high-risk countries of Indonesia and Vietnam. Project resources have been used to collect and analyze geographically referenced poultry owning households in Indonesia, along with accompanying socio-economic and behavioral information. The project prepared the first-ever population representative H5N1 seroprevalence survey, conducted in Vietnam. This component, when completed, will be invaluable in estimating the true prevalence rate of HPAI in exposed human populations.

One of the findings was that during the initial outbreak of avian flu in 2004, many Indonesian farmers shed their holdings of chickens; but this was not true for the most disadvantaged households, indicating the importance of these risky holdings for the poorest segments of the population. Further, there appears either to have been a critical breakdown in public health messaging during the intervening 2 years in Indonesia, or the economic value of livestock holdings prompted socially sub-optimal behaviors from poorer households. For one, farmers continued to slaughter and sell or consume diseased carcasses of visibly sick birds. Second, many farmers who divested of chickens substituted into duck holdings. Ducks are more efficient spreaders of the avian flu than chickens, but also a safer asset because they are asymptomatic and rarely succumb to the avian flu virus.

These behaviors have important implications for understanding the design of avian flu control policies and how prescribed actions may actually run counter to the economic motivations of households. In fact, these economic motivations appear to prompt behaviors that serve to increase pandemic risk rather than decrease risks.

In short, a comprehensive approach to flu risk mitigation needs to consider the characteristics of households that come into repeated daily contact with livestock as well as the role livestock plays in economic well-being.

Responsibility: Development Research Group, Poverty Team—Jed Friedman (jfriedman@worldbank.org) and Quy-Toan Do.

Project Code: P099686.

Completion date: June 30, 2010.

Countries: Indonesia, Vietnam.

Publications

Friedman, Jed. 2008. “The Small-Scale Avian Influenza Saturation Survey.” Dataset covering the animal husbandry practices and socio-economic characteristics of 5,000 households in Central Java, Indonesia. World Bank, Washington, D.C.

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Farmers’ Willingness to Accept Compensation for Poultry.” HPAI Research Brief #20. International Food Policy Research Institute.

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Conditional Cash Transfers for HIV/STI Prevention

The primary aim of this study is to evaluate the use of conditional cash transfers (CCTs) to prevent HIV and other sexually-transmitted infections (STIs) among youth and young people, aged 15–30, in a rural area of southern Tanzania.

New, innovative approaches to behavioral change are desperately needed, particularly in view of the limited impact that existing prevention strategies have had on the trajectory of the HIV/AIDS epidemic. Although CCTs have been used successfully in a variety of health and social policy settings, they have not yet been evaluated for their effectiveness as an AIDS prevention intervention.

This research project is conducting a three-arm randomized control trial to test the hypothesis that a system of rapid feedback and positive reinforcement using cash as the primary incentive can be used to promote safer sexual activity among youth and young people who are at high risk of HIV infection. The researchers have conducted the baseline survey and are conducting the first follow-up survey.

The research was presented at the International Health Economic Association (IHEA) Congress, Beijing (July 2009).

The William and Flora Hewlett Foundation contributed funds for this research.

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org). With Will Dow, Carol Kolb, and Zachary Isdahl, University California, Berkeley; Carol Medlin and Jeanne Moncada, University California, San Francisco; the Ifakara Health Institute (Tanzania); Rose Nathan; Sally Mtenga; and Boniphace Jullu.

Project Code: P102522.
Completion date: April 2011.
Countries: Tanzania.

Publications

Medlin, Carol, and Damien de Walque. 2008. "Potential Applications of Conditional Cash Transfers for Prevention of Sexually Transmitted Infections and HIV in Sub-Saharan Africa." Policy Research Working Paper 4673. World Bank, Washington, D.C.

Health Insurance Take-up, Market Efficiency, and Impacts: Field Experiments and Data Collection in the Philippines

Health risk is an important source of income fluctuations for low-income households in developing countries. With complete and frictionless insurance markets, protecting households from health shocks would be fairly unproblematic; but in developing countries, these markets are typically incomplete or altogether absent. Insurance providers face great challenges in trying to reduce the health risk faced by their clients due to moral hazard and adverse selection. Thus, one might conclude that transactions costs and information problems loom too large for insurance providers to make inroads in a cost-effective way. Yet, microfinance institutions around the world are starting to offer health insurance to their clients.

This project worked with the Green Bank of Caraga, a rural bank operating in the central and southern Philippines, and the Philippine Health Insurance Corporation (PhilHealth) to address several research, policy, and programmatic questions related to expanding access to health insurance. Using randomized field experiments, the goals of the project were to identify the presence or absence of adverse selection, to estimate the impact of access to insurance on household health and risk-taking, to measure potential crowding-out of informal insurance arrangements, and to evaluate alternative strategies for microfinance institutions interested in offering micro-insurance products.

The follow-up data collection has recently concluded, and the results will be available in fall 2009.

The findings will shed light on the pros and cons that microfinance institutions face when considering whether to offer micro-insurance products on a compulsory basis as compared with a voluntary basis.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Xavier Gine (xgine@worldbank.org). With Dean Karlan, Yale University; Tomoko Harigaya, IPA, Japan; and Jonathan Zinman, Dartmouth College.

Project Code: P104719.
Completion date: June 2009.
Countries: Philippines.

Understanding Adult Mortality in Developing Countries

This research project will shed light on three general sets of correlates and determinants of adult mortality. First, the research is documenting the time trends and socio-economic gradients in adult mortality in developing countries. Second, it is documenting mortality and the HIV/AIDS epidemic. The project will compare findings about excess adult mortality with measures of HIV prevalence. This work will take advantage of recently collected demographic and health sero-surveys that are nationally representative. Third, the project is documenting the impact of conflict on adult mortality and its socio-economic distribution. By analyzing the timing of adult mortality and episodes of conflict in numerous countries, the research will aim at establishing whether the effects of those conflicts can be seen in the population structure at the country, regional, and local levels.

Initial findings have shed light on the impacts of genocide. In particular, a country-specific study carried out within this project studies the demographic consequences of the Rwandan genocide and how the excess mortality due to the conflict was distributed in the population. The results show that although there were more deaths across the entire population, adult males were the most likely to die. Using the characteristics of the survey respondent as a proxy for the socio-economic status of the victim's family, the results also show that individuals with an urban or more educated background were more likely to die. In addition to the human tragedy, a long-term cost of the genocide is the country's loss of human capital.

Preliminary multi-country work is documenting that, despite consistent falls in the level of infant and child mortality at every income level over the past three decades, adult mortality has fallen only slightly for much of the world—and increased in Sub-Saharan Africa (especially over the past decade). This rise is particularly dramatic in countries heavily hit by HIV/AIDS, and in those countries it is especially steep among 25 to 44 year olds. Socio-economic characteristics appear only weakly correlated with adult mortality in the multi-country analysis—although country-specific work is needed to investigate this further.

The project findings will ultimately help to provide a better understanding of the socio-economic gradient in adult mortality, how the HIV/AIDS pandemic affects adult mortality, and more localized shocks such as conflict and famine. The project will generate primary information that could be used in the

design of projects to mitigate socio-economic inequalities in adult health, the implementation of projects that address the HIV/AIDS pandemic, and in providing better understanding of the demographic consequences of shocks.

Responsibility: Development Research Group, Poverty Team—Deon Filmer (dfilmer@worldbank.org) and Damien de Walque. With Shannon Allen.

Project code: P104962.

Completion date: June 2010.

Countries: Global. Focus on Africa.

Socio-economic Impact of Reducing Premature Adult Mortality: The Case of Antiretroviral Treatment for HIV/AIDS Patients

The objective of this research project is to measure the socio-economic impact of reductions in adult mortality due to HIV/AIDS at the household level. The central question of the study is: What are the socio-economic benefits of anti-retroviral therapy (ART)?

Comparing the time path of household well-being when the AIDS patient receives ART to the time path that the household would have experienced in the absence of ART should reveal improved household well-being on several dimensions. The patient's better health will enable him or her to contribute more to household production and wage-earning activity and to enjoy more of the leisure activities of a healthy life. As a consequence of the patient's health, other household members whose time would have gone to care for the AIDS patient or to substitute for the patient's work can instead pursue higher-gain activities, including schooling for the children, labor market participation for adults, and leisure activities. Several studies have shown the profound impact that parental deaths have on children's well-being. By avoiding those deaths, anti-retroviral treatment should bring substantial benefits for the long-term development of children.

The studies in the different countries provide exogenous variations in the likelihood of treatment success, for example based on quality of service delivery at the facility level or experiments with the adherence support mechanisms, to address the endogeneity problem caused by the fact that success with ART is likely to be determined also by socioeconomic variables. The analysis is based on a set of longitudinal household and health facility surveys in the studied countries.

The project developed survey instruments aimed at providing more complete measurement of the time use, labor force participation, and earnings of not only the patient, but of all members of the household. The surveys will gather information on the following impact indicators: school participation

of children; labor force participation of adults and children; income and expenditures; health of adults and children, including anthropometric measurements' migration; and quality of life. In addition, the project is collecting biomedical records for HIV+ patients.

Although the follow-up surveys will reveal stronger results, there are already several important results. First, the scaling-up of antiretroviral treatment has reduced mortality among HIV/AIDS patients. Second, access to pediatric ART appears limited. This might be due to the fact that parents and family do not identify weak or sick children as suffering from HIV/AIDS. Third, HIV/AIDS related deaths are associated with higher health expenditures, the sale of assets for health care, and income generation and agriculture

Results from the baseline surveys in Burkina Faso and Mozambique were presented at the International AIDS Conference in Mexico (August 2008). Results from the baseline survey in Mozambique were presented at the International Conference on AIDS and Sexual Infections in Africa (ICASA) in Dakar, Senegal (December 2008).

Responsibility: Development Research Group, Public Service Delivery Team—Damien de Walque (ddewalque@worldbank.org). With Harounan Kazianga, Oklahoma State University; Mead Over, Center for Global Development; Catherine Machingauta; Julia Vaillant; Anjali Oza; and Rachel Kline.

Project Code: P105109.

Completion date: June 2010.

Countries: Burkina Faso, Ghana, Mozambique, India, Kenya, Rwanda and South Africa.

Marriage Transitions and HIV/AIDS in Malawi

This project is motivated by two sets of theories, based on evidence from Sub-Saharan Africa. First, the choices that young men and women make in terms of sexual partnerships are seen as critical factors determining the characteristics of marriage transitions, including the age at marriage and the characteristics of partners. Second, the characteristics of marriage, such as age at marriage or the relative socio-economic background of wives and husbands, can have significant effects on the future lives of women and their children, in terms of poverty, health, and human capital investments in children. The project aims to examine young people's transition into marriage; the socio-economic, cultural, and sexual circumstances surrounding this transition; and a wide range of outcomes following marriage to better inform policies to improve the longer-term well-being of young people.

The study is collecting innovative longitudinal data on a sample of young adults in Malawi to understand the links

between non-marital relations and sexual experiences, transitions into marriage, socio-economic status (both prior to and after marriage), and the spread of HIV/AIDS. By following a cohort of young adults, it seeks to understand the socio-economic and other conditions that precipitate marriage, including early marriage. By continuing to study newly married couples, the researchers explore the fertility outcomes and socio-economic consequences associated with marriage, including the incidence of HIV/AIDS and the variation in outcomes by the characteristics of marriages. The study interviewed 1,000 unmarried women and men in the Salima district in Malawi. The project will follow those individuals for at least 3 years, continuing to collect detailed socio-economic information, sexual partnering information, and the HIV status of the respondents and their new spouses.

To date, the project has conducted four rounds of data collection, including HIV/AIDS testing in summer 2008. The final round of data was collected in summer 2009, again including HIV/AIDS testing. The data will be analyzed largely using multivariate regression analysis to examine what factors affect marriage, and how marriage affects the socioeconomic outcomes of young adults. The data are mainly quantitative in nature (collected through close-response questionnaires). The qualitative data will be analyzed using other, more appropriate measures and techniques.

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org) and Berk Ozler. With Michelle Poulin, Brown University.

Project Code: P105110.

Completion date: June 2010.

Countries: Malawi.

Impact of Family Size on Child Welfare

A family preference for sons over daughters may manifest itself in a variety of ways. This study focuses on one particular manifestation of a “preference” for sons, namely, different propensities for continued childbearing given the gender composition of existing children in the family. Such behavior could be the result of taste-based gender discrimination, or economic reasons, such as differences in the costs of investing in girls versus boys, or differences in the pecuniary returns to investments in girls versus boys. Therefore, although differential (fertility) stopping behavior is related to preferences, it is the result of a larger set of factors.

By understanding the factors underlying the determinants of family size, this research aims to understand the determinants of child welfare more generally. Indeed, if a preference for having male children leads to more childbearing, then girls

will systematically grow up in larger families—where there is more competition for family resources.

A handful of empirical studies have investigated how differential stopping behavior varies during the development process. This project extends the literature in several important ways. It includes a large number of developing countries from disparate regions. It documents not only regional patterns in son-preferred differential stopping behavior, but also within-region differences by location (urban versus rural), education (women who have completed primary school versus those with less schooling), wealth levels (above and below the median of a composite measure of assets), and over time (by comparing different birth cohorts of mothers). It analyzes the extent to which observed patterns in son-preferred differential stopping behavior strengthen or weaken as the total number of children decreases. And, finally, it links these results to the wider literature on gender composition and resource dissolution in larger families.

The research uses data from 158 Demographic and Health Surveys from 64 countries. It finds fertility behavior consistent with son preference in many regions of the developing world, with the clearest patterns apparent in South and Central Asia. Specifically, the absence of sons increases the probability of an additional birth by significantly more than the absence of daughters.

Widely used measures of “modernization,” including urbanization, higher education levels, and household wealth, are associated with an increase in son preference, as captured by differential stopping behavior. The presumption that this manifestation of son preference will dissipate over time is also not supported by the data. The results from regressions using a simple multivariate framework suggest that this may be a result of reductions in family size.

For this reason, social policies that aim to limit fertility may, as an unintended consequence, bring son-preferred differential stopping behavior to the fore, which in turn may have implications for gender equity. One implication of these patterns is that girls, indeed, tend to have more siblings than boys. Son preference in fertility decisions can have important indirect implications for investments and for the wellbeing of girls, relative to boys.

Hewlett Foundation, USA provided funding for the project. **Responsibility:** Development Research Group, Human Development and Public Services Team—Deon Filmer (Dfilmer@worldbank.org) and Norbert Schady; and Development Research Group, Poverty Team—Jed Friedman. With Ryan Booth and Nick Ingwerson.

Project Code: P105112.

Completion date: December 30, 2009.

Countries: Global.

Publications

Friedman, Jed, Deon Filmer, and Norbert Schady. 2008. "Development, Modernization, and Son Preference in Fertility Decisions." Policy Research Working Paper No. 4716. World Bank, Washington, D.C.

The Politics of Public Health: A Systematic Case Study Approach

This project is examining public health performance through the prism of infant and child mortality rates. Each country faces somewhat different public health challenges and has greatly varying resources at its disposal. Therefore, the project is evaluating overall performance by examining the residual (unexplained variance) from a general statistical model that incorporates controls for factors that lie outside the control of the public health sector (e.g., GDP per capita). The model encompasses all sovereign and semi-sovereign countries during the post-war era.

The model is used to identify a small set of "over-performers," countries whose infant and child mortality rates are better than expected (given the country's challenges and constraints) and have experienced a substantial improvement over the past decade or two. It is likely that the experiences of these countries will reveal important information about how public health achievements are won.

Why are these countries so much more successful than other countries with similar background characteristics? What lessons can be drawn from this to better understand the causes of health outcomes across the world? Perhaps most importantly, what elements of these countries' recent experiences might be replicable in other parts of the world?

The principal objective of the project is to identify factors that are difficult to test in a cross-national dataset format, because they have yet to be identified, the data are limited, or they resist measurement. They are, for similar reasons, difficult or impossible to test in an experimental format. This project is therefore exploratory in nature, and follows a case study research design. Its goal is to develop new accounts—perhaps even new theories—of public health. At the same time, the project builds on a global statistical analysis, thus providing a more solid basis for choosing cases to be explored in an in-depth fashion. In methodological terms, the project promises a rare union between quantitative and qualitative research methods and between political science and public health, two disciplines that have often been estranged.

Responsibility: Development Research Group, Human

Development and Public Services Team—Varun Gauri (Vgauri@worldbank.org). With John Gerring, Strom Thacker, and Julian Arevalo, Boston University.

Project Code: P106061.

Completion date: June 2010.

Countries: Global.

Follow-up Study of Stunted Children in Jamaica

Between 1987 and 1989, a cohort of stunted children participated in a randomized trial of a relatively low-cost early childhood cognitive stimulation intervention. Follow-up studies at 7, 11, and 17 years of age already showed that the children benefited in terms of cognition and school achievement throughout childhood. The objective of this project was to follow up on the study's initial cohort of children at 22 years of age in order to determine their final educational attainment, employment history, financial situation, general social behavior (including risky behaviors), and cognitive and psychosocial function.

There is little evidence on the long-term impact of early childhood interventions, and most of the evidence comes from developed countries. The Jamaica study is unique because it involves a very long-term (20+ years) follow-up to a cohort of children that were randomly assigned to treatment and comparison groups in a cognitive stimulation program. The study consisted of two phases. Phase I (tracking of participants) was completed in April 2008. Phase II (survey and testing of participants) began in February 2008 and was completed in March 2009. The final results will be available in August 2009.

Findings, phase I: Of the original participants (211), 169 were interviewed during Phase I of the study. The results suggest that stimulation increased the likelihood that participants obtained secondary examination passes and pursued further training after school. However, these benefits were seen only in the group that received stimulation only and not in the group that received both stimulation and supplementation.

Findings, phase II: Phase II tested 148 participants resident in Jamaica. The analysis showed benefits of the stimulation intervention for IQ, reading, mathematics, and general knowledge. The stimulated participants also reported fewer symptoms of depression, tended to stay in school longer, and were significantly more likely to have passed advanced level exams.

The results of the study provide evidence of gains from the early childhood stimulation intervention to cognition, educational achievement, and psychological functioning. The study provides further evidence of the long-term deficits to cognition and educational achievement associated with early childhood

stunting and confirms the association with increased depressive symptoms first reported at age 17 years. However, there were few differences related to social functioning in areas such as relationships, community involvement, antisocial behavior, and drug abuse.

Responsibility: Latin America Region, Education Sector—Chingboon Lee (Clee2@worldbank.org) and Christel Vermeersch. With Susan Walker and Susan Chang, University of the West Indies; Sally Grantham-McGregor, University College London; and Paul Gertler, University of California at Berkeley.

Project Code: P106737.

Completion date: August 2009.

Countries: Jamaica.

Publications

Walker, Susan, and Susan M. Chang. “The effects of early childhood stimulation on economic, cognitive and social outcomes in a cohort of stunted Jamaican children: The 22 years follow-up study Phase 2 Report.” Epidemiology Research Unit, TMRI, The University of the West Indies, Jamaica.

The Economic Impact of Pandemic Influenza and Mitigation Policies

The current H1N1 “swine flu” pandemic has heightened public awareness of the threat posed by influenza pandemics. Although the current pandemic has proved relatively mild, it may infect hundreds of millions of people as the northern hemisphere enters the peak season for influenza infection. A more virulent strain (such as a strain of H5N1 avian flu, which could be transmitted between humans) could prove even more devastating, and spread rapidly around the world through international airline networks.

This research project investigates the severity and incidence of a pandemic using a detailed global epidemiological simulation model, and estimates the effectiveness of using antiviral drugs to treat those infected. It analyzes the implementation of physical distancing measures (such as school closures) on reducing the aggregate number of flu cases. It also examines incentives for countries to undertake these measures.

The project shows that, globally and in any given country, developing a stockpile of antiviral drugs and using these to treat people infected with the pandemic strain can be highly effective at reducing the number of people infected over the course of a pandemic. Because the number of people infected with a pandemic strain can be hidden among the much larger number of people with regular seasonal influenza strains, it is very difficult to detect a pandemic strain early enough to

entirely prevent an epidemic. Physical distancing measures that reduce contact rates between people can reduce the number of cases for low-moderate severity strains, but for very infectious strains these measures only slow the course of the pandemic, with little direct impact on the final number of people infected.

The benefits of policies that mitigate pandemics go largely to the country that undertakes the policy. Consequently, high-income countries will have strong incentives to pay for pandemic mitigation for their domestic populations, but poor countries may not have sufficient incentive to engage in any mitigation. The project results show that, for a broad range of assumptions regarding the infectivity of the epidemic and the effectiveness of national antiviral treatment policies, the value of health benefits to high-income countries from donating stockpiles to a poor outbreak country would surpass the costs to the high-income country. Thus, under circumstances where poor countries do not prepare their own stockpiles, the donation of antiviral stockpiles to influenza outbreak countries can be justified by an economic as well as a humanitarian rationale.

Responsibility: Development Research Group, Poverty Team—Jed Friedman (jfriedman@worldbank.org). With Maureen Cropper, retired from the World Bank, University of Maryland, RFF; Stephen Hutton, University of Maryland; and Mead Over, Center for Global Development.

Project Code: P107529.

Completion date: June 30, 2009.

Countries: Global.

Publications

Bobashev, Georgiy, Maureen Cropper, Joshua Epstein, Michael Goedecke, Stephen Hutton, and Mead Over. Forthcoming. “Policy Response to Pandemic Influenza: The Value of Collective Action.” Policy Research Working Paper. World Bank, Washington, D.C.

Malaria Impact Evaluation Program

The overall objective of the Malaria Impact Evaluation Program is to help malaria-burdened countries transition to evidence-based anti-malarial programs. The program will generate evidence on effective approaches to increase demand and utilization of anti-malarial services, such as Long-Lasting Insecticide Treated Nets (LLITNs) and effective anti-malarial medication. In addition, the program will build evaluative capacity in the participating countries and secure longer-term effectiveness of the World Bank supported malaria programs in reducing malaria morbidity and mortality.

The program supports a number of evaluations currently underway that are expected to deliver evidence on innovations in malaria control. These evaluations are taking place in Eritrea, India, Kenya, Nigeria, Senegal, and Zambia. The following selected cases illustrate how malaria impact evaluations can inform and help governments and funding/development agencies allocate resources more efficiently, and scale up preventive and treatment programs that both deliver results and prove to be sustainable.

Eritrea has greatly reduced the incidence of malaria through a combination of case management, larval control, ITN distribution strategies, and prompt and effective epidemic response. Despite considerable advances in the reduction of malaria transmission over the past 8 years, malaria has not yet been eliminated—especially in Eritrea’s western lowlands. Studies underway are assessing how multiple vector control strategies may be more beneficial when used in combination, including community-level integrated indoor residual spraying (IRS) and larval habitat management. Integrating entomological, economic, socio-behavioral, and epidemiological data to understand malaria transmission dynamics in relation to interventions is expected to shed more light on comprehensive control strategies.

In its fight against Malaria, Zambia has achieved ITN coverage of 60 percent (MOH 2008) and has scaled up IRS efforts. There has been less progress, however, in case management. Frequent stock-outs of medicines in public health facilities have hampered access, as has the high price of ACTs in the private sector and general lack of awareness about them. Government ministers and key donors have focused, therefore, on implementing complementary intervention strategies in both the public and private sectors, as well as using community-based agents (community health workers) more effectively to increase ACT access.

The Zambia Access to ACT Initiative (ZAAI) is designed to introduce innovations in these service delivery arms, accompanied by valuable technical assistance during the design and pilot implementation phases. ZAAI also includes a rigorous impact evaluation, using a randomized design to draw inferences on the separate and joint effects of the innovations in the public, private, and community-based delivery channels. The evaluations are taking a closer look at household access to, and utilization of, test-based diagnosis (rapid diagnostic tests, RDT) and first-line treatment (ACT), as well as consequent malaria-related morbidity, health status, and selected socio-economic measures. Further, the evaluation is expected to provide quantitative evidence on the cost effectiveness of these alternative modes of delivery, which, in turn, will inform programmatic choices and policy decisions.

Responsibility: Development Research Group, Poverty Team—Jed Friedman (jfriedman@worldbank.org) and Development Economics, Operations and Strategy—Arianna Legovini. With Edit Velenyi and numerous researchers in individual country teams.

Project Code: P107536, P114969.

Completion date: June 2012.

Countries: Eritrea, Zambia.

The Long-Term Impact of Providing Eyeglasses to Primary School Students: Further Analysis of a Randomized Trial Conducted in China’s Gansu Province

This research project examined the impact of providing eyeglasses to Chinese students in grades 3–5 in two counties in Gansu province. The baseline data were collected in 2004 and the follow-up survey was conducted in 2008.

The program was evaluated using a randomized treatment and control design. The sample included about 20,000 students in about 150 schools. One-half of the sample was randomly assigned, based on random assignment of townships, to participate in the program. In the “treatment” schools, all children in grades 3–5 were given eye examinations at school.

Of the 10,000 students, about 1,000 were deemed to have a vision problem (by far the most common vision problem was myopia). The vast majority of the children with vision problems did not have eyeglasses. The parents of these children were offered the opportunity to have their children fitted with eyeglasses, and about 70 percent accepted the offer. In the “control” schools, which again had about 10,000 students, again about 1,000 were found to have a vision problem.

Initial estimates after about 10 months showed large impacts of providing eyeglasses on Chinese language, mathematics, and science test scores. The project analyzed follow-up data four years later to estimate the long-term effects of providing eyeglasses on test scores, enrollment, and grade progression.

Responsibility: East Asia and Pacific, Education Sector Unit—Kin Bing Wu (Kwu@worldbank.org). With Paul Glewwe, University of Minnesota; Emily Hannum, University of Pennsylvania; and Albert Park, University of Michigan.

Project Code: P109322.

Completion date: August 30, 2008.

Countries: China.

Vietnam Avian Influenza Sero Prevalence Survey

The objectives of this project are to measure the prevalence of Avian Influenza H5N1 in the population, and to assess the risk factors. The project focuses on the need to understand

a disease in the population before drawing policy prescriptions that have large known costs and uncertain benefits. The researchers will also investigate the risk factors of exposure to avian influenza, and try to understand the extent to which poor health care systems are at the root of the under-reporting of cases.

This is the first time such an effort has been undertaken. The project will conduct survey implementation and blood collection to gather data, and use cross-sectional analysis of the risk factors.

The U.S. National Institutes of Health provided funding for the project.

Responsibility: Development Research Group, Poverty—Quy-Toan Do (qdo@worldbank.org) and Jed Friedman. With Tung Phung, IPSARD, General Statistics Office, Vietnam.

Project Code: P109752.

Completion date: September 2010.

Countries: Vietnam.

Human Capital Development, Labor, and Employment

Developing Urban Knowledge Economies in Asia

Enhancing innovation capacity in the context of urban knowledge economies is emerging as a key objective of countries in East Asia that are attempting to upgrade and diversify their industries and exports. The growing integration of East Asian firms with the leading global industries coincides with rapid urbanization and a dramatic re-scaling of economic activity. However, research that could guide the development of innovative knowledge economies and supportive metropolitan as well as national policies in Asia is very thin, despite the fact that technological change is gathering momentum in China, India, Korea, Malaysia, and Taiwan (China).

This research project is contributing to a better understanding of the development of innovation and knowledge-intensive activities in East Asia. During the past two years, research associated with this study has assessed the industrial structure and exports of Southeast Asian countries such as Malaysia and Thailand and of cities such as Penang and Shanghai, and gauged the innovation capacity of these entities. Based on this assessment and international experience, a number of policy measures were proposed to promote research and development and innovation in firms and harness these to support productivity growth. The research has also focused on policies and institutional mechanisms for promoting successful university-industry linkages in Asia, maximizing the spillovers from universities, and creating the conditions for the emergence of industrial clusters.

The project has primarily relied on detailed interviews of representatives of firms, universities, and municipal authorities; quantitative data on innovation outputs by universities (published papers and patents); data from WITS and other sources; published material on the performance of firms linked to universities; and research results drawn from the academic literature.

The project findings indicate that the leading universities and research institutions in Asia are likely to increase their linkages with industry. Asian firms are finding that in-house research is insufficient even for the largest corporations. Contracting out research to universities, entering into alliances with research institutes, and collaborating with university researchers can confer substantial advantages. Urban centers have emphasized science parks, incubators, venture capital, and a better business climate in an effort to create industrial clusters and, in some cases, clusters are beginning to form.

The project's case studies of countries and urban centers has highlighted problems and identified policies for remedying them. These can help inform the World Bank's policy dialogue with member countries on the tertiary education sector and technology development. Studies have been completed on Malaysia, Thailand, and Shanghai; on clusters in Asia; and on university-industry linkages more broadly. The project has sparked wide interest in the World Bank. A similar study was completed on countries in Sub-Saharan Africa.

Responsibility: World Bank Institute, Poverty Reduction and Economic Management Division—Shahid Yusuf (syusuf@worldbank.org). With Kaoru Nabeshima.

Project code: P070727.

Completion date: October 2009.

Countries: Asia.

Publications

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- Kodama, Fumio, Shahid Yusuf, and Kaoru Nabeshima. 2008. "Introduction to the Special Section on University-Industry Linkages: The Significance of Tacit Knowledge and the Role of Intermediaries." *Research Policy* 37(8): 1165-66.
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- Yusuf, Shahid, Kaoru Nabeshima, and Shoichi Yamashita (eds.). 2009. *Growing Industrial Clusters in Asia, Serendipity and Science*. Washington, D.C.: World Bank.
- Yusuf, Shahid, William Saint, and Kaoru Nabeshima. 2009. *Accelerating Catch-up: Tertiary Education for Growth in Sub-Saharan Africa*. Washington, D.C.: World Bank.

Child Labor and Access to Credit

Although there is 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.

The studies in this research project differentiated between correlates of child labor and covariates that actually drive child labor. As to the impact of child labor, the research has taken advantage of LSMS panel surveys from Vietnam and Tanzania to study the process longitudinally. The analytical approach used both the panel nature of the data sets as well as exogenous variation in crop shocks (Tanzania) and rice liberalization (Vietnam).

Among the findings, there is evidence that access to credit (in the face of economic shocks to farming) may buffer the use of child labor. In the long run, although working as a child results in fewer years of schooling, it can lead to advantages in the labor market as a young adult (returns to experience), which might explain why children's parents choose to send children to work. The findings did not reveal any negative health effects of working as a child in the study of Vietnam. 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 research results have been disseminated at the Centre for the Study of African Economies, Oxford, UK (March 2007);

Paris School of Economics (February 2007); University of Toulouse I (February 2007); CIDE in Mexico City (March 2007); Rutgers University (March 2007); World Bank Child Labor and Education: Access and Quality Workshop (April 2007); Hebrew University (May 2007); Tel Aviv University (May 2007); IDEI at the University of Toulouse; IZA conference on Migration; conference on child labor organized by UCW; and the Centre d'Economie de la Sorbonne.

Responsibility: Development Research Group, Poverty Team—Kathleen Beegle (kbeegle@worldbank.org) and Middle East and North Africa, Human Development—Roberta Gatti. With Rajeev Dehejia, Tufts University; and NBER.

Project Code: P081465.

Completion date: 2009.

Countries: Vietnam, Tanzania.

An Evaluation of Alternative Food for Education Approaches

Subsidized school meals and other "food for education" programs can be attractive development programs. They address both education and nutrition objectives by tying food supplementation to regular school attendance. However, some criticize food for education programs for being less cost effective than alternative programs that focus more directly on either education or nutrition outcomes.

This research project compared take-home rations and school meals in the same setting in order to assess their relative effectiveness. The analysis was based on case studies of three countries: Burkina Faso, Laos, and Uganda.

The key findings include verification that food for education increased enrollment and/or attendance. There was no advantage of meals compared with take-home rations on impact (the latter were, in general, a bit larger on results measured, but not always significantly so). Thus, the cost of implementation leads to estimates of benefit-cost ratios. Moreover, the study found that the programs in Burkina Faso and Uganda had a significant impact on the nutritional status of younger siblings (who were not directly in the food for education interventions), with take-home rations having the larger impact in Burkina Faso and meals having somewhat more impact in Uganda.

The project findings have been presented at a workshop was hosted by the World Food Program, Kampala, Uganda; the Centre for the Study of African Economies Conference, Oxford University (March 2008); the Midwest International Economic Development Conference, University of Wisconsin, Madison (May 2008); the Department of Agricultural and Resource Economics, University of Maryland, College Park (November 2008); the Northeast Universities Development Conference,

Boston University (November 2008); the Canadian Economics Association meetings (June 2008); a seminar in Burkina Faso (February 2009); Oklahoma State University (November 2008); Purdue University (February 2009); the Center for the Study of African Economics (CSAE) Conference, Oxford University, UK (March 2009); the World Bank (April 2009); Georgetown University (April 2009); the IZA Workshop on Child Labor, Bonn, Germany (May 2009); IFPRI (May 2009); and a World Food Program sponsored breakout of the International Congress of Nutrition (October 2009).

The World Food Program provided trust funds and undertook the operations that were evaluated in all the countries.

Responsibility: Africa Technical Families, Regional Human Development—Harold Alderman (halderman@worldbank), and Development Research Group—Jed Friedman and Damian de Walque. With Harounan Kazianga, Oklahoma State University; Alison Buttenheim, Princeton University; International Food Policy Research Institute (IFPRI); Institute of Public Health, Makerere University, Kampala; Opifer Ltd Finland (in collaboration with Laos Department of Statistics); Jean-Pierre Sawadogo and Bambio Yiribin, Economics Department of the University of Ouagadougou; Laetitia Nikiema, Institut de Recherche en Sciences de la Sante (IRSS); and the University of Ouagadougou.

Project Code: P083953, P100887.

Completion date: May 2009.

Countries: Burkina Faso, Uganda, Laos.

Publications

Adelman, Sarah, Harold Alderman, Daniel Gilligan, and Joseph Konde-Lule. “The Impact of Alternative Food for Education Programs on Child Nutrition in Northern Uganda.” IFPRI. Processed.

Adelman, Sarah, Harold Alderman, Daniel Gilligan, and Kim Lehrer. 2008. “The Impact of Alternative Food for Education Programs on Learning Achievement and Cognitive Development in Northern Uganda.” IFPRI. Processed.

Alderman, Harold, Daniel Gilligan, and Kim Lehrer. “The Impact of Alternative Food for Education Programs on School Participation and Education Attainment in Northern Uganda.” IFPRI. Processed.

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Gilligan, Daniel O., Sarah Adelman, and Kim Lehrer. 2006. “An Evaluation of Alternative School-Based Feeding Programs in Northern Uganda: Report on the Baseline Survey.” IFPRI. Processed.

Kazianga, Harounan, Damien de Walque, and Harold Alderman. 2009. “Educational and Health Impact of Two School Feeding Schemes: Evidence from a Randomized Trial in Rural Burkina Faso.” Policy Research Working Paper 4976. World Bank, Washington, D.C.

Benefits of Conditional Cash Transfers in Cambodia

For a number of years, Cambodia has had programs that offer “scholarships” to poor children making the transition from primary to lower secondary school. The two most well known programs are the Program Budget Program (PB, formerly called PAP12), financed and run by the Ministry of Education, Youth, and Sports (MOEYS), and the Japan Fund for Poverty Reduction (JFPR) scholarship program, financed by donors and run by MOEYS. In 2005, MOEYS launched the Cambodia Education Sector Support Project (CESSP) with financial assistance from the World Bank. The project included a scholarship component known as the CSP. Scholarships were intended to promote the transition from primary to secondary school, and the completion of lower secondary schooling.

CSP offers scholarships to 6th grade students conditional on enrolling in school in 7th grade, the first year of lower secondary school. These scholarships are renewable for the three years of lower secondary school—conditional on enrollment, regular attendance, and on-time promotion from one grade to the next. The money is transferred to parents. In each CSP school, half the children who received a scholarship were offered a scholarship of \$60, and the other half was offered a scholarship of \$45. Poorer students were offered the larger scholarships.

The evaluation design builds on how students were selected for scholarship receipt. Based on responses to a simple survey, 6th grade applicants were ranked by a composite “dropout-risk score”—from those most likely to drop out of school to those least likely to drop out. In each participating lower secondary school, a fixed number of scholarships were awarded to children with the highest drop-out risk. Comparing applicants “just below” to “just above” the cutoff effectively compares extremely similar applicants—who differ only in that the former were offered a scholarship.

The main finding of this research is that the scholarships raised the school participation of recipients by about 20 percentage points above what it would have been in the absence of the program. Moreover, the results suggest that there was not a large difference in the impact on girls versus boys. The findings reveal little—if any—incremental increase among recipients who received \$60 as opposed to \$45.

The purpose of the CSP was to increase school participation. Nevertheless, the evaluation included an assessment

of learning through tests implemented in the context of the household survey, as well as a test implemented in schools. The results show that, despite the increase in school participation, there is no evidence that children who received scholarships did any better on tests in mathematics and vocabulary than they would have in the absence of the program. Further analysis suggests that this lack of impact on learning is not due primarily to low school quality, as measured by the student-teacher ratio or the education or experience of teachers; nor is it due to overcrowding in participating schools. Rather, the findings are consistent with the scholarship program bringing—and keeping—lower-ability children in school. This suggests that specific initiatives for low-ability students—both scholarship recipients and non-recipients—might be especially necessary to maximize the impact of the program on learning.

Responsibility: Development Research Group, Poverty Team—Deon Filmer (dfilmer@worldbank.org), Norbert Schady, Luis Benveniste, and Omporn Regel. With Charis Wuerffel.

Project code: P095662.

Completion date: June 2009.

Countries: Cambodia.

Schooling, Poverty, and Ethnic Minorities in Laos

Laos is a very poor and underdeveloped country with large schooling disparities across gender, ethnicity, and rural and urban location. It is in this context that operational support and research were launched on income, spatial, and ethnic inequalities in utilization; access to schooling inputs; and educational outcomes. The project was extended to look specifically at the living standards of ethnic minorities in Laos.

The research project first examined inequalities in the access to quality-adjusted education services, especially the failure of such services to reach the rural poor and ethnic minorities in Laos.

A survey of primary schools was designed and fielded in 2002 in conjunction with the nationally representative Lao Household Consumption Survey. Thus, all primary school children in sampled households can be linked to a school. This provides a rare source of information linking access to school characteristics and quality with household level characteristics. The research thus links data at the household, child, and primary school levels in Laos. These data were examined using simple descriptive techniques and non-parametric and parametric regression analysis.

The research found that over the past 40 years, Lao PDR has seen steady progress in educational outcomes across the groups in its population, as evidenced by higher enrollment rates, literacy rates, and schooling years completed.

But educational progress has not been equal across groups. Significant disparities exist according to a person's residence, gender, ethno-linguistic affiliation, and income, and how these attributes interact. These results imply that policy interventions to increase schooling will not succeed unless they are carefully tailored to the specific constraints and needs facing each group.

This research was used extensively in the Lao PDR Poverty Assessment and Public Expenditure Review.

In response to a request from the UN Permanent Forum on Indigenous Peoples Issues, the project was extended to delve much more deeply into various aspects of the living standards of ethnic minorities. A stand-alone study has been produced that will be a chapter in the book *Indigenous Peoples, Poverty and Development*, produced by SDV and edited by Harry Patrinos and Gillette Hall. There will be a series of conferences to present results, including possibly in Norway coordinated with TFESSD (which also provided funding for the study). It has also been presented to the UN Permanent Forum on Indigenous Peoples Issues.

Responsibility: Development Research Group, Human Development and Public Services Team—Dominique van de Walle (dvandewalle@worldbank.org) and Elizabeth King. With Constant Tra, University of Maryland; Jossy Moies; Jennica Larisson; Ren Mu, and Vy Nguyen.

Project code: P096402.

Completion date: December 2009.

Countries: Laos.

Publications

King, Elizabeth, and Dominique van de Walle. 2007. "Schooling, Poverty, and Disadvantage in the Lao People's Democratic Republic." In Maureen Lewis and Marlaine Lockheed (eds.), *Exclusion, Gender and Education: Case Studies from the Developing World*. Washington, D.C.: Center for Global Development.

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Improving Schools in Pakistan

As in many other low-income countries, the educational landscape in Pakistan has changed fundamentally in the past decade—both in terms of the ground realities and in terms of its focus. This is not because of a rise in religious schooling (often believed, but patently untrue), but rather an effect of (a) a dramatic increase in low-cost private schooling, and (b) an increasing focus on learning rather than enrollment. Consequently, almost 50 percent of the population in the most

populous province in Pakistan, Punjab (where this study was conducted), lives in villages with an average of eight schools.

This research project has three main objectives. The first is to understand how children learn in school and the relative role of schools and households in promoting learning. The second is to understand how policies and interventions can be designed in this new landscape, which is characterized by school choice and complicated household decision making. The third is to actively disseminate the findings to promote a culture of evidence-based experimentation and learning in this environment.

The project is gathering research on the general conditions of child learning and its dynamics in a low-income country setting. The analysis is using a new method of monitoring and evaluation. Specifically, it surveyed and collected a host of data from a large number of schools and households in selected communities each year for 4 years. Part of our research will investigate the “on-the-ground” effects of this World Bank operation through this “sentinel” approach to monitoring. Furthermore, the work embedded experimental evaluations into the ongoing panel data collection, thus allowing for greater learning about what works and what does not.

The data are from a sample of 112 villages in 3 districts of Punjab—Attock, Faisalabad and Rahim Yar Khan.

Originally, the Learning and Educational Achievements in Punjab Schools (LEAPS) project was conceived for 3 years, and it has now been completed for a fourth with funding recently received for a 5th follow-up. The project is following the same schools, teachers, households, and children over these years. The children who are being followed were first tested in Class 3, then in Class 4 and finally in Class 5 in January 2006. In January 2006, the project added a new cohort of children from Class 3 (testing both Class 3 and Class 5 children in the schools). Both cohorts were followed for an additional year to complete the panel.

The research and analytical projects fall in three categories. The first category is descriptive work on the schooling environment, which provides a set of facts that can bookend the debate on educational provision and quality in the country. The second category is methodological and technical analysis that tests a hypothesis regarding the data. The third category is the evaluation of specific interventions using randomized treatment-control designs.

Less than 1 percent of enrolled children are in religious schools. There was no change in this trend after 9/11. Neither does it appear that children in these schools are from particularly “radicalized” families—indeed, in three out of four families with a child in a religious school, other children in the same family are in public or private schools.

All the project surveys and surveyor manuals are available on request from LEAPS, and will be made available on a public website (www.leapsproject.org).

Responsibility: Development Research Group, Public Service Delivery Team—Jishnu Das (jdas1@worldbank.org) and Middle East and North Africa, PREM—Tara Vishwanath.

Project Code: P098137.

Completion date: Ongoing.

Countries: Pakistan.

Publications

Andrabi, Tahir, Jishnu Das, Asim Ijaz Khwaja, Tara Vishwanath, and Tristan Zajonc. 2008. “Learning and Educational Achievements in Punjab Schools: Insights to Inform the Policy Debate.” World Bank, Washington, D.C.

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Labor Informality: Estimating the Benefits and the Costs in Brazil

In developing countries, there is a large gap between *de facto* regulation and its effective implementation. This research project explored the within-country variation (across 5,200 Brazilian cities) in the strength of regulation caused by enforcement. Conceptually, variation in enforcement is close to exploring changes in *de facto* regulation.

The analysis used three main sources of data for Brazil. The first source was city-level data covering all Brazilian cities on the main outcomes of interest (employment, unemployment, labor productivity, poverty, and inequality) and other economic and demographic city characteristics from IPEA and IBGE. These data were available for 1970, 1980, 1990, and 2000. The second source was administrative data from the Ministry of Labor on enforcement of labor regulation at the city level for 2000. The third source was city-level institutional data (governance, access to justice, quality of management, and an index of institutional quality), which were kindly provided by Rodrigo Soares.

The analysis regressed different equity and efficiency measures on enforcement of labor regulation in the city, controlling for predetermined city level characteristics. Enforcement was measured by the number of inspected firms per 100 firms in the city (2002). Enforcement was instrumented with distance to the nearest sub-district interacted with the number of inspectors in the state (always controlling for distance to the nearest sub-district, transportation costs, and distance to the capital city).

There was strong evidence that labor regulations involve a trade-off between efficiency and equity in Brazil. The findings showed that stricter enforcement (affecting the payment of mandated benefits to formal workers) leads to higher unemployment, less income inequality, a higher proportion of formal employment, and a lower formal wage premium. The results were consistent with a model in which stricter enforcement caused a contraction in labor demand in both the formal and informal sectors; and where workers valued mandated benefits highly, so that there was an increase in the formal sector labor supply, an increase in the willingness to become unemployed to search for a formal sector job, and a decrease in labor supply to the informal sector.

The project findings were presented at the following conferences: Society of Labor Economists, New York (May 2008); Human Development Network, World Bank, Washington, D.C. (November 2007); OECD Development Center, Paris, France (September 2007); European Economic Association Conference, Budapest, Hungary (August 2007); IZA/World Bank Conference on Employment and Development, Bonn, Germany (June 2007); and the Economists' Forum at the World Bank, Washington, D.C. (April 2007).

Responsibility: Social Protection Team, Labor Market Unit—Rita Almeida (ralmeida@worldbank.org). With Pedro Carneiro, University College London; and Renata Narita, University College London.

Project Code: P100843.

Completion date: December 2008.

Countries: Brazil.

Publications

Almeida, Rita, and Pedro Carneiro. 2007. "Inequality and Employment in a Dual Economy: Enforcement of Labor Regulation in Brazil." IZA Discussion Paper No. 3094 (www.iza.org).

———. 2009. "Mandated benefits, Employment and Inequality in a Dual Economy." World Bank, Washington, D.C. Mimeo. <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Labor-Market-DP/0823.pdf>

Labor Issues in Service Delivery: Pay, Incentives, and Performance of Service Providers

This research project aims to understand how markets and institutions affect the provision of public services through labor issues in service provision. The project is studying the relationships between the remuneration, labor supply, and incentives for performance of education and health sector workers in developing countries. It will address ways to improve incentives for service providers and, in turn, investigate how improved incentives can be related to improved health and education outcomes.

The research uses regression-based analysis of large sample surveys. Most of the studies are based on specialized data collection. In Indonesia, for example, the research makes use of the Indonesia Family Life Survey.

The project addresses the following topics, among others:

- Job satisfaction and teacher performance—Based on a nationally representative survey of teachers from Indonesia.
- The effects of the private sector on service provision—Two projects examine the effects of the private sector on education and health outcomes and on the distribution of benefits.
- The impacts of in-service training—This project investigates the impact of the training component of an early childhood development project on the knowledge, attitudes, and skills of service providers; on aspects of their service behavior; and ultimately on outcome indicators related to the health and nutritional status and cognitive development of young children.
- How the governance of public health institutions affects health outcomes—This study focuses on the labor force incentives of grassroots public health workers in environmental sanitation in Sri Lanka.
- Community-based health care providers and child outcomes—An evaluation of the extent to which exposure to

community-based health service providers during early childhood affects the relationship between health status and subsequent educational outcomes.

Responsibility: Development Research Group, Human Development and Public Services Team—John Giles (jgiles@worldbank.org), Jishnu Das, Monica Das Gupta, Varun Gauri, Halsey Rogers, and Pascale Schnitzer; and Human Development Network, Education Team—Elizabeth King. With Savisa Bhumiratana; Hai-Anh H. Dang; Vy T. Nguyen; Nicholas Robinson; Kenneth Leonard, University of Maryland; Asim Ijaz Khwaja, Harvard, KSG; Cristina Rosemberg, Amsterdam Institute for International Development; Elan Satriawan, Gadjah Mada University; Infrastructure Professionals Ent. (India); Institute for Health Policy (Sri Lanka); Overseas Development Group (UK, University of East Anglia); and Pieter Serneels (consultant, UEA).

Project Code: P101922.

Completion date: Ongoing.

Countries: Ethiopia, India, Indonesia, Pakistan, Sri Lanka.

Publications

Andrabi, T., A. Kwaja, and J. Das. 2009. "Students Today, Teachers Tomorrow? Identifying Constraints on the provision of Education." KSG, Harvard. Mimeo.

Dang, Hai-Anh, and Halsey Rogers. 2008. "The Growing Phenomenon of Private Tutoring: Does It Deepen Human Capital, Widen Inequalities or Waste Resources?" World Bank Research Observer 23(2, fall).

———. 2008. "How to Interpret the Growing Phenomenon of Private Tutoring: Human Capital Deepening, Inequality Increasing, or Waste of Resources?" Policy Research Working Paper 4530. World Bank, Washington, D.C.

———. 2008. "What Do Teachers Want and Does It Matter? Job Satisfaction and Employee Performance." World Bank, Washington, D.C. Mimeo.

Giles, John, and Elan Satriawan. 2009. "Evaluating the Impact of Community-Based Health Service Providers on Early Childhood Nutrition and on Subsequent Child Schooling: Evidence from Indonesia." World Bank, Washington, D.C. Mimeo.

Leonard, Kenneth L. 2009. "Improving Health Outcomes by Choosing Better Doctors: Evidence of Social Learning from Rural Tanzania." University of Maryland. Mimeo.

Serneels, Pieter, Magnus Lindelow, and Jose G. Montalvo. 2009. "Public Service and Selection: Unraveling the Role of Health Worker Motivation." University of East Anglia. Mimeo.

Measuring and Understanding the Impacts of Development Projects

The recent emphasis on impact evaluation in World Bank operations has prompted a surge in activity, with numerous evaluations starting up, and many more potential evaluations. At the same time, there have been substantial advances in evaluation methodology coming out of the academic literature in econometrics and statistics, notably in non-experimental evaluation methods. For example, a new econometric method directly addresses a recurrent issue emerging from impact evaluations in developing countries, namely that the impacts can vary greatly according to the context of the intervention, reflecting the various ways that local institutions and participant characteristics influence outcomes. Yet the method has not, to date, been applied in assessing any development project and the method cannot be implemented by any existing "off-the shelf" software package. There are many other examples illustrating the large current lags between evaluation practice in the World Bank and the literature in theoretical econometrics.

The World Bank's Research Department has traditionally served the role of bridging such methodological developments and operational work at the World Bank. But the high level of demand for technical assistance to staff in operations and government and the rapid advance of the more theoretical literature have put a severe strain on the department's ability to provide the kind of support that is needed. This research project is helping to expand the capacity to provide technical support to impact evaluations and any coordination needed on specific research tasks on impact evaluation.

Responsibility: Development Research Group, Human Development and Public Services Team—Elizabeth M. King (Eking@worldbank.org) and Poverty Team—Martin Ravallion.

Project Code: P102905.

Completion date: Ongoing.

Countries: Global.

Informality in Latin America and the Caribbean: Understanding the Choices of Firms and Workers and Their Implications for the Welfare State

This research project examined the phenomenon of the informal or unregulated sector along several dimensions. At the most micro level, it investigated the motivations of and constraints facing workers that lead them to informal employment, and the dynamics of informal micro firms. At the level of the state, the project studied informality as a reflection of deficiencies in government social protection and regulatory policy. At

the most general level, it analyzed the deficient social contract in which poor provision of services and limited attention to distribution led to low loyalty to the state.

At each level, the elements of exclusion from and voluntary exit from the formal system were weighed and examined for their policy implications. In some cases, labor legislation and clearly excessively rigid markets led to higher levels of informality although several countries showed large informal sectors, and little evidence of rigidities or queuing. Voluntary entry into informality (exit) suggests that workers weigh the costs and benefits of participation in formal institutions and that, in Latin America, important reforms are necessary to tilt the balance in favor of formality. For instance, the study found that often pension systems are designed such that workers with high mobility among jobs will never achieve sufficient years of contribution to draw a pension and hence see such contributions as a pure tax. More generally, where state services are of low quality and are of limited access to the poor, there is little incentive for citizens to comply with state mandates of any kind. Thus, strengthening the efficiency and responsiveness of the state is a central agenda.

The project sought to highlight the exit element as central to understanding the informality and developing sound policy. It made extensive use of specifically designed surveys of the motivations of workers for entry into the sector; dynamic labor panels, applying recent mainstream approaches to studying gross labor flows; time series of cross sections to analyze the role of the sector across the business cycle; micro firm databases to compare entry/exit and performance indicators across demographic groups and to OECD countries; and aggregate social indicators that reflect the state of the “social contract.”

Responsibility: Latin America, Office of the Chief Economist—William Maloney (Wmaloney@worldbank.org), Pablo Fajnzylber, and Guillermo Perry; Human Development—Omar Arias; Poverty Sector—Jaime Saavedra; and East Asia and Pacific, PREM Sector Department—Andrew Mason. With Leonardo Gasparini, Universidad de la Plata; and Sebastian Galiani, Washington University of St. Louis.

Project Code: P103396.

Completion date: June 30, 2007.

Countries: Latin America.

Publications

- Arias, O., and M. Khamis. 2009. “Comparative Advantage and Informal Employment.” World Bank, Washington, D.C. Mimeo.
- Arias, Omar, Fernando Landa, and Patricia Yáñez. 2007. “Movilidad Laboral e Ingresos en el Sector Formal e Informal de Bolivia.” Documento de Trabajo, UDAPE, La Paz, Bolivia.
- Arias, O., L. Lucchetti, and W. Sosa-Escudero. 2008. “Informal

Employment and Self-Rated Welfare: Measuring Compensating Differentials.” World Bank, Washington, D.C. Draft.

Arias, O., and W. Sosa-Escudero. 2009. “Labor Market Adjustments during the Business Cycle in Argentina: A Cohorts Panel VAR Approach.” World Bank, Washington, D.C. Mimeo.

Bosch, M., and William Maloney. 2008. “Gross Worker Flows in the Presence of Informal Labor Markets: The Mexican Experience 1987–2002.” World Bank, Washington, D.C.

Bosch, M., and W. Maloney. 2009. “Comparative Analysis of Labor Market Dynamics Using Markov Processes: An Application to Informality.” World Bank, Washington, D.C.

Fajnzylber, P., G. Montes, and W. Maloney. 2006. “Microenterprise Dynamics in Developing Countries: How Similar Are They to Those in the Industrialized World? Evidence from Mexico.” World Bank, Washington, D.C. <http://wber.oxfordjournals.org/cgi/content/abstract/20/3/389>

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Fiess, N., M. Fugazza, and W. Maloney. 2008. “Informal Self Employment and Macro Economic Fluctuations.” World Bank, Washington, D.C. [http://irispublic.worldbank.org/85257559006C22E9/All+Documents/85257559006C22E98525721E00733F93/\\$File/rer0inf21.pdf](http://irispublic.worldbank.org/85257559006C22E9/All+Documents/85257559006C22E98525721E00733F93/$File/rer0inf21.pdf)

Galiani, S., and F. Weinschelbaum. 2007. “Modeling Informality Formally: Households and Firms.” World Bank, Washington, D.C.

Gasparini, L., and L. Tornarolli. 2007. “Labor Informality in Latin America and the Caribbean: Patterns and Trends from Household Survey Microdata.” Working Papers 0046. CEDLAS, Universidad Nacional de La Plata.

Loayza, Norman V., and Jamele Rigolini. 2006. “Informality Trends and Cycles.” Policy Research Working Paper 4078. World Bank, Washington, D.C.

Perry, G., W. Maloney, O. Arias, P. Fajnzylber, A. Mason, and J. Saavedra. 2007. “Informality: Exit and Exclusion.” Latin America and Caribbean Region, World Bank, Washington, D.C. <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/0,,contentMDK:21345369~pagePK:146736~piPK:146830~theSitePK:258554,00.html>

Conditional Cash Transfers: Reducing Present and Future Poverty—Policy Research Report

This research project evaluated conditional cash transfer (CCT) programs that offer qualifying families cash in exchange for commitments such as taking babies to health clinics regularly or keeping children in school. The project found that these programs—where the responsibility for breaking out

of poverty is shared by the state and poor households—can reduce poverty both in the short and long terms, particularly when supported by better public services. CCTs also have had positive institutional externalities—most notably, through their emphasis on monitoring and evaluation, by which they have helped strengthen a results culture within the public sector, at least within social policies.

The project also found that demand for well-designed safety net and cash transfer programs to assist poor families is growing across the world. After early successes in South Asia and Latin America, CCT programs are now found on every continent. They operate in more than two dozen developing countries, as well as in several developed countries, including the United States. In some countries, such as Mexico and Brazil, CCTs have become the largest social assistance program, covering millions of households. CCT programs were introduced in these countries as part of larger efforts to make safety nets more effective, replace badly targeted subsidies, or integrate smaller programs.

CCTs have also grown tremendously within countries. Mexico's Progresa began in 1997 with 300,000 households; its successor Oportunidades now reaches 5 million households. Positive evaluations by researchers encouraged this scaling-up. In economic terms, the program's transfers account for about one-fifth of the consumption of the median recipient household.

This project reported on a conceptual framework that considers the economic and political rationale for CCTs, reviews more than 20 impact evaluation studies of these programs, discusses how the conceptual framework and the evidence on impacts should inform the design of CCT programs in practice, and considers where CCTs fit in the context of broader social policies.

The following key lessons were learned: CCT programs should be seen as part of a social protection system; CCT programs have reduced poverty; CCT programs have increased the use of health and education services; CCT programs cannot work in isolation.

Responsibility: Human Development Network, Chief Economist's Office—Ariel Fiszbein (Afiszbein@worldbank.org); Development Research Group, Public Service Delivery Team—Norbert Schady (nschady@worldbank.org); Development Research Group—Francisco Ferreira; Human Development Network, Social Protection Team—Margaret Grosh; Latin America Region, Poverty Sector—Pedro Olinto; and Poverty Reduction and Economic Management Network, Poverty Reduction Group—Emmanuel Skoufias. With Nial Kelleher.

Project Code: P104163.

Completion date: June 30, 2009.

Countries: Global.

Publications

Schady, Norbert, and Ariel Fiszbein. 2009. "Conditional Cash Transfers: Reducing Present and Future Poverty." World Bank, Washington, D.C.

India's Employment Challenges: Answering Old Questions with New Data

Although the Indian economy has been growing at a stellar rate of about 6 percent per year since the mid-1980s, this achievement has been clouded by the relatively slow rate of poverty reduction. Three broad factors are seen to inhibit inclusive growth: (i) poor service delivery; (ii) rising spatial inequality as some of the most populous states and areas of India lag behind in income growth and human development; and, most pertinent for this research project, (iii) the inability of the economy to generate good jobs for the rising number of working age population.

The research analyzed the 61st National Sample Survey round (covering 2004–05) to analyze some key issues. The project aimed to update the results and trends established in earlier research and analyze some issues in more depth using the new data. It analyzed the new data set on both a cross-section basis and a time-series basis extending back to the early 1980s.

The project produced a set of five papers, with the aim to update the knowledge on the performance of Indian labor markets since 2000. The latest evidence clearly shows that although employment growth picked up between 2000 and 2005, as economic growth accelerated, significant labor market issues persisted. These include: unchanged long-term job growth rates; softening of wage growth and a marked increase in wage inequality with the increase in the education premium, especially in the formal sector; the large number of working poor—about a quarter of all workers in 2000—whose absolute number increased in the middle of the decade, indicating that many workers are trapped in jobs with low earnings; initial indications that the composition of employment across sectors has significantly changed, breaking the mold of the past decades; pre-dominance of informality at the workplace with an increased share of self-employed workers; sluggish formal sector employment growth; mostly productivity-led shifts of employment shares to the service sector, especially to transport, trade, and hospitality; and the persistence of regional differences in labor market outcomes over the past two decades and possible accentuation in recent years with widening differences in wages and unemployment rates.

Responsibility: East Asia and Pacific, PREM Sector—Ahmad Ahsan (Aahsan@worldbank.org); South Asia, Economic Policy and Poverty Sector—Ashish Narain; Poverty Reduction and Economic Management Network, Poverty Reduction—Pierella Paci and Catalina Gutierrez; Europe and Central Asia, Poverty Reduction—Saumik Paul; South Asia, Social Protection—Puja Vasudeva Dutta. With Dipak Mazumdar, Munk Institute, University of Toronto and Institute for Human Development; Sandip Sarkar, Institute for Human Development, New Delhi; Marco Ranzini, University of Bergamo; and Research Assistants: Zhaoyang Hou, George Washington University; Virginia Rabano, George Washington University; and Marika Krausova, University of California.

Project Code: P104968.

Completion Date: November 30, 2009.

Countries: India.

Child Quality over Quantity

This research study focuses on the “quantity-quality tradeoff” hypothesis of child-bearing and raising, that when parents have the ability to limit fertility, the result may be not only smaller numbers of children, but also greater investment in each child’s human capital. The project is investigating whether and to what extent fertility decline and smaller family size—globally and in Vietnam—are making it possible for households to invest more in their children’s education by keeping them in school longer and increasing direct outlays on private tutoring and schooling.

The project is studying Vietnam because during its two decades of rapid economic growth, its fertility rate has fallen sharply and at the same time average educational attainment has risen rapidly. The project explores whether the coincidence of these two trends could be explained by parents making a trade-off between the quantity and quality of children, and whether government policies to control family size may therefore have accelerated progress in education.

Private tutoring is now a major component of the education sector in many developing countries, yet education policy too seldom acknowledges or makes use of it. Household income, parental education, and urban location are all associated with higher levels of tutoring in a number of countries. In some countries, having a larger number of children in the household predicts lower levels of spending on private tutoring. Private tutoring appears to improve student performance in most settings. The findings of this project show that, even taking equity concerns into account, tutoring can raise the effectiveness of the education system under certain reasonable assumptions.

Combining micro data from three sources, including a new

survey focused on private tutoring expenditures, the researchers find that families in Vietnam do indeed invest less in the education of school-age children who have larger numbers of (minor) siblings. This effect holds for several indicators of educational investment—including the child’s school enrollment, his or her attendance at private tutoring, and both the money and time spent on tutoring for that child—and is robust to instrumenting for the number of siblings using different instruments. Assuming these results are confirmed, they imply that the availability of family planning services can affect not only the number of children a family has, but also the amount invested in the education of each child and the child’s level of educational attainment.

The research findings have been presented at: Population Association of America Annual Meetings, Detroit, Michigan (April 2009); Hewlett Foundation-World Bank workshop on “Fertility, Reproductive Health, and Socioeconomic Outcomes” (April 2008); and other internal World Bank workshops.

Responsibility: Development Research Group, Human Development and Public Services Team—F. Halsey Rogers (Hrogers@worldbank.org). With Hai-Anh Dang.

Project Code: P105113.

Completion date: April 30, 2010.

Countries: Global (focus on Vietnam).

Publications

Rogers, F Halsey, and Hai-Anh Dang. 2008. “The Growing Phenomenon of Private Tutoring: Does It Deepen Human Capital, Increase Inequality, or Waste Resources?” *World Bank Research Observer* 23(2): 161–200.

———. 2009. “The Decision to Invest in Child Quality over Quantity: Has Declining Fertility Increased Household Investment in Education in Vietnam?” Presented at the Population Association of America annual meetings.

Evaluating Small and Medium Enterprise Support Programs in Latin America

This regional research project evaluated small and medium enterprise (SME) programs in four Latin American countries to gain insights into which programs perform better than others and why. The countries—Mexico, Chile, Colombia, and Peru—cover a wide range of enterprise support programs, including training, innovation and technology upgrading, quality control, market development, export promotion, and network formation. Broadly comparable panel data on enterprises were used to investigate the net impacts of these SME interventions, and to test a variety of hypotheses.

SME support programs are a common feature of industrial policy in developing countries. Few governments, however, have evaluated their SME programs rigorously, so there is little empirical basis for rational allocation of resources to the well-performing programs. The paucity of empirical evidence from rigorous impact evaluations also presents problems for multilateral and bilateral donors in deciding whether to provide lending or aid for policy interventions to promote SME development.

The project adopted a non-experimental design. For Mexico, Colombia, and Chile, it used panel data for the treatment and control groups created by linking one or more firm-level surveys with SME program participation information (which identifies the treatment and control groups) to a panel of annual industrial surveys maintained by the national statistical office of each country. For Peru, it developed comparable panel data by fielding a purposive survey of SME program beneficiaries sampled from administrative records of the responsible SME agency.

A variety of econometric techniques were used to estimate the net impacts of SME program participation on intermediate program outputs and final outcomes. These ranged from simple regression models with program participation indicators and controls for firm characteristics, to two-stage selectivity models, propensity score matching techniques, and difference-in-differences methods using pre and post-program panel data. The final outcomes common to most programs included the gross number of jobs created, higher wages, increased sales, and productivity growth.

Controlling for selectivity bias in program participation and unobserved firm heterogeneity, the analysis generally found positive impacts of program participation on intermediate outcomes, such as increased training, R&D spending, and exports, but mixed results for impacts on productivity or productivity growth.

The research results were disseminated at the following conferences and workshops: “Internal Workshop on Evaluating SME Programs,” with the participation of the Country Offices in Mexico, Peru, Colombia, and Chile (March 2009); and “Internal Workshop on Evaluating SME Programs,” with the participation of the Country Offices in Mexico, Peru, Colombia, and Chile (July 2009).

Responsibility: Latin America and the Caribbean Region, Poverty Sector—Gladys Lopez-Acevedo (Gacevedo@worldbank.org) and Development Research Group, Finance and Private Sector Development—David Mackenzie. With Hong Tan; Yevgeniya Savchenko; Miguel Jaramillo, GRADE; Juan Jose Diaz, GRADE; Monica Tinajero, Mexico; and Econometria, Colombia.

Project Code: P105213.

Completion date: September 2009.

Countries: Latin America.

Publications

- Duarte, Juan Felipe. 2009. “Evaluating Colombia’s Small and Medium Enterprise Programs Using Panel Firm Data.” *Econometria*, Colombia. Unpublished report.
- Jaramillo, Miguel. 2009. “Evaluating Peru’s Small and Medium Enterprise Programs.” GRADE, Peru. Unpublished report.
- Tan, Hong, et al. 2009. “Evaluating Chile’s Small and Medium Enterprise Programs Using Panel Firm Data.” World Bank, Washington, D.C. Mimeo.
- Tinajero, Monica, and Gladys Lopez-Acevedo. 2009. “Evaluating Mexico’s Small and Medium Enterprise Programs Using Panel Firm Data.” World Bank, Washington, D.C. Mimeo.

Financial Incentives

Since the early 1990s, several states in India have introduced financial incentive programs to discourage son preference among parents and to encourage investments in the education and health of daughters. This research project is evaluating the early effects of Apni Beti Apna Dhan (Our Daughter, Our Wealth), a program in the Indian state of Haryana that provides financial transfers to families upon the birth of girls. The project seeks to understand whether financial incentives can effectively improve the wellbeing of girls in settings where parents appear to discriminate against daughters.

The Apni Beti Apna Dhan program is different from most well-known conditional cash transfer programs (in both the type of conditionality—daughter’s birth and marriage delay—and the long, 18-year period over which transfers are made). The program design raises new questions about the efficacy of such incentives in a novel design that merits further empirical study. The project’s impact evaluation of this program will address the broader economic question of how parents adjust investments in children’s human capital when their fertility choices change.

The analysis is based on data from the National Family Health Survey. The analysis uses a standard difference-in-difference methodology—controlling for common (additive) time trends and pre-program differences between the two groups—to measure the impact of the Apni Beti Apna Dhan program on mothers (sex ratio among live children, fertility preferences) and children (mother’s use of antenatal care, survival, nutritional status, immunization, schooling).

The findings show that parents have increased their

investment in daughters' human capital as a result of the program. Families made greater post-natal health investments in eligible girls, with some mixed evidence on improved health status in the short and medium terms. Further evidence suggests that the early cohort of eligible school-age girls was not significantly more likely to attend school; however, conditional on first attending any school, they may be more likely to continue their education.

The research findings have been presented conferences and seminars at the World Bank; RAND; and the International Center on Research on Women, Washington, D.C.

Responsibility: Poverty Reduction and Economic Management Network, Gender and Development—Nistha Sinha (nsinha@worldbank.org). With Joanne Yoong, RAND Corporation; and Rekha Varghese, University of Chicago.

Project Code: P105338.

Completion date: December 2009.

Countries: India.

Publications

Sinha, Nistha, and Joanne Yoong. 2009. "Long-Term Financial Incentives and Investment In Daughters: Evidence From Conditional Cash Transfers In North India." Policy Research Working Paper 4860. World Bank, Washington, D.C.

Small Enterprise Performance and the Investment Climate: Evidence from Ethiopian Rural and Urban Surveys

The purpose of this research project was to analyze the determinants of productivity, employment growth, and enterprise turnover among non-farm enterprises in Ethiopia. The empirical analysis used data from recent rural and urban investment climate surveys.

The research provided insights into the role of supply and demand-side constraints for small informal firms. A unique contribution was that it highlighted the role of small towns for enterprise development.

The research results were presented at Oxford University: Center for the Study of African Economies; conferences on economic development in Africa; IZA, Bonn; the World Bank Conference on Employment and Development; and a workshop with the Ministry of Economic Development and Finance and the Ministry of Agriculture and Rural Development in Ethiopia. The data for the Ethiopian Rural Investment Climate Survey has been stored in the African Household Survey database: <http://ddp.worldbank.org/microdata/index.jsp>.

Responsibility: Africa, Agricultural and Rural—Josef Loening (jloening@worldbank.org) and Poverty Reduction and Economic

Management Network, Poverty Reduction Group—Bob Rijkers. With Mans Söderbom, Gothenburg University.

Project Code: P105609.

Completion date: June 2008.

Countries: Ethiopia.

Publications

Loening, J., B. Rijkers, and M. Söderbom. 2008. "Nonfarm Microenterprise Performance and the Investment Climate: Evidence from Rural Ethiopia." Policy Research Working Paper 4577. World Bank, Washington, D.C. <http://www-wds.worldbank.org/>

Rijkers, B., M. Söderbom, and J. Loening. 2009. "Mind the Gap? A Rural-Urban Comparison of Manufacturing Firms." Policy Research Working Paper 4946. World Bank, Washington, D.C. <http://www-wds.worldbank.org/>

Söderbom, M., and B. Rijkers. 2009. "Market Integration and Structural Transformation in a Poor Rural Economy." Policy Research Working Paper 4856. World Bank, Washington, D.C. <http://www-wds.worldbank.org/>

The Determinants of Learning and the Impact of Private Tutoring on Educational Outcomes in Vietnam

Does the availability of tutoring hurt children who do not participate in tutoring? Do teachers either teach less well in the normal school day in order to generate demand for their tutoring services, or deliberately lower the grades of non-participating students? This research project estimated the determinants of learning in Vietnam, focusing on the impact of private tutoring on student learning.

The research combined general household survey information with additional data on learning achievement from a sub-sample of the full household survey sample.

Simple regressions of the determinants of test scores revealed many expected results, such as strong impacts of years in school (at least at the primary and lower secondary level) and of parent's education. But there were also some surprises. Years in school at the upper secondary level had little effect on test scores. It was also interesting that household income (per capita expenditure) levels and even spending on education showed no significant effects. There was evidence that taking extra classes increased students' skills, and these impacts were quite strong when compared with the impacts of years in school.

The University of Minnesota provided funding. The Vietnam Government Statistics Office undertook to make data available free of charge on www.gso.gov.vn.

Responsibility: East Asia and Pacific, Education Sector—Jeffrey

Waite (Jwaite@worldbank.org) and Development Research Group—Hai-Anh Dang. With Paul Glewwe, University of Minnesota.

Project Code: P105814.

Completion date: August 1, 2008.

Countries: Vietnam.

Publications

Dang, Hai-Anh, and Paul Glewwe. 2008. "Preliminary Report on Student Achievement and Private Tutoring in Vietnam." World Bank, Washington, D.C. Unpublished report.

Marginal and Average Returns to Schooling across Geographical Regions

The objective of this research project was to use recent data to understand the poverty and inequality implications of the current pattern of returns to education.

The study had two aims. First, it examined the pattern of economic returns to different levels of education using recent data in order to understand the contemporary poverty-reducing potential of different levels of education. Second, it examined heterogeneity in returns to education to ask whether some individuals benefit more from education than others and why, and the inequality implications of that. The focus was on low-income countries in Sub-Saharan Africa and South Asia; the analysis also included a few middle-income countries in Latin America and East Asia.

It is tacitly held (including in the Millennium Development Goals) that basic education reduces poverty. This idea is supported by the notion of diminishing returns to education and evidence that labor market returns to education are highest at the primary level of education. However, returns to education can be heterogeneous across people and this has implications for the inequality-reducing role of education.

Instead of the usual estimate of earnings functions for the average individual, this research estimated returns across the earnings distribution. It demonstrated the importance of moving beyond averages. In particular, the estimation of returns to education entails much more than the fact that, on average, one more year of education results in a certain percent increase in earnings. The quantile approach has a number of useful features, in addition to allowing the full characterization of the conditional distribution of the dependent variable.

The project studied the following countries: Cambodia, Chile, Ghana, India, Indonesia, Kenya, Mexico, Pakistan, South Africa, and Tanzania.

One of the findings was that there are large premiums for higher education qualifications. Another finding was that there

are increasing returns going from the lower to the higher end of the earnings distribution.

The research results were disseminated at a labor markets workshop in Washington, D.C., attended by 60 World Bank staff and academic researchers (May 2008); and a seminar on returns to schooling, held in Mexico City, where 20 researchers and policymakers were present (June 2008).

Responsibility: Human Development Network, Education Team—Harry Anthony Patrinos (Hpatrinos@worldbank.org), Tazeen Fasih, and Vicente Garcia Moreno. With Geeta Kingdon, University of London; Chris Sakellariou, Nanyang Technological University; and Mans Soderbom, University of Goteborg.

Project Code: P105898.

Completion date: June 30, 2008.

Countries: Argentina, Bolivia, Brazil, Cambodia, Chile, China, Colombia, Ghana, Guatemala, India, Indonesia, Kenya, Mexico, Mongolia, Pakistan, Philippines, Singapore, South Africa, Tanzania, Thailand, Venezuela, Vietnam.

Publications

Patrinos, H., G. Kingdon, C. Sakellariou, M. Soderbom, and T. Fasih. 2008. "Heterogeneous Returns in the Labor Market." Human Development Network, World Bank, Washington, D.C. Processed.

Reaching the Poor with Quality Education: What Works?

School systems in developing countries frequently fail to deliver quality primary education to poor children. More than 100 million primary age children either never enter or fail to complete primary school, and studies show that even children who do complete may be functionally illiterate and innumerate.

Drawing on new evidence from rigorous impact evaluations across many developing countries, this research program examines how strategies to improve the accountability of school systems to poor communities can affect school quality and children's enrollment, completion, and learning levels. It critically evaluates the recent experience with accountability-promoting strategies vis-à-vis other strategies for promoting education for all.

The 2004 World Development Report: Making Services Work for Poor People argued that the underlying cause of failures in basic service delivery in developing countries is weak accountability relationships between the state, the service providers, and the citizens and clients they serve. In the education sector, efforts in both developed and developing countries to strengthen these accountability relationships through system

reforms have been numerous. However, the designs have varied considerably and there has been very little rigorous evaluation of impact.

This research program aims to analyze global experience with three of the most common types of accountability-promoting reforms in basic education: school based management; information provision to empower school stakeholders; and teacher contracting and incentive reforms. In particular, the goal is to assess when such accountability-enhancing interventions are likely to result in improved service delivery, how much impact improved service delivery can be expected to have on student learning and other key education outcomes, and which design features of these interventions are critical for success.

The main goal of this program is to foster new comparable impact evaluation work on interventions that aim to improve accountability in the education sector. Importantly, the program will compile new work along with existing work with the aim of drawing policy lessons. The analysis will rely on findings from rigorously carried out impact evaluations (that is, evaluations in which a counterfactual is convincingly established). It will use an analytical framework based on that derived in the 2004 World Development Report to assess what works, why, and how it can be replicated and scaled up.

Most of the evaluations on which this work will be based are ongoing. Preliminary evidence suggests that increased accountability can improve outcomes—but that the details of the interventions and the environment in which they are implemented matter for success.

Responsibility: Development Research Group, Human Development and Public Services Team—Deon Filmer (Dfilmer@worldbank.org); Latin America and Caribbean, Education Sector—Barbara Bruns; and Human Development Network, Education Team—Harry Anthony Patrinos. With Katherine Conn and Margaret Koziol.

Project Code: P105900.

Completion date: December 30, 2010.

Countries: Global.

Labor Regulation and Employment in India's Retail Stores

The retail sector is highly neglected in research, although it is one of the largest sectors in a number of developing and developed countries. This research project looked at labor laws in India's retail sector using Enterprise Survey data, and estimated the impact of labor laws on employment in Indian retailing. The main data source was the survey of retail stores in India conducted in 2005 by the Enterprise Surveys.

The findings showed that there is a large and statistically significant negative effect of more stringent labor laws on employment in Indian retailing.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Mohammad Amin (mamin@worldbank.org) and Simeon Djankov.

Project Code: P105928.

Completion date: August 30, 2007.

Countries: India.

Publications

Amin, Mohammad. 2009. "Labor Regulation and Employment in India's Retail Stores." *Journal of Comparative Economics* 37(1, March): 47–61.

Impact Evaluation of a School-Based Management Program in Mexico

The objective of this research project is twofold. First, it will comprehensively assess the medium-term impacts of school-based management intervention on the quality of education outcomes. Second, it will identify the mechanisms through which a school-based management intervention like the one implemented in Colima, Mexico—the national SBM program, Programa Escuelas de Calidad (Quality Schools Program, or PEC) affect student learning, if at all.

The project will take advantage of standardized test score information that is collected for all students enrolled in the last three years of primary school to assess the impacts of the school-based management intervention on student learning, among other education quality outcomes. It will follow a sample of 100 experimental primary schools in the state of Colima where the allocation of benefits has been randomized for a period of three consecutive school years, i.e., from 2006–07 to 2008–09. Additional data on processes will be collected.

The methodology will employ a controlled randomized experiment, whereby eligible primary schools are randomly assigned to treatment and control groups. This procedure guarantees balance between treatment and control groups, in which the average characteristics of each group are similar, and subsequent differences in outcomes between treatments and controls may be attributed as causal effects of the intervention.

The project will look at the impact of PEC on schools over time at three different levels. First, it will estimate the impact of PEC on process outcomes, that is, parents' and other school community members' participation in school activities and teacher effort. Second, it will estimate the impact of PEC on intermediate school quality indicators—grade failure, grade repetition, and school dropout. Third, it will focus on learning

outcomes as measured by test scores in math and reading. The analysis will test for differential impacts by grade, gender, school type, and other sources of heterogeneity related to household and parental background (maternal education, economic status, etc).

Preliminary analysis shows progress in reducing failure and dropout rates in both treatment and control schools, with slightly better performance in treatment schools. No significant changes in test scores have been seen thus far. This is in line with the expectation that intermediate outcomes—such as failure and dropout rates—would decrease before there would be progress on test scores.

Responsibility: Human Development Network, Education Team—Harry Anthony Patrinos (Hpatrinos@worldbank.org). With Paul Gertler; Marta Rubio-Codina (Spain); Vicente Garcia (Mexico); and Stefan Metzger (Mexico).

Project Code: P107105.

Completion date: January 29, 2010.

Countries: Mexico.

Unemployment and Worker-Firm Matching: Comparing Transition and Advanced Labor Markets

Across the developing world, recent interest in labor market performance has focused on issues related to unemployment, and understanding which factors are behind persistent unemployment. This study aimed to understand the phenomenon of “jobless growth.”

The research project tested three hypotheses about the causes of unemployment in the Central-Eastern European transition economies and in a benchmark market economy (the Western part of Germany). The first hypothesis was that unemployment was caused by inefficient matching. The second hypothesis was that unemployment was caused by low demand. The third hypothesis was that restructuring was at work.

The analysis used an up-to-date econometric methodology and superior data. In particular, the analysis did the following: a) control for the endogeneity of explanatory variables, b) account for the presence of a spurious scale effect introduced by the varying size across units of observation (districts), and c) use long panels of comparable monthly data from all districts in the countries that were analyzed. The study employed both static and dynamic specifications and estimated on contiguous panels to allow for dynamic adjustment and regime changes.

The study made use of an extensive panel of district level data on vacancies, unemployment, and other characteristics for 74 Czech, 38(79) Slovak, 20 Hungarian, 49(16) Polish, 34 East German, and 140 West German districts. The data for

all countries except Hungary cover the period from January 1991 to July 2005. The work then made use of dynamic panel data techniques to identify different hypotheses concerning the causes of unemployment in Eastern European transition economies.

The study found differences across Eastern Europe in the causes of unemployment. In those countries in which unemployment is caused by inefficient matching (Eastern districts of Germany and Poland), policy should focus on labor market institutions and measures to stimulate labor mobility and create appropriate skills. For those countries in which high unemployment is caused by either low demand for labor or incomplete restructuring, the policy recommendation is macroeconomic policy to stimulate labor demand and completion of the restructuring process.

Responsibility: Development Research Group, Human Development and Public Services Team—John Giles (jgiles@worldbank.org). With Jan Svejnar, University of Michigan; and Daniel Munich, CERGE.

Project Code: P107925.

Completion date: June 30, 2008.

Countries: Czech Republic, Germany, Hungary, Poland, Slovakia.

Publications

Münich, Daniel, and Jan Svejnar. 2009. “Unemployment and Worker-Firm Matching: Theory and Evidence from East and West Europe.” Policy Research Working Paper 4810. World Bank, Washington, D.C.

Litigation and Settlement: New Evidence from Labor Courts in Mexico

Using a newly assembled data set on procedures filed in Mexican labor tribunals, this research project studied the determinants of final awards to workers.

The findings showed that, on average, workers recovered less than 30 percent of their claims. The strongest result was that workers received higher percentages of their claims in settlements than in trial judgments. The findings also showed that cases with multiple claimants against a single firm were less likely to be settled. This partially explains why workers involved in these procedures received lower percentages of their claims. Finally, the project found evidence that a worker who exaggerated his or her claim was less likely to settle.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—David Kaplan (dkaplan@worldbank.org). With Joyce Sadka, the Instituto Tecnológico Autónomo de México; and Jorge Luis Silva-Mendez, Stanford Law School.

Project Code: P108897.

Completion date: May 8, 2008.

Countries: Mexico.

Publications

Kaplan, David S., Joyce Sadka, and Jorge Luis Silva-Mendez. 2008. "Litigation and Settlement: New Evidence from Labor Courts in Mexico." *Journal of Empirical Legal Studies* 5(2): 309–50.

Conditional Cash Transfers, Schooling, and HIV/AIDS

Through a randomized evaluation of a conditional cash transfer (CCT) program, this project aims to improve CCT design in Sub-Saharan Africa. A randomized intervention that provides randomly varied amounts of cash transfers to young individuals and their guardians is the perfect setting to examine the possible existence of causal relationships. Given the high prevalence of HIV infection among young women in Sub-Saharan Africa, the policy importance of identifying any potentially large impacts of CCT for schooling interventions on HIV prevention cannot be overstated.

The analytical approach is an experimental evaluation design. The researchers are collecting primary data (baseline and multiple rounds of follow-up) on a sample of nearly 4,000 individuals in approximately 200 communities in Malawi.

After one year, the impact evaluation has found large impacts for young women on school enrollment and attendance, as well as reductions in early marriage, teenage pregnancy, and risky sexual behavior. In addition, there are a number of interesting results on CCT design elements. If the one-year impacts persist, they indicate that a bare-bones CCT program with little monitoring, low monthly transfers, and at least some of the money being directly transferred to the young women would be the most cost-effective way to increase enrollment in this population.

The project will provide lessons for the design of CCT projects in Sub-Saharan Africa by informing policymakers of crucial design parameters, such as conditionality, transfer size, transfer recipient, targeting, expected impact sizes on a variety of outcomes, and cost of implementation.

Funding has been provided by the Global Development Network and by NBER.

The research has been disseminated by the following: workshops—GDN (York); conferences—PACDEV (San Francisco), AMERB (Washington, D.C.), and CSAE (Oxford); seminars—World Bank, UCLA, UC San Diego, Free University of Amsterdam, and University of Namur.

Responsibility: Development Research Group, Poverty and Inequality Team—Berk Ozler (Bozler@worldbank.org). With Sarah Baird, George Washington University; Jacobus

de Hoop, Free University of Amsterdam; Craig McIntosh, Josefina Durazo, Nicola Hedge, Rhiannon Kucharski, Tabitha Zimmerman, Michael Oras, and Richard Garfein, University of California San Diego; and Angeli Kirk, University of Maryland. With Wadonda Consult, Malawi; Invest in Knowledge Initiative, Malawi; Biokit USA, USA; and Inverness Medical Innovations, South Africa.

Project Code: P109215.

Completion date: December 2010.

Countries: Malawi.

Publications

Baird, Sarah, Chirwa, Craig McIntosh, and Berk Ozler. 2009. "The Short-Term Impacts of a CCT Program for Schooling on the Sexual Behavior of Young Women." World Bank, Washington, D.C. Unpublished manuscript.

Baird, Sarah, Craig McIntosh, and Berk Ozler. 2009. "Designing Cost-Effective Conditional Cash Transfer Programs in Sub-Saharan Africa." World Bank, Washington, D.C. Unpublished manuscript.

Economic Restructuring, Shocks to Parent Employment and the Economic Enrollment Decision: Evidence from Urban China

The initial objectives of this project were to examine the effects of shocks to China's labor market during economic restructuring on the ability of high school graduates to enroll in college. The objectives of the project were broadened in two ways. First, the project examined evidence that the high returns to education in China's urban labor market are driven by the signaling effect of the college entrance examination. Second, it examined how the ability to migrate to urban areas affects the decision of rural youth and their families to make costly investments in high school education.

The project looked at the effects of a shock to parental earnings in an environment in which the costs of tertiary education were rising steeply and the families of some urban children suffered sharp drops in earnings. The research also documented high returns to education in urban China, arguing that they reflect a shortage of skilled labor. The work that concentrated on urban areas used the China Urban Labor Survey (2001) and information from China's education yearbooks. The work that examined the high school investment decision used a panel dataset collected by the Research Center for Rural Economy at China's Ministry of Agriculture.

The findings indicate that if a family experienced an unexpected layoff in a child's senior year of high school, there was a 40 percent reduction in the probability of enrolling in

post-secondary education. There was evidence consistent with unobserved ability bias in the OLS estimates of the returns to schooling. This suggests that the supposed shortage in skills that policymakers associate with high returns to college education may be the signaling effect of the college entrance examination. The research emphasized that the ability to migrate may reduce incentives to invest in costly education if the jobs in which migrants find employment do not require education beyond junior high school. This leads to the conclusion that if it is important to raise the education level of the migrant population, then lowering the cost of rural high school education may make sense.

The research results were disseminated at: the Social Protection and Labor Sector Brown Bag Lunch, World Bank, Washington, D.C. (February 2008); Development Economics Seminar, Yale University (April 2008); Migration and Development Brown Bag Lunch, World Bank, Washington, D.C. (April 2008); Development and Trade Seminar, Maxwell School of Public Policy, Syracuse University (April 2008); Association for Public Policy Analysis and Management Annual Meetings, Los Angeles (November 2008); Northeast Universities Development Consortium Conference, Boston University (November 2008); 5th Annual Australasian Development Conference, University of Melbourne, Melbourne, Australia (June 2009); and Wageningen University, Department of Agricultural Economics (June 2009).

Responsibility: Development Research Group, Human Development and Public Services Team—John Giles (jgiles@worldbank.org). With Alan de Brauw, International Food Policy Research Institute; and Albert Park, Oxford University.

Project Code: P110344.

Completion date: August 31, 2009.

Countries: China.

Publications

de Brauw, Alan, and John Giles. 2008. "Migrant Opportunity and the Educational Attainment of Youth in Rural China." Policy Research Working Paper 4526. World Bank, Washington, D.C.

———. 2009. "Identifying the Impacts of Migration on Educational Attainment in Rural China." Research Department, World Bank, Washington, D.C. Mimeo.

Du, Yang, and John Giles. 2009. "Economic Restructuring, Shocks to Parent Employment and the College Enrollment Decision: Evidence from Urban China." Research Department, World Bank, Washington, D.C. Mimeo.

Giles, John, Albert Park, and Meiyang Wang. 2008. "The Great Proletarian Cultural Revolution, Disruptions to Education, and Returns to Schooling in Urban China." Policy Research Working Paper 4729. World Bank, Washington, D.C.

Openness and Labor Demand in East Asia

This research project documented in a systematic and comparable manner the evolution of skill/industry premiums and the composition of the labor force across East Asian economies. The objective was to identify trends in the demand for skills and emerging skill gaps, and to analyze in detail the relationship between openness and changes in labor demand.

The project sought to understand the extent to which skill demand has increased, what has driven the changes, which sectors have become more skill intensive, and which types of workers remain vulnerable. Industry and wage skill premiums were estimated by regressing workers' wages on workers' characteristics; on whether, based on education, the worker was skilled or unskilled; and on a set of industry (and location) indicators. Following the same approach, skill and industry wages were pooled over time and countries and regressed on trade-related industry characteristics. To estimate determinants of labor force composition, a "relative demand for skilled labor" function was used. The analysis used data from all available household, labor force, and firm surveys (ICAs and firm census).

Among the main results and findings of the project, there was evidence of increasing proportions of skilled/educated workers over the long run across the region, and evidence of generally increasing demand for skills and emerging skill gaps. The service sector has become the most important driver of demand for skills for all countries (except Thailand). Other important determinants of demand include foreign capital and technological innovation; the effects of trade expansion are ambiguous. Skill gaps (quantity and/or quality) are particularly strong in the service sector and technology intensive and globally integrated manufacturing sector. Countries can be broadly categorized into three groups in relation to trends and patterns of demand for skills (Indonesia, Philippines, and Thailand; Vietnam and China; and Cambodia and Mongolia). Finally, there was evidence of rising industry premiums—and related possible labor market segmentation—in three countries of the region (Philippines, Thailand, and Cambodia).

The research results were disseminated at the Chief Economist Skills for Employability Workshop, World Bank, Washington, D.C. (June 2009); the Philippines Skills for Growth Workshop, World Bank/Philippines (May 2009); and the Indonesia Education Sector Assessment Workshop, Government of Indonesia/World Bank (March 2009).

Responsibility: East Asia and Pacific, Education Sector—Emanuela di Gropello (edigropello@worldbank.org) and Aurelien Kruse; Human Development Network, Social Protection Team—Rita Almeida; and Development Research Group, Trade

and International Integration—Ana Fernandes. With Chris Sakellariou, Nanyang Technological University of Singapore; Ramya Sundaram; and Hong Tan.

Project Code: P110368.

Completion date: June 2009.

Countries: Cambodia, China, Indonesia, Mongolia, Philippines, Thailand, Vietnam.

Publications

Almeida, Rita. 2009. "Does the Workforce in East Asia have the Right Skills? Evidence from Firm Level Surveys." World Bank, Washington, D.C. Mimeo.

———. 2009. "Innovation and Openness in East Asia: Have They Increased Demand for Educated Workers?" World Bank, Washington, D.C. Mimeo.

Fernandes, Ana, and Ramya Sundaram. 2009. "Skill Demand and Openness in Indonesia." World Bank, Washington, D.C. Mimeo.

Sakellariou, Chris. 2009. "Openness and Skill Wage Premiums in East Asia." World Bank, Washington, D.C. Mimeo.

Sakellariou, Chris, and Emanuela di Gropello. 2009. "Industry and Skill Premiums in East Asia." World Bank, Washington, D.C. Mimeo.

Impact Evaluation of a Parental Empowerment Program in Mexico

The objective of this research project is to evaluate school-based management programs and their variants in Mexico, and to propose a strategy for measuring the impact of the rural school-based management program in Mexico.

The parental participation program, known as Apoyo a la Gestión Escolar (AGEs), or Support to School Management, will be altered to provide additional resources to participating schools (doubling the usual amount that parent associations receive). The schools will be assessed in terms of intermediate educational outcomes, to determine the mechanisms through which enhanced AGEs schools affect student learning, if at all.

The analysis will take advantage of the fact that standardized national test score information is collected for all students enrolled in the last three years of primary school. In particular, the project will follow a sample of 250 experimental primary schools in four Mexican states where the allocation of the extra benefits has been randomized for a period of three consecutive school years, from 2007–08 to 2009–10.

The methodology employs a controlled randomized experiment, whereby eligible primary schools in the most disadvantaged communities of Mexico are assigned to treatment and control groups. The AGEs project will be implemented in 125 treatment schools during the 2007–08 school year, and will

double the amount parent associations receive from an average of \$600 to \$1200 per school year. Half of the money will be financed by the Ministry of Education through its usual support to these schools. The other half will be provided by the private sector as a public-private partnership. The private sector partners include Cinopolis, Deutsche Bank Mexico, Fundación Televisa, Lazos, and Western Union. The Mexican Ministry of Education will be implementing the project.

The project will analyze the impacts of the program using differences-in-differences estimation using multivariate regression to condition on baseline socio-demographic and economic characteristics. It will test for differential impacts by gender, being indigenous, and parental background (for example, maternal education and economic status). It will also estimate the impact of AGEs on intermediate outcomes—teacher effort, repetition, dropout, and failure. And it will analyze learning outcomes, expecting to see changes only after 36 months of exposure to the program.

Responsibility: Human Development Network, Education Team—Harry Anthony Patrinos (Hpatrinos@worldbank.org). With Paul Gertler, Eduardo Rodriguez-Oreggia, Stefan Metzger, Angelica Rivera, Vicente Garcia, and Marta Rubio-Codina.

Project Code: P113327.

Completion date: August 30, 2011.

Countries: Mexico.

Increasing Access to Education in Mozambique: Analysis of Barriers and Effects of Recent Reforms

The general objective of this study is to analyze the barriers to school enrollment and retention. It will examine the effects that fees and other schooling costs paid at the household level have on the following: (a) household decisions with respect to child enrollment and dropout, repetition, and completion in primary and secondary school education; (b) school-level decisions on budget and expenditures; and (c) perceptions of school quality and educational outcomes at the school and community level. Particular attention will be paid to the impact on the poorest and most vulnerable children, including girls and orphans.

The primary education study will aim to determine the impact of recent reforms—such as the abolition of primary school fees, changes in curriculum, free book distribution, and semi-automatic promotion—on achieving education goals. These goals are to increase the net schooling rate, increase the enrollment of girls in first grade, reduce dropouts, reduce repetition, increase the graduation rate; and reduce student-teacher ratios.

The secondary education study will highlight measures that policymakers could use to support the achievement of the PEEC secondary education goals, especially with respect to education fees.

The analysis will rely on econometric estimation methods, in conjunction with qualitative data, to examine whether the education policy measures have had a measurable impact on enrollment, and possibly on other measures of schooling outcomes, and whether access by poor households has increased relative to other wealth groups. It will also measure the impact of injecting cash into the poorest households through conditional cash transfer on the behavior of parents. The econometric analysis will be complemented by descriptive analysis to help illustrate and substantiate the relationships.

The data sources are the IAF 2002/03 and the quantitative and qualitative panel data collected as part of the project, as well as school-level data provided by the Ministry of Education.

So far, only the qualitative study has produced findings; the quantitative data analysis is still underway. According to the qualitative findings, the removal of the barrier of the obligatory matriculation fee has stimulated a significant increase in enrollment since 2005. The network of schools, however, was not totally prepared to absorb so many new students due to lack of classrooms and teachers and overcrowding in many schools. There are fewer barriers to access due to lack of financial resources by households compared with 2004. However, two key demand-side constraints continue to affect access: the costs of uniforms and school materials. In sum, parents have fewer expenses and fewer barriers than in 2004; but for very poor parents, the sum of the direct costs is still a factor when they have more than two children of school age.

Responsibility: Africa, PREM 1—Louise Fox (Lfox@worldbank.org); Africa, Human Development 1—Ana Ruth Menezes and Xiaoyan Liang; Development Research Group—Kathleen Beegle and Diane Steele; Human Development Network, Education Sector—Elizabeth King; Social Protection—Phillippe Leite; and Poverty Reduction and Economic Management Network, Poverty Reduction—Kenneth Simler. With Rui M. Benfica; Melissa Sekkel Gaal; Manolo Sanchez; Hakon Nordang; Joel Muzima; David Megill, U.S. Census Bureau; KPMG (Mozambican consulting firm); INDE (Mozambican, National Institute for the Development of Education, Ministry of Education, Mozambique); and Virgulino Nhate, Ministry of Planning and Development of Mozambique.

Project Code: P113706.

Completion date: December 2009.

Countries: Mozambique.

Publications

Sanchez, Manolo, and Hakon Nordang. 2007. "PSIA II- Follow-up Study of Primary Education and Baseline Study of Secondary Education, Mozambique." World Bank, Washington, D.C. Unpublished report of the PSIA qualitative study.

Infrastructure and Urban Development

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 assessed the impact of rural roads on living standards in Vietnam—where the World Bank financed and helped implement a large-scale rural road rehabilitation project.

The analysis was based on panel data—a baseline survey of a random sample of 100 project communes and 100 non-project communes in 1997, followed by subsequent rounds of data collection in 1999, 2001, and 2003. In each sampled commune, a questionnaire was also administered to 15 randomly sampled households. 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 was also constructed.

The study first investigated the extent to which project funding was used as intended, relying on impact evaluation methods and the local level data. The analysis estimated the impact of the project on the kilometers of roads actually rehabilitated and built. It tested whether the evidence supported the standard economic argument that there would be little or no impact on rural roads rehabilitated, given fungibility. Although impacts on rehabilitated road kilometers were less than intended, more roads were built in project areas. The results suggested that there was fungibility within the sector, but that aid largely stuck to that sector.

Next, the project assessed the impacts of rural road rehabilitation on market development at the commune level and examined the variance of those impacts and the geographic, community, and household factors that explain it. Double difference and matching methods were used to address sources of selection bias in identifying impacts. The results point to significant average impacts on the development of local markets. They also uncover evidence of considerable impact heterogeneity, with a tendency for poorer communes to have greater impacts due to lower levels of initial market development. Yet, poor areas are also saddled with other attributes that reduce those impacts. These findings have important policy implications.

The project results were presented at the Northeast Universities Development Consortium Conference in Montreal (October 2004); in a Workshop at the University of

Namur, Belgium (November 2006); and in various sessions on impact evaluation and rural roads at the World Bank. Seminars have been held at TRB 2008 Annual Meeting Workshop (January 2008); the Ministry of Planning and Development in Maputo, Mozambique (January 2008); the Paris School of Economic Development Seminar (March 2009); IFPRI (June 2008); and the NONIE 3IE Conference on Impact Evaluation, Cairo (March 2009).

Responsibility: Development Research Group, Public Services Team—Dominique van de Walle (dvandewalle@worldbank.org). With Ren Mu and Vu Tuan Anh, Economics Institute, Hanoi. The Canadian International Development Agency (CIDA) Consultants Trust Fund and the U.K. Department for International Development (DFID) Poverty Trust Fund contributed funding for the research.

Project Code: P059436.

Completion date: December 2009.

Countries: Vietnam.

Publications

- van de Walle, Dominique. 2008. "Impact Evaluation of Rural Road Projects." Doing Impact Evaluation Working Papers No. 12, PREM, World Bank, Washington, D.C.
- . 2009. "Impact Evaluation of Rural Road Projects." *Journal of Development Effectiveness* 1(1): 15–36.
- van de Walle, Dominique, and Ren Mu. 2007a. "Fungibility and the Flypaper Effect of Project Aid: Micro-evidence for Vietnam." Policy Research Working Paper 4133. World Bank, Washington, D.C.
- . 2007b. "Fungibility and the Flypaper Effect of Project Aid: Micro-evidence for Vietnam." *Journal of Development Economics* 84(2): 667–84.
- . 2007c. "Rural Roads and Local Market Development in Vietnam." Policy Research Working Paper 4340. Development Research Group, World Bank, Washington, D.C.

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

This research project is studying the relationships between infrastructure, geographic location, and economic development and welfare 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 has affected household

participation in labor and output markets and their allocation of land, the research is using a modified von Thunen model of specialization. The analysis uses 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 combined household data from the 1995–96 Nepal Living Standards Survey with geographic information system data on travel time to major cities. It also used urban population data from the 1991 population census. Estimation based on a cross-section of 3,300 households revealed a strong spatial division of labor. Non-farm 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.

Isolation tends to reduce a household's satisfaction with the adequacy of consumption and income. Moreover, the relative income effect is more intense in relatively isolated villages. The policy simulations showed that a reduction in isolation (due to investment in infrastructure) results in a large gain in well-being, with households located closer to markets benefiting most. 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, the evidence shows that urban women specialize more than rural women.

The Danish, Japanese, and Swedish Consultant Trust Funds contributed funding for the research.

Responsibility: Development Research Group, Rural Development Team—Forhad Shilpi (fshilpi@worldbank.org). With Marcel Fafchamps, Oxford University; and Migiwa Tanaka, Hong Kong University of Science and Technology.

Project Code: P063054.

Completion date: December 2009.

Countries: Nepal.

Publications

Emran, M.S., and Forhad Shilpi. 2006. "The Extent of the Market and Stages of Agricultural Specialization." Development Research Group, World Bank, Washington, D.C.

Fafchamps, Marcel, and Forhad Shilpi. 2008. "Subjective Welfare, Isolation, and Relative Consumption." *Journal of Development Economics* 86(1, April): 43–60.

———. 2009. "Isolation and Subjective Welfare: Evidence from

South Asia." *Economic Development and Cultural Change* 57(4): 641–83.

Information Technology and Development

The World Bank's senior management has identified narrowing the information and communication technology (ICT) divide as a critical focus for action during the coming decade. Several projects have extended ICT to rural communities through public access tele-centers, for example in Costa Rica, Egypt, and South Africa. National governments and other international organizations have also begun rural tele-center projects. Some claim that ICT will drastically improve the lot of the rural poor; others argue that a change in one input price will not have a significant impact or, perversely, that it may encourage more rapid rural-urban migration. The debate is propelled by a mass of preconceived notions that overwhelm the trickle of anecdotal evidence. Without systematic information, it is impossible to strengthen the policy dialogue with better estimates of impacts, benefits, and costs.

This research project investigated the spread and effects of mobile telephony in Sub-Saharan Africa. The analysis employed cutting-edge spatial econometric estimation techniques as opposed to anecdotal evidence and descriptions. The analysis also employed a probability model that relates the likelihood of cell-tower location within a grid square to potential market size (proximate population), installation and maintenance cost factors related to accessibility (elevation, slope, distance from a main road, and distance from the nearest large city), and national competition policy.

As expected, the analysis indicates strong, significant results for the supply-demand variables, and very strong results for the competition policy index. The probability of a GSM cell tower location in a grid square increases significantly with population and the degree of competition, and decreases significantly with higher levels of installation and maintenance cost factors (higher elevation, steep slope, longer distance from the main road, and longer travel time to the nearest major city). To assess the potential implications of pro-competitive policy on improving connectivity, a simulation was conducted, based on the econometric results. The results provide striking evidence of the power of policy reform to improve public access to telecommunications in Sub-Saharan Africa. Feasible reforms may include enactment of formal regulations, privatization of incumbent operators, introduction of competition with attention to licensing, direct access promotion, interconnection, allocation of scarce resources (e.g., numbering and spectrum), and pricing.

The results are expected to contribute valuable insights to

the ongoing debate about the effects of policy reform on ICT use and the welfare of rural households.

The research was conducted in close collaboration with the Africa regional vice presidency of the World Bank. AFTSN is preparing a flagship report on ICT in Sub-Saharan Africa, and has expressed keen interest in the findings of this research.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—David Wheeler (former World Bank staff), Susmita Dasgupta (sdasgupta@worldbank.org), and Piet Buys. With Timothy Thomas, Craig Meisner, Mainul Huq, and Kiran Pandey.

Project Code: P070367.

Completion date: June 2007.

Countries: Sub-Saharan Africa.

Publications

- Buys, P., S. Dasgupta, T. Thomas, and D. Wheeler. 2008. "Determinants of a Digital Divide in Sub-Saharan Africa: A Spatial Econometric Analysis of Cell Phone Coverage." Policy Research Working Paper 4516. World Bank, Washington, D.C.
- . 2009. "Determinants of a Digital Divide in Sub-Saharan Africa: A Spatial Econometric Analysis of Cell Phone Coverage." World Development. Available at <http://dx.doi.org/10.1016/j.worlddev.2009.01.011>.

Infrastructure and Growth

This research project is investigating the contribution of public infrastructure to growth and poverty reduction in developing countries. The project is analyzing the growth impact of infrastructure spending, and more broadly of fiscal policy.

The ongoing debate on "fiscal space" stresses the need to design and assess fiscal policy with attention to its growth dimensions. This research seeks to inform this debate. Its purpose is to (i) document the trends in infrastructure development across developing countries, and (ii) assess the impact of infrastructure development on growth and poverty reduction.

To date, research on the development impact of infrastructure spending has been hampered by the limited availability of consistent data across countries and over time.

This project attempts to fill that gap by constructing a cross-country, time-series dataset on investment (public and private) in individual infrastructure sectors, combining it with a dataset of infrastructure quantity and quality indicators, and relating the latter to countries' observed performance in terms of growth and equity.

The investment data are being collected from national sources and with the assistance of national statistical author-

ities. The infrastructure quantity and quality indicators are being assembled from both national and international sources.

The empirical analysis is using econometric estimations of growth and inequality equations based on panel data. The investment data collected so far show a persistent slump in infrastructure spending in many countries since the 1980s—notably in Latin America, where reduced spending is associated with a slowdown in infrastructure development. In turn, the econometric results show that infrastructure development, as captured by the expansion of both the quantity and quality of infrastructure assets and services, has a strong positive effect on growth and equity, and hence a double effect on poverty reduction.

The project's preliminary findings have been presented at the annual meetings of the African Economic Research Consortium in Cape Town and at Oxford University.

Responsibility: Development Research Group, Macroeconomics and Growth Team—Luis Servén (Lserven@worldbank.org) and Norman Loayza; and Latin America Chief Economist's Office—César Calderón. With Rei Odawara.

Project Code: P101647.

Completion date: Ongoing.

Countries: Developing countries.

Publications

- Calderón, César, Rei Odawara, and Luis Servén. 2009. "Infrastructure Investment in Developing Countries: A Quarter-century Retrospective." World Bank, Washington, D.C. Mimeo.
- Calderón, César, and Luis Servén. 2008. "Infrastructure and Economic Development in Sub-Saharan Africa." Policy Research Working Paper 4712. World Bank, Washington, D.C.
- . 2009. "Infrastructure in Latin America." World Bank, Washington, D.C. Mimeo.

Fourth Urban Research Symposium: Follow-up Activities

This research project published a volume of the 15 best papers presented at the Fourth Urban Research Symposium. The Symposium was organized by the World Bank to provide fresh ideas on the topic of urban land markets.

The book addresses three main issues. First, does more public intervention in land markets produce more affordable land market outcomes? Second, do conventional approaches to strengthening property rights bolster security of tenure and market transactions? Third, how should governments go about integrating informal settlements with the broader economy of the city?

Responsibility: Finance, Economics and Urban Department, Urban Unit—Daniel Hoornweg (dhoornweg@worldbank.org).

org) and Robin Rajack; Spatial and Economics Unit—Somik Lall; and Urban Development—Jean-Jacques Helluin. With Mila Freire.

Project Code: P103649.

Completion date: August 2009.

Countries: Global.

Publications

Lall, S.V., M. Freire, B. Yuen, R. Rajack, and J.J. Helluin (eds.). 2009. Property Tax, Land Use and Land Use Regulation. Springer.

Price Structure and Network Externalities in the Telecommunications Industry: Evidence from Sub-Saharan Africa

Many developing countries have experienced significant developments in their telecommunications network. Africa is no exception to this. In theory, the telecommunications sector has two sector-specific characteristics: network externalities and discriminatory pricing. The project collected new operator-level price information to examine how African countries could accelerate telecommunications network development through pricing instruments, particularly discriminatory pricing.

With no available data on the detailed price structure of individual telephone operators, how often do African telephone operators rely on peak and off-peak prices and termination-based price discrimination? What are the strategic fee schedules, such as tie-in arrangements? This study investigated whether and how termination-based discriminatory pricing could facilitate network expansion.

The data were collected focusing on the price structure, unlike the traditional data, which include only average tariffs, such as the cost of making a local call for three minutes. There was no empirical work that related the degree of pricing differentiation to network expansion. The positive relationship between the average price and network development was relatively easy to show. But the pricing mechanism was diverse and difficult to quantify.

The project collected price structure data from 45 fixed-line and mobile telephone operators in 18 African countries. Based on the data, the study estimated a discrete consumer choice demand function. The estimated model indicated that termination-based discriminatory pricing could facilitate network expansion. It also showed that the implied price-cost margins were significantly high. Thus, price liberalization could be conducive to development of the telecommunications network led by the private sector.

Responsibility: Social Development Network, Finance Economics and Urban Department—Atsushi Iimi (aiimi@worldbank.org).

Project Code: P104115.

Completion date: March 2007.

Countries: Sub-Saharan Africa.

Publications

Iimi, Atsushi. 2007. "Price Structure and Network Externalities in the Telecommunications Industry: Evidence from Sub-Saharan Africa." Policy Research Working Paper 4200. World Bank, Washington, D.C.

Identification and Analysis of Urban Disaster Risk

This research project on urban disaster risk assessment entails two main components. The first is a macro-level global assessment of urban disaster risk. The second is an assessment of the utility of high-resolution remote sensing data and related information for rapid and cost-effective urban risk assessments.

The project seeks to contribute to priority setting in geographic targeting and sequencing of interventions aimed at reducing urban disaster risks, and providing a methodology for urban sector task managers to improve city-specific risk assessments.

At the global level, the project extends previous work on identification of global natural hazards more generally to the urban level. The case study work in two cities, Sana'a (Yemen) and Legaspi (Philippines), develops new tools to generate information from high-resolution satellite data that can feed directly into urban disaster risk policies. A related research question is how remotely sensed data can be augmented by data from national household surveys that can then be utilized to create indicators of vulnerability to natural hazards.

The global study relies on geographically referenced information on risk, exposure, and vulnerability. The information is analyzed using a risk model initially developed for the Global Hotspots study. The case studies rely on advanced techniques for the extraction of infrastructure and other physical features from high resolution remotely sensed images.

Responsibility: Development Research Group, Sustainable Development and Urban Development Team—Uwe Deichmann (UDeichmann@worldbank.org). The urban remote sensing work is implemented in cooperation with the Join Research Centre of the European Commission in Ispra, Italy. Other contributors include Christopher Small, Columbia University; and Henrike Brecht, GFDRR.

Project Code: P104425.

Completion date: December 2009.

Countries: Global. Case studies: Sana'a (Yemen) and Legaspi (Philippines).

Competition and Corruption in Public Procurement: Evidence from Infrastructure Projects

Public procurement aims to deliver public goods and services at the lowest cost with the appropriate level of quality. The authorities design procurement procedures for selecting an efficient private agent to which a public good or service is contracted out. The direct contribution of this research project is to provide evidence for understanding how public procurement procedures operate and which mechanisms are most effective in encouraging competition, reducing corruption, and improving efficiency and quality. The analysis estimates the optimal unit prices of infrastructure, controlling for heterogeneity, to provide operational guidance on the reference price for a particular type of project.

Following the auction literature, the research addresses the following specific issues: (i) optimal procurement costs of infrastructure; (ii) joint bidding and bidder entry; (iii) fringe bidders and local competitiveness; (iv) unbundling of infrastructure projects; (v) effective procurement design for maintaining the quality of the project; and (vi) unobserved bids and competition effects. Public procurement has attracted increasing attention in recent years, because enhancing public financial management helps to maximize economic performance. In fact, corruption in public procurement is one of the important challenges confronting developing countries. However, there has been little attempt to apply auction theory to aid-related public procurement.

Unlike the traditional approaches in this field—the principal-agent model and basic incomplete contract theory—the project adopted auction theory, which has been extensively developed in recent years. Auction theory provides various principles and implications on how to manage effectiveness and efficiency in public procurement auctions. The study covers mainly electricity generation and distribution, roads, and water treatment and distribution. Procurement data were collected from the World Bank's Structural Adjustment Program and the Japan Bank for International Cooperation ODA Operations.

The empirical findings were published in a series of working papers. In general, competition is found important to contain public infrastructure procurement costs. Four possible ways of enhancing competition were examined: encouraging new entry, joint bidding, making the size of contracts smaller, and unbundling some separable components. Two disadvantages of these pro-competitive measures were considered: economies of scale in procurement and the quality of projects. Various tradeoffs were found among these factors, but the work did find the optimal auction policy to balance the tradeoffs.

Responsibility: Social Development Network, Finance, Economics and Urban Development—Atsushi Iimi (aiimi@worldbank.org), and former Senior Advisor of the Social Development Network Vice Presidency—Antonio Estache.

Project Code: P105008.

Completion date: June 2009.

Countries: Global.

Publications

Estache, Antonio, and Atsushi Iimi. 2008a. "Bidder Asymmetry in Infrastructure Procurement: Are There Any Fringe Bidders?" Policy Research Working Paper 4660. World Bank Institute, World Bank, Washington, D.C.

———. 2008b. "Joint Bidding in Infrastructure Procurement." Policy Research Working Paper 4664. World Bank Institute, World Bank, Washington, D.C.

———. 2008c. "Procurement Efficiency for Infrastructure Development and Financial Needs Reassessed." Policy Research Working Paper 4662. World Bank Institute, World Bank, Washington, D.C.

———. 2009a. "Auctions with Endogenous Participation and Quality Thresholds: Evidence from ODA Infrastructure Procurement." Policy Research Working Paper 4853. World Bank Institute, World Bank, Washington, D.C.

———. 2009b. "Bidders' Entry and Auctioneer's Rejection: Applying a Double Selection Model to Road Procurement Auctions." Policy Research Working Paper 4855. World Bank Institute, World Bank, Washington, D.C.

———. 2009c. "(Un)Bundling Infrastructure Procurement: Evidence from Water Supply and Sewage Projects." Policy Research Working Paper 4854. World Bank Institute, World Bank, Washington, D.C.

Impact Evaluation of Reforms on Efficiency: Evidence from a New Sample of Electric Utilities

This research project explored the relation between the establishment of a regulatory agency and the performance of the electricity sector. The analysis exploited a unique dataset comprised of firm-level information on a representative sample of 220 electric utilities from 51 developing and transition countries for 1985 to 2005.

The results indicated that regulatory agencies are associated with more efficient firms and greater social welfare.

The research was disseminated at the Sorbonne, Paris (December 2007); Di Tella Academic Seminar, Buenos Aires (January 2008); Lacea, Cartagena (June 2008); and ULB Academic Seminar, Brussels (September 2008).

Responsibility: Finance Economics and Urban Department,

Spatial and Economics Unit—Daniel Benitez (dbenitez@worldbank.org) and Antonio Estache. With Martin Rossi, Universidad de San Andres; Lourdes Trujillo, Universidad de Las Palmas de Gran Canaria; and Aldo Gonzalez, Universidad de Chile.

Project Code: P105336.

Completion date: June 10, 2009.

Countries: Global.

Publications

Estache, Antonio, and Martin A. Rossi. 2008. "Regulatory Agencies: Impact on Firm Performance and Social Welfare." Policy Research Working Paper 4509. World Bank, Washington, D.C., and Université Libre de Bruxelles, ECARES, Working Papers. http://www.ecares.org/index2.php?option=com_docman&task=doc_view&gid=66&Itemid=204

The Livestock Industry and Infrastructure Development

How to improve the productivity and external competitiveness of the agriculture sector, for instance, the livestock industry, is still a difficult challenge for developing countries, where agricultural growth is essential for stimulating overall growth. This research project studied the linkages among agricultural growth, infrastructure development, and institutional arrangements. It focused on Sub-Saharan Africa because the region continues to be relatively heavily dependent on the agricultural sector. What types of infrastructure would be most useful for increasing agricultural production? Which farm products would be the most important for stimulating overall growth and reducing poverty? The possible answers to these questions are likely to vary across commodities and across countries.

It is expected that aggregate agricultural growth would be positively related to infrastructure development. However, the empirical linkage between agricultural growth and infrastructure appears weak. In the existing literature, agricultural outputs are aggregated. However, this might be the wrong approach for analyzing the effects of infrastructure on farm productivity. It is unlikely that different commodities would benefit identically from a particular type of infrastructure.

The project analyzed a commodity-specific demand and supply system, relating product market outcomes to agriculture-related infrastructure for several commodities, including livestock, coffee, cocoa, and dairy products. These products are very important in Africa and differentiated at various levels. The data were from Eurostat, FAOSTAT, World Integrated Trade Solution (WITS), World Development Indicators, International Telecommunication Union (ITU), and International Energy Agency (IEA) Energy Statistics.

The findings showed that various types of infrastructure affected agricultural growth differently depending on the commodity. For instance, the general transport network and irrigation facilities were essential for promoting coffee and cocoa production. By contrast, rural water supply services were more important for the dairy industry.

Responsibility: Finance Economics and Urban Department—Atsushi Iimi (aiimi@worldbank.org).

Project Code: P106376.

Completion date: July 2007.

Countries: Sub-Saharan Africa.

Publications

Iimi, Atsushi. 2007a. "Infrastructure and Trade Preferences for the Livestock Sector: Empirical Evidence from the Beef Industry in Africa." Policy Research Working Paper 4201. World Bank Institute, World Bank, Washington, D.C.

———. 2007b. "What Is Missing between Agricultural Growth and Infrastructure Development? Cases of Coffee and Dairy in Africa." World Bank, Washington, D.C. Draft.

Addressing the Development Impact of the Media

This research project aimed to explain the media's contribution to development, which occurs simultaneously along five closely intermingled influences: plurality and transparency, behavior, infrastructure and platform, economics, and trade. The research highlighted the fact that the media is at the cutting edge of technological change, where the digitalization of content, Next Generation Networks, falling device and distribution costs, ever-increasing abundance, and new business models are overturning the pre-existing order of markets and the media, although broadcasting, particularly radio, remains crucial in developing countries.

Much of the attention paid to the contribution of the media to development centers on its social and cultural influences and on "social marketing." This research added the economic and trade dimensions as well as political economy considerations. A review of the literature was undertaken regarding the direct economic impact of media investments in terms of key variables, such as contribution to GDP and employment, in a range of developed and developing countries.

The project described and assessed approaches to supporting media initiatives in different countries for the purpose of identifying lessons of experience and best practices from cross-country experience. The project illustrated that the media offers new development opportunities requiring new policy initiatives, and the realization of this by the development community. Although in many instances the media has yet to attain

its appropriate status on the list of development priorities, it was anticipated that this research would help to raise the development profile of the media.

Responsibility: Policy Division (IBRD Telecommunications and Infrastructure)—Gareth Locksley (glocksley@worldbank.org). Peer reviewers Christine Qiang (CITPO), Stephanie Von Friedeburg (CITTM IFC), Sina Odugbemi (CommGap), and Tia Duer (CEERD WBIGP).

Project Code: P106910.

Completion date: January 12, 2009.

Countries: Global.

Publications

Locksley, Gareth. “The Media and Development: What’s the Story?” Working Paper 158. World Bank, Washington, D.C. http://siteresources.worldbank.org/INFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/The_Media_and_Development.pdf.

The Role of Mobile Phones in Sustainable Rural Poverty Reduction

Many developing country governments and development agencies are focusing on extending telecommunications services into rural areas, as they seek to alleviate poverty, encourage economic and social growth, and overcome a perceived “digital divide.” However, relatively little is known about how rural communities benefit from modern telecommunications services and the impact on their lives and livelihoods. This research project examined the role of mobile telephones in sustainable poverty reduction among the rural poor.

There is considerable evidence to suggest that the economic and social benefits of mobile telephony will be greatest in rural areas, which currently have fewer telephony services. Both poverty and lack of information are common bed partners. Thus, the dissemination of information together with serving rural areas has a double anti-poverty imperative.

It is clear that the deployment of mobile phones does have a multi-dimensional positive impact on sustainable poverty reduction. Thus, going forward, it remains important to make the mobile phone as cheaply and widely accessible as possible. This involves two important development dimensions: cost and distribution. The costs of devices and services have been declining, as developed world markets saturate and mobile operators and service providers increasingly compete for a share of the dwindling developing world market. Rural access seems a logical next step in global penetration—and development partners, the government, the private sector, and the World Bank have all acknowledged its importance.

However, in order to achieve the maximum impact, it remains vital to continue the evaluation of the development impact of mobile phones on sustainable poverty reduction to help identify the relevant applications and business models that would maximize the economic and social benefits, while minimizing costs, both start-up and ongoing, for the mobile operator, so these are not passed on to the end user. Moreover, although it is easier to measure the economic and tangible benefits, a clear, sophisticated methodology for measuring the social and intangible benefits is yet to be developed. Yet, in rural communities, where family, kinship, and societal ties are often stronger than in urban communities, these benefits remain the compelling, untold story.

Responsibility: Policy division, IBRD Telecom and Infrastructure—Peter Silarszky (psilarszky@worldbank.org), Philippe Dongier, and Deepak T. Bhatia. With Rowena Won-Wai Chiu, Asheeta Bhavnani, and Subramaniam Janakiram.

Project Code: P108065.

Completion date: June 23, 2008.

Countries: Global.

Publications

Bhavnani Asheeta, Rowena Won-Wai Chiu, Subramaniam Janakiram, and Peter Silarszky. 2008. “The Role of Mobile Phones in Sustainable Rural Poverty Reduction.” ICT Policy Division, World Bank, Washington, D.C. <http://go.worldbank.org/PKDHUJKD60>.

Understanding Equity-Efficiency Tradeoffs in Regional Development Strategies

Formal and informal consultations point to the fact that spatial imbalances are of concern to policy makers, and an important pillar of national development strategies. For instance, in a recent review drawing on a sample of 19 Country Assistance Strategies for middle-income countries, three-fourths identified lagging regions as an important issue needing attention.

This research project was designed to assist governments in the design of regional development policies that reduce economic distances within countries. It aimed at helping policy makers assess the short to medium-term benefits and costs associated with their main policy options to integrate lagging and leading areas within countries.

The analytic methods used in this project helped in measuring the magnitude of regional disparities in production as well as various living standards indicators, and in prioritizing across policies for territorial integration. The underlying principle was to identify regions where public investments would have the greatest expected returns—either in terms of economic growth

or poverty reduction. This approach can help policy makers identify whether their preferred instruments are likely to be effective in improving local conditions, and whether specific investments are being put to their most productive use. Tilting investment policies toward these regions is spatially efficient.

Three country projects were initiated to assess the contribution of infrastructure in connecting lagging and leading areas. The following question was central to all three cases: Will geographic equity in transport coverage lead to economic dispersion or concentration? The research on Russia highlighted the spatial implications of the transition from a planned economy to a market-based one. With firms now free to locate where they please, economic activity has become increasingly concentrated in regions offering good access to markets. Policy makers face a dilemma: Should they direct public investments to interregional transport infrastructure that could help improve connectivity among lagging regions to create markets, or to infrastructure that could improve connectivity within leading areas at the center of the market? These choices involve tradeoffs between the objectives of spatial equity and spatial efficiency.

The findings from the research on Russia were presented at the European Investment Bank's 50th anniversary conference focusing on infrastructure development.

Responsibility: Finance Economics and Urban Department, Spatial and Economics Unit—Somik V. Lall (Slall1@worldbank.org) and Hyoung Wang. With Elizabeth Schroeder, Georgetown University; and Justin Sandefur, Oxford University.

Project Code: P108870.

Completion date: June 2009.

Countries: Uganda, Ghana, Russian Federation.

Publications

Lall, Somik, Elizabeth Schroeder, and Emily Schmidt. 2009.

“Identifying Spatial Efficiency Equity Trade-offs in Territorial Development Policies: Evidence from Uganda.” Policy Research Working Paper. World Bank, Washington, D.C.

Lall, Somik, Justin Sandefur, and Hyoung Wang. “Does Improving Market Access Help De-industrialize Lagging Regions? ‘Leaking by Linking’ in Ghana.” World Bank, Washington, D.C. Mimeo.

Brown, David, Marianne Fay, John Felkner, Somik Lall, and Hyoung Wang. “Profiting from Proximity: Rising Economic Densities in the Russian Federation.” World Bank, Washington, D.C.

Brown, David, Marianne Fay, John Felkner, Somik Lall, and Hyoung Wang. 2008. “The Death of Distance? Economic Implications of Infrastructure Improvement in Russia.” EIB Papers 13(2, July). Conference volume: Infrastructure Investment, Growth and Cohesion and the Economics of Regional Transport Investment.

Opportunities and Challenges for Small-Scale Private Service Providers in Electricity and Water Supply: Evidence from Bangladesh, Cambodia, Kenya, and the Philippines

This research project provides an in-depth look at small-scale private service providers (SPSPs) of electricity and water, based on a recent firm-level survey in Bangladesh, Cambodia, Kenya, and the Philippines. The findings of the survey analysis reveal a relatively diverse group of small enterprises with different ownership structures, business models, and levels of profitability. Services range from well-organized networks—such as electric mini-grids and small private water networks—to mobile distributors of water (tankers), and smaller operations—such as battery-charging stations, water kiosks, and standpipes. From the analysis of the different types of service providers, it is possible to identify some of the specific challenges facing the SPSPs and to explore where substantial opportunities for scaling-up exist.

On the whole, SPSPs play an important role in service provision in areas where utilities do not reach, and a significant proportion of these areas are poor. The existence, success, and continued viability of SPSPs in the near to medium term is therefore important for the provision of services to certain segments of the population in the four countries studied. For the providers of network services (mini-grids and small piped networks), particularly for the more successful businesses, there is substantial room for growth. Most mini-grids and small piped network SPSPs in the survey report unmet demand in their existing service areas. In rapidly urbanizing countries, SPSPs will also have a critical role to play for the near to medium term as utilities try to keep up with the increasing demand for services. In remote rural areas, SPSPs may also remain the most viable approach to service delivery over the long term.

Based on the findings and the existing literature, the study also explores the emerging policy issues with the goals of ensuring quality and safety standards for the services provided at affordable prices.

Responsibility: Finance, Economics and Urban Department, Urban Unit—Judy Baker (Jbaker2@worldbank.org); Spatial and Economics Unit—Karina Izaguirre; and East Asia and Pacific, Philippines Sustainable Development—Mukami Kariuki. With Jenna Davis, Witold Templitz-Sembitzky, and Iwona Reichardt.

Project Code: P109865.

Completion date: September 30, 2009.

Countries: Bangladesh, Cambodia, Kenya, the Philippines.

Publications

Baker, Judy, L. 2009. "Opportunities and Challenges for Small Scale Private Service Providers in Electricity and Water Supply: Evidence from Bangladesh, Cambodia, Kenya and the Philippines." Working Paper. World Bank and PPIAF.

Evaluation of Rural Electrification

This research project is analyzing existing and new data to examine the impact of rural electrification on development. It is employing several types of techniques to assess the impacts of rural electrification. With cross-sectional data, an important technique is propensity score matching, which compares households of similar characteristics with and without electricity. Another method is the use of instrumental variable regression to control for the potential role of unobserved selection bias. The panel data analysis uses simple difference-in-difference and difference-in-difference with propensity score matching techniques.

Data for the study come from both new data collected through World Bank-funded surveys (for example, Vietnam) and existing data collected by local organizations (for example, India).

The findings so far suggest that rural electrification has wide-ranging positive benefits for household and individual welfare outcomes (preliminary results from Bangladesh and Vietnam). The findings also show that electrification access and benefits may not be equitable among poor and non-poor households.

There has been a pronounced need in the World Bank for more emphasis on impact evaluation of program interventions. This initiative is an attempt to address that need. Its aim is to investigate household survey data from a few developing countries to determine the scope and nature of the impact of rural electrification programs in those countries.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Shahidur Khandker (Skhandker@worldbank.org); and Energy, Transport and Water Department, Energy Sector Management Assistance Program—Douglas Barnes and Voravate Tunitivate. With Hussain Samad.

Project Code: P111450.

Completion date: December 31, 2010.

Countries: Bangladesh, Vietnam, India, Nepal, Peru, and Kenya.

Publications

Khandker, Shahidur, Douglas Barnes, and Hussain Samad. 2009. "Welfare Impacts of Rural Electrification: A Case Study from Bangladesh." Policy Research Working Paper 4859. World Bank,

Washington, D.C. (http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2009/03/09/000158349_20090309084132/Rendered/PDF/WPS4859.pdf)

Khandker, Shahidur, Douglas Barnes, Hussain Samad, and Nguyen Huu Minh. 2009. "Welfare Impacts of Rural Electrification: Evidence from Vietnam." World Bank, Washington, D.C. Mimeo.

Fifth Urban Research Symposium

This research project supported the Fifth Urban Research Symposium. The Symposium aimed at pushing forward the research agenda on climate change from a city's perspective. Specifically, the main questions were structured around the impacts of city and urban growth on climate change; measurement and anticipation of the consequences of climate change on urban quality of life, city assets, and local and national economies; and assessment of alternatives to increase the resilience of cities and the related costs and incentives required for successful implementation.

The Symposium was structured around five broad research clusters, which represent the most relevant issues faced by cities and peri-urban areas on climate change:

- Cluster 1. Science and Indicators of Climate Change and Related Impacts: Understanding and Measuring How Cities Impact, and Are Impacted by, Climate Change
- Cluster 2. Infrastructure, Built Environment, and Energy Efficiency: Planning Efficiently and Effectively to Increase the Resilience of Cities
- Cluster 3. The Role of Institutions, Governance, and Urban Planning: Improving Management, Coordination, and Planning of Cities to Meet Climate Change Challenges
- Cluster 4. Incentive Policies, Economics, and Finance: Understanding How and Why Cities Respond to Climate Change
- Cluster 5. Social Aspects of Climate Change: Understanding and Reducing Vulnerability of Urban Populations to Climate Change.

This was the first international research seminar on cities and climate change. Nine teams of researchers were commissioned to review the existing literature on cities and climate change and identify the main knowledge gaps. About 150 other papers were selected for presentation, of 500 proposals received. The papers are on the web site www.urs2009.net.

Funding was provided by the following: French Ministry of Ecology and Sustainable Development (France); French Agency for Development (AFD) (France); French Energy Efficiency Agency; GEF; IDRC (Canada); Private Sector (VEOLIA, DEXIA); and a few other institutions.

Responsibility: Finance, Economics and Urban Department, Urban Unit—Daniel Hoornweg (dhoornweg@worldbank.org), Jean-Jacques Helluin, and Perinaz Bhada. With Mila Freire.

Project Code: P115741.

Completion date: July 1, 2009.

Countries: Global.

Project Code: P117262.

Completion date: March 2010.

Countries: India, Indonesia, USA.

The Role of Land Management in Pre and Post-Disaster Planning and Responsiveness: Impacts on Urban Land Markets

This research project seeks to identify what are the medium-term impacts of post-disaster land management and land use planning interventions on land markets.

The study may offer useful insights into the impacts of urban planning interventions on urban land markets. This information may help stakeholders arrive at new or adjusted positions on longstanding stalemates in the political economy of urban land use, including land use associated with vulnerability to natural disasters and climate change. This is relevant to both pre and post-disasters.

The project emphasizes medium-term land market impacts on post-disaster interventions.

The methodology is based on comparison of land market characteristics in test and control groups within the same post-disaster area allowing for assessment of the counterfactual. The analysis makes temporal comparisons of some land market characteristics in affected areas both pre- and post-disaster. It also used multivariate stepwise regression analyses of key land market characteristic variables.

The data sources are household surveys applied to a random sample of households in test and control areas; real estate broker surveys in test and control areas; aggregation and standardization of data from secondary sources, including spatial and population data from census and municipal data bases; government departments and agencies, including land registries, area development authorities, and municipal bodies; property tax data from municipalities (before the disaster and after the concession periods); and interviews and focus groups.

Data collection and analyses are ongoing, so there are no findings to report as yet. The Global Facility for Disaster Reduction and Recovery provided funding for the study.

The research was presented at the Fifth Urban Research Symposium: Cities and Climate Change at Marseille, France (June 2009).

Responsibility: Finance Economics and Urban Department, Urban Unit—Robin Rajack (rrajack@worldbank.org), Kimberly Colopinto, and Barbara Lipman. With Narayanan Edadan; Asmita Tiwari; and Uktarsh Patel.

International Migration and Development

Trade and Technical Change

This research project assessed the impact of trade and education policies on North-North, North-South, and South-South technology spillovers. More specifically, it investigated whether trade openness and higher education increase technology spillovers and total factor productivity (TFP) growth.

The project constructed stocks of research and development (R&D) in OECD countries, and used regression analysis to examine how trade affects TFP in developing countries. The estimation made use of a measure of “foreign R&D” for each developing country, defined as the weighted sum of OECD trading partners’ R&D. When aggregate data were used, the weights were the developing country’s trade shares with each OECD trading partner, relative to the developing country’s GDP. When industry data were used, the industry-specific weights were the bilateral industry-specific trade shares relative to that industry’s value added. Because each industry uses other industries’ inputs, input-output data were used to obtain each developing country’s bilateral trade shares.

The findings showed that trade has a greater impact on TFP growth than international telecommunications and foreign direct investment, and information and communication technology has a greater impact than foreign direct investment. Splitting “foreign R&D” into its R&D and trade components, the research found that trade has a greater impact on TFP growth than R&D for North-South trade, while the opposite holds for North-North trade. The difference is associated with the fact that trade barriers for industry are still important in the South but not in the North (and innovations are mainly produced in the North).

The findings also showed that productivity growth increases with North-South trade-related technology diffusion and decreases with brain drain. And the impact of North-South trade-related technology diffusion, education, and their interaction with productivity growth in small states is more than three times that for large countries, with the negative impact of the brain drain more than three times greater in small than in large states.

Further, the greater loss in productivity growth in small states has two brain drain-related causes: a substantially greater sensitivity of productivity growth to the brain drain, and brain drain levels that are more than five times greater in small than in large states.

Responsibility: Development Research Group, Trade

Team—Maurice Schiff (Mschiff@worldbank.org). With Angling Wang, Carleton University, Ottawa.

Project Code: P077506.

Completion date: June 30, 2008.

Countries: East Asia and Pacific, Latin America and Caribbean, Sub-Saharan Africa and High-income countries.

Publications

Schiff, M., and Y. Yanling. 2009. “North-South Trade-Related Technology Diffusion, Brain Drain and Productivity Growth: Are Small States Different?” Policy Research Working Paper 4828. World Bank, Washington, D.C.

Schiff, M., and Y. Yanling. 2009. “Openness and Productivity: The Role of Trade, FDI and International Telecommunications.” World Bank, Washington, D.C. Mimeo.

Schiff, M., and Y. Yanling. Forthcoming. “North-South Technology Spillovers: The Relative Impact of Openness and R&D.” *International Economic Journal*.

Remittances and Migration

The World Bank’s Migration and Remittances Team’s work program involves efforts to monitor and forecast remittance and migration flows, analysis of the here-and-now topics involving migration and remittances, and provision of information and policy advice. The past year’s work has focused heavily on the impact of the economic crisis on migration and remittances.

This ongoing research project has carried out several studies that use a variety of analytical approaches from data collection, case studies, and data analysis of government statistics on migration and remittances. Newly available data show that remittance flows to developing countries reached \$328 billion in 2008, larger than the previous estimate of \$305 billion. Remittances grew rapidly during 2007 and 2008, but have slowed down in many corridors since the last quarter of 2008. The continued research on remittances shows how developing countries can leverage remittances for improving their access to international capital markets. It also shows how currency appreciation and rising costs of living have eroded the purchasing power of recipients in the major remittance-receiving countries.

The project’s study on natural disasters shows that there is a positive role of remittances in preparing households against natural disasters and in coping with the loss afterward.

The research on migrant protection shows that governments

of countries of origin can play a major role in protecting their migrants abroad through migrant welfare funds. A welfare fund operated from the origin country and financed by migrants or their employers can offer a potentially efficient solution to protecting migrants from vulnerable situations abroad.

The research on migration and technological progress provided an overview of the role of the diaspora in fostering the transfer of knowledge, technology, capital, and remittances.

In addition to the annual remittances flows database, the project is building a database of monthly remittance flows to selected countries, which is available at <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/0,,contentMDK:21122856~pagePK:64165401~piPK:64165026~theSitePK:476883,00.html>.

The project has also developed a blog dedicated to work on migration and remittances at the World Bank: <http://peoplemove.worldbank.org>.

Project findings have been presented at the following conferences and workshops: a meeting on the sidelines of the World Bank-IMF Annual Meetings, Washington, D.C. (October 2009); Global Forum on Migration and Development, Manila (October 2008); Money Transfers Conference, London (November 2009); Impact of Crisis on Migration and Remittances in APEC; PREM conferences, World Bank, Washington, D.C. (2008); GDLN South Asia Event on Migration (India, Pakistan, Sri Lanka, and Nepal); GDLN in ECA Region Events on Managing Migration and Remittances (April-June 2009); South Africa Diaspora Brown Bag Workshop (April 2009); IAMN Conference, Dubai; G8 Outreach Event on Remittances, Berlin (November 2007).

Responsibility: Development Prospects Group, Migration and Remittances Team—Dilip Ratha (Dratha@worldbank.org). With Binod Khadria, Jawaharlal Nehru University; Suhas L. Ketkar, Vanderbilt University; Tasneem Siddiqui, University of Dhaka; and Sanket Mohapatra, William Shaw, and Zhimei Xu, World Bank.

Project Code: P088048.

Completion date: Ongoing.

Countries: Global.

Publications

Burns, Andrew, and Sanket Mohapatra. 2008. "International Migration and Technological Progress." Migration and Development Brief 4. World Bank, Washington, D.C. http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/Migration&Development_Brief_4.pdf.

Leipziger, Danny M. 2008. "Brain Drain and the Global Mobility of Highly-Skilled Talent." PREM Notes, Number 123. World

Bank, Washington, D.C. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/premnote123.pdf>.

Mohapatra, Sanket. 2008. "Remittances Dispatch: US Dollar Depreciation and Remittance Flows to Developing Countries." World Bank, Washington, D.C. http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/RemittancesDispatch-US_dollar_depreciation_and_remittance_flows.pdf.

Mohapatra, Sanket, George Joseph, and Dilip Ratha. 2009. "Remittances and Natural Disasters: Ex-post Response and Contribution to Ex-ante Preparedness." Policy Research Working Paper 4972. World Bank, Washington, D.C. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/WPS4972.pdf>.

Ratha, Dilip, Sanket Mohapatra, and Ani Silwal. 2009. "Outlook for Remittance Flows 2009–2011: Remittances Expected to Fall by 7–10 Percent in 2009." Migration and Development Brief 10. World Bank, Washington, D.C. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/Migration&DevelopmentBrief10.pdf>.

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Ruiz, Neil G., and Dovelyn Rannveig Agunias. 2008. "Protecting Temporary Workers: Migrant Welfare Funds from Developing Countries." Migration and Development Brief 8. World Bank, Washington, D.C. http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/MD_Brief7.pdf.

International Migration: Implications for Growth and Welfare

International migration has enormous implications for growth and welfare in both origin and destination countries. Although 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 project sought to fill that gap by identifying migration policies, regulations, and institutional reforms by industrial and developing countries that would lead to better development

outcomes. Given the dearth of migration data, one of the major objectives of this program was to create new databases. A number of global bilateral migration databases were constructed as well as household surveys.

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

One project under this research program analyzed the impact of financial sector development on host country characteristics (such as growth, poverty, GDP per capita, education levels, migration, and crisis episodes) and of 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 studied whether remittances intermediated by the formal financial sector in a host country would help to develop this sector by increasing aggregate deposits or the credit intermediated by the local banking sector.

The research program tackled a large number of other issues. These included:

- The impact of migration on foreign direct investment from host countries to migrants' home countries
- Migration, transfer of norms, and home country fertility
- Brain drain and institutional development
- Foreign workers in host countries' labor markets and whether there is brain waste.

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; Finance Team—Maria Soledad Martinez Peria; and Development Economics, Office of the Senior 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.

Project Code: P088066.

Completion date: June 2007.

Countries: Global.

Publications

Aaditya, M., and M. Amin. 2007. "Migration from Zambia: Ensuring Temporariness through Cooperation." Policy Research Working Paper 4145. World Bank, Washington, D.C.

Adams, R. 2007. "International Remittances and the Household:

Analysis and Review of Global Evidence." Policy Research Working Paper 4116. World Bank, Washington, D.C.

Bhargava, A., and F. Docquier. 2008. "HIV Prevalence and Migration of Healthcare Staff in Africa," World Bank Economic Review 22: 345–66. http://www.ires.ucl.ac.be/CSSSP/home_pa_pers/Docquier/filePDF/BD_HIV.pdf

Docquier, M., F. Beine, and M. Schiff. 2008. "International Migration, Transfers of Norms and Home-Country Fertility." Policy Research Working Paper 4925. World Bank, Washington, D.C.

Docquier, F., and L. Marchiori. 2009. "MENA-to-EU Migration and Labor Market Imbalances." World Bank, Washington, D.C. http://www.ires.ucl.ac.be/CSSSP/home_pa_pers/Docquier/filePDF/DM_MENAtoEU.pdf

Docquier, Frederic, and Maurice Schiff. 2009. "Measuring Skilled Migration Rates: The Case of Small States." Policy Research Working Paper 4827. World Bank, Washington, D.C.

Gibson, J., D. McKenzie, and S. Stillman. 2007. "Migration and Mental Health: Evidence from a Natural Experiment." Policy Research Working Paper 4138. World Bank, Washington, D.C.

Junichi, G. 2007. "Latin Americans of Japanese Origin (Nikkeijin) Working in Japan: A Survey." Policy Research Working Paper 4203. World Bank, Washington, D.C.

McKenzie, D., and J. Mistiaen. 2007. "Surveying Migrant Households: A Comparison of Census-based, Snowball, and Intercept Point Surveys." Policy Research Working Paper 4419. World Bank, Washington, D.C.

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Ozden, C., and M. Schiff (eds.). 2007. *International Migration, Economic Development & Policy*. Washington, D.C.: Palgrave MacMillan and World Bank.

Rapoport, H., and D. McKenzie. 2007. "Self-selection Patterns in Mexico-U.S. Migration: The Role of Migration Networks." Policy Research Working Paper 4118. World Bank, Washington, D.C.

Schiff, M., A.M. Morrison, and M. Sjoblom (eds.). 2007. *The International Migration of Women*. Washington, D.C.: Palgrave MacMillan and World Bank.

Schiff, Maurice, and Yanling Wang. 2009. "The Regional Dimension of North-South Trade-related R&D Spillover." Policy Research Working Paper 4826. World Bank, Washington, D.C.

Winters, L.A., T.L. Walmsely, R. Skeldon, and C.R. Parsons. 2007. "Quantifying International Migration: A Database of Bilateral Migrant Stocks." Policy Research Working Paper 4165. World Bank, Washington, D.C. http://www.ires.ucl.ac.be/CSSSP/home_pa_pers/Docquier/filePDF/BDS_FertilityNorms.pdf

Household Surveys on International Migration and Remittances in Ghana

The objective of the project was to collect original, household-level data on migration and remittances in Ghana. The project used the data to analyze the impact of internal and international migration and remittances on poverty and income inequality in Ghana. It also analyzed how internal and international migrant households spent and invested remittance income, and how this contributed to overall economic development. And the project examined how the internal and international migration of workers from Ghana has affected wage rates and labor markets in that country.

The project was conducted by inserting a module of 45 questions on migration and remittances into the nationally-representative 2005/06 Ghana Living Standards Survey. The survey was conducted by the Ghana Statistical Service in Accra.

The data are being cleaned and organized for the analysis. Access to the data will be made available later.

Responsibility: Development Research Group, Trade Team—Maurice Schiff (mschiff@worldbank.org) and Çağlar Özden. With Richard Adams.

Project Code: P092160, P096150.

Completion date: December 2007.

Countries: Ghana.

Publications

Adams, R.H. Jr. 2007. "An Overview of Data Contained in the 2005/06 Ghana Living Standards Survey (GLSS 5) (Sub-sample) On Migration and Remittances." World Bank, Washington, D.C. Mimeo.

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———. 2008. "Remittances, Consumption and Investment in Ghana." Policy Research Working Paper 4515. World Bank, Washington, D.C.

Guzman, J., and M. Sjoblom. 2009. "Gender and Migration Effects on Education and Health Outcomes: The Case of Ghana." World Bank, Washington, D.C. Mimeo.

Joseph, G.A. 2009. "Note on Remittance Patterns and Uses in Ghana." World Bank, Washington, D.C. Mimeo.

Joseph, G., Y. Niimi, C. Ozden, and Q. Wodon. 2008. "International Migration from Ghana: Patterns, Brain Drain and Policy Implications." In Ghana. Job Creation and Skills Development, Volume 2. World Bank, Washington, D.C.

Sjoblom, Mirja. 2008. "Migration and Gender of Household Head: Impact on Household Expenditure Patterns." World Bank, Washington, D.C. Mimeo.

International Migration and Development—Case Study of Brazil Nikkei Households

This research project carried out research and analytical work within the framework of the Research Program on International Migration and Development. In particular, it set out to improve household survey instruments.

The Brazil Nikkei Household Survey was undertaken to answer two key questions. First, what were the key determinants, constraints, and socio-economic and welfare impacts of international migration by Japanese-Brazilians to, settlement in, and return from Japan? And second, which survey sampling methodologies could be used to collect representative data through household survey questionnaires for applied micro-economic analysis of migration and remittance corridors?

The project implemented three alternative sampling methodologies to collect data from Japanese-Brazilian families of potential migrants to Japan. Households were selected randomly from a door-to-door listing using the Brazilian Census to select census blocks. A snowball survey used Nikkei community groups to select the seeds. And an intercept survey was collected at Nikkei community gatherings, ethnic grocery stores, sports clubs, and other locations where family members of migrants were likely to congregate.

The project findings should provide researchers and policy-makers with useful guidance on the use of snowball and intercept surveys for collecting data on migrants when it is not feasible to conduct the more expensive census-based method.

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

Project Code: P097353.

Completion date: July 2006.

Countries: Brazil, Japan.

Publications

McKenzie, D. 2008. "Japanese-Brazilians and the Future of Brazilian Migration to Japan." *Journal of the Royal Statistical Society Series A*.

McKenzie, D.J., and J. Mistiaen. 2008. "Surveying Migrant Households: A Comparison of Census-Based, Snowball, and Intercept Surveys." World Bank, Washington, D.C.

Remittances and Capital Market Access

The main objective of this research project was to study how developing countries can leverage worker remittances to improve their access to international capital markets. This study examined the challenges posed by the remittances for policy makers in developing countries and provided

recommendations on how countries can benefit from remittance securitizations and diaspora bonds for financing their development needs.

The project attempted to do the following: (1) to predict sovereign ratings for developing countries that do not have risk ratings from agencies such as Fitch, Moody's, and Standard and Poor's; (2) understand how developing countries can use remittances to improve the financial access of households and the capital market access of countries through securitization of future remittances and issuance of diaspora bonds; (3) draw lessons from the experiences of Israel and India in issuing \$36 billion in diaspora bonds; and (4) assess the potential for leveraging remittances for capital market access in Sub-Saharan Africa.

The research analyzed the stylized relationship between borrowing costs and the credit rating of sovereign bonds. It showed how a strong flow of remittances can improve the receiving country's creditworthiness and lower its cost of borrowing money in international markets, how countries with strong and transparent legal systems for contract enforcement are likely to find it easier to issue diaspora bonds, and how Sub-Saharan Africa has the potential to raise \$1 to 3 billion by reducing the costs of transferring international remittances.

The project used a rating model to examine the relationship between borrowing costs and credit rating of sovereign bonds, analysis of data from a global database of remittances, and case studies of Israel and India's diaspora bonds.

The findings show that the rating model, along with the stylized relationship between spreads and ratings, can be useful for securitization and other financial structures, and for leveraging official aid for improving borrowing terms in poor countries. A strong flow of remittances can also improve the receiving country's creditworthiness, lowering its cost of borrowing money in international markets.

If remittances are a way to tap into the income stream of migrants, diaspora bonds can be a way to tap the vast wealth of the diaspora. India and Israel have issued \$36 billion in diaspora bonds. Countries with strong and transparent legal systems for contract enforcement are likely to find it easier to issue diaspora bonds. Absence of civil strife is a plus. And although it is not a prerequisite, the presence of national banks and other institutions in destination countries facilitates the marketing of bonds to the diaspora. Sri Lanka and Ethiopia have issued diaspora bonds and Nepal is currently in the planning stage.

Sub-Saharan African countries can potentially raise \$1–3 billion by reducing the cost of international migrant remittances, \$5–10 billion by issuing diaspora bonds, and \$17 billion by securitizing future remittances and other future receivables.

The project findings have been presented at the following: Workshop on Innovative Financing, IMF, Washington, D.C. (October 2008); presentations at the World Bank (2008–2009); the Central Banks of Kenya, Sri Lanka, and Nepal, and the Central Bank Governor of the Caribbean Islands at the World Bank, Washington, D.C. (2008–2009); Euromoney Conference, Washington, D.C. (June 18, 2009); World Bank International Diaspora and Development Conference, Washington, D.C. (July 2009); a sideline event at the UN Conference on Financing for Development, Doha (December 2008); and Innovative Financing: Remittance Securitization and Diaspora Bonds (May 2009).

Responsibility: Development Prospects Group, Migration and Remittances Team—Dilip Ratha (Dratha@worldbank.org) and Sanket Mahapatra. With Antonio Corbi, Fitch Ratings; Prabal Kumar De, New York University; Suhas L. Ketkar, Vanderbilt University; and Zhimei Xu, World Bank.

Project Code: P101664.

Completion date: September 28, 2007.

Countries: Global.

Publications

- Ketkar, Suhas and Dilip Ratha. June 2009. "New Paths to Funding: When Financing Is Scarce, Developing Countries May Try Innovative Approaches to Raise Capital." Finance and Development. International Monetary Fund, Washington D.C. <http://www.imf.org/external/pubs/ft/fandd/2009/06/ketkar.htm>
- Ratha, Dilip. 2007. "Leveraging Remittances for Development." Policy Brief. Program on Migrants, Migration and Development. Migration Policy Institute. http://www.migrationpolicy.org/pubs/MigDevPB_062507.pdf
- Ratha, Dilip, Prabal De, and Sanket Mohapatra. 2007. "Shadow Sovereign Ratings for Unrated Developing Countries." Policy Research Working Paper 4269. World Bank, Washington, D.C. http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166322&entityID=000016406_20070621154413
- Ratha, Dilip, and Suhas Ketkar. 2007. "Diaspora Bonds: Track Record and Potential." Policy Research Working Paper 4311. World Bank, Washington, D.C. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2007/08/09/000158349_20070809132536/Rendered/PDF/wps4311.pdf
- . 2008. Innovative Financing for Development. Washington, D.C.: World Bank.
- Ratha, Dilip, Sanket Mohapatra, and Sonia Plaza. 2008. "Beyond Aid: New Sources and Innovative Mechanisms for Financing Development in Sub-Saharan Africa." Policy Research Working Paper 4609. World Bank, Washington, D.C. <http://econ.worldbank.org/external/default/main?pag>

ePK=64165259&theSitePK=469372&piPK=64165421&m
enuPK=64166093&entityID=000158349_20080428101826
[http://siteresources.worldbank.org/INTPROSPECTS/
Resources/334934-1110315015165/%5Be-book%5DInnovative_
Financing_for_Development.pdf](http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/%5Be-book%5DInnovative_Financing_for_Development.pdf).

Brain Drain and Brain Gain

How important an issue is highly skilled migration for small island nations? This project measured the determinants and consequences of highly-skilled migration in the Pacific Islands. The study collected microeconomic data on highly skilled migration and conducted a scientific survey of those who migrate and those who do not.

The results show that there are large gains in income to be had from migrating for the best and brightest. But among this group, it appears that preference variables and career concerns rather than income gains are driving migration. There appear to be high levels of remittances and knowledge transfer, but little involvement in trade or foreign direct investment among this group of highly skilled individuals.

The broad research project is ongoing. The findings may temper the negative feelings developing countries have about highly skilled migration, and reduce efforts to try to stop high-skilled emigration. They may also have implications for policies designed to make countries more attractive for high-skilled individuals.

The research findings have been disseminated at the International Brain Drain Conference, Bar-Ilan University, Israel; the International Migration Conference, Lille University, France; and the Paris School of Economics, France.

Responsibility: Development Research Group, Finance and Private Sector Development Team—David McKenzie (dmckenzie@worldbank.org). With John Gibson, University of Waikato. The University of Waikato hired researchers and survey workers in Tonga, Micronesia, and Solomon Islands to help implement the work.

Project Code: P105301.

Completion date: 2009.

Countries: Micronesia, New Zealand, Solomon Islands, Tonga.

Publications

Gibson, John, and David McKenzie. 2009. "A Microeconomic Analysis of Brain Drain versus Brain Gain: New Survey Evidence from the Pacific." World Bank, Washington, D.C. Mimeo.

———. 2009. "The Microeconomic Determinants of Emigration and Return Migration of the Best and Brightest: Evidence from the Pacific." Policy Research Working Paper 4965. World Bank, Washington, D.C.

Gender Action Plan

Existing data on migration and brain drain fails to answer many questions related to skilled female migration because the data lack gender-disaggregated statistics. The main goal of this research project was to extend the Marfouk-Docquier database on migration and brain drain to add new data on the gender of migrants.

The new database will help improve the formulation and analysis of a number of research hypotheses of great significance to policy makers. The data will be publically available to researchers and other interested parties. Some of the fundamental development issues that will be possible to explore with the new data are related to issues such as:

- The extent of international skilled migration of women (brain drain) and its evolution over time
- The determinants of international skilled migration of women in both source and destination countries
- The relationship between female brain drain and different key development variables, such as women's economic empowerment, gender equality, fertility, human capital formation, and economic growth in both source and destination countries.

The data set with bilateral gender-disaggregated data on skilled migration and age of entry into the main OECD destination countries from 192 countries for 1975–2000 is available at [http://econ.worldbank.org/WBSITE/EXTERNAL/
EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTINTERNATIONAL/0,,contentMDK:21087611~menuPK:304341
4~pagePK:64168182~piPK:64168060~theSitePK:1572893,00.
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Responsibility: Development Research Group, Trade Team—Maurice Schiff (Mschiff@worldbank.org). With Marfouk Adelsalam and Frederic Docquier.

Project Code: 106087.

Completion date: June 30, 2008.

Countries: East Asia and Pacific, Latin America and Caribbean, Sub-Saharan Africa and High-income countries.

Publications

Schiff, M., A. Morrison, and M. Sjoblom (eds.). 2007. *The International Migration of Women*. Washington, D.C.: Palgrave MacMillan and World Bank.

Where to Go? Migration Patterns in Nepal

This research project is examining labor migration across locations with particular focus on the role of infrastructure and amenities in regulating this flow.

The motivation for the study comes from a number of recent trends in developing countries. First, a large number of developing countries are undergoing rapid structural transformation of their economies with increasing internal migration and rapid urbanization. This transformation process is becoming particularly prominent in the context of South Asian countries. In this economic transformation process, while cities are experiencing considerable growth in prosperity, the rural areas, where most of South Asia's population still resides, are being left behind.

Because of its wider implications for economic, political, and social stability, the issue of managing this transformation has become a priority. In this context, policy makers often need to consider different the options available to induce employment diversification and income growth in rural areas. Should they invest in improving connectivity to rural towns as well as amenities there to attract commuters from surrounding rural areas? Should they instead invest in amenities in villages so as to attract nonfarm activities there?

These investments will affect location attributes differently, and hence induce different responses from potential migrants. Migration, in turn, will affect rates of returns from these investments. Thus, an understanding of how location attributes (e.g., amenities and infrastructure) influence the migration location decision is essential to evaluate the efficacy of the different options available for managing the transformation of rural economies in particular.

This project examines migrants' choice of destination conditional on migration. To this end, the empirical strategy remedies both migration selection and unobserved heterogeneity problems.

The analysis uses data from two rounds of the Nepal Living Standard Surveys and a Population Census, and examines how the choice of migration destination is influenced by income differentials and other covariates. The empirical analysis finds distance, population density, and social proximity to have a strong significant effect: migrants move primarily to proximate, high population density areas where many people share their language and ethnic background. Better access to amenities is significant as well. Income differential is important but its impact is smaller in magnitude in comparison with that of distance and other amenities.

Responsibility: Finance Economics and Urban Department, Spatial and Economics Unit—Forhad Shilpi (Fshilpi@worldbank.org). With Marcel Fafchamps, Oxford University; and Migiwa Tanaka, Hong Kong University of Science and Technology.

Project Code: P106131.

Completion date: December 2009.

Countries: Nepal.

Publications

Fafchamps, Marcel, and Forhad Shilpi. 2008. "Determinants of Choice of Migration Destination." Policy Research Working Paper 4728. World Bank, Washington, D.C.

KCP Migration, Remittances-Africa

This research project is conducting a pilot survey of migrant households in Sub-Saharan African countries to (a) fill the knowledge gap on the magnitude, causes, and impacts of migration and remittances in the target country; (b) generate a standardized survey tool for conducting similar surveys in other countries in Sub-Saharan Africa; and (c) strengthen the capacity of the national authorities and local institutions in conducting surveys and monitoring migration and remittance flows. This survey is an integral part of a broader work program on migration and remittances in Sub-Saharan Africa. It will develop survey instruments that can be used for future household surveys on migration and remittances.

The survey will seek information on the following topics:

- Drivers and motivations for migration from the target country
- The relative importance of internal migration, intra-regional migration, and South-North migration for poor households in the target country
- The remittance behavior of different types of migrants, including the use of formal and informal remittance channels, and access of remittance recipients to bank accounts
- Uses of remittance receipts for spending on housing, education, and health care
- Effects of remittances on the household's work efforts and labor market participation
- A profile of return migrants by education, gender, sector, income level, and asset ownership.

The broad method is to use a standardized questionnaire that will be carried out in a nationally representative survey in each country. The project has developed four tools to conduct the household surveys on migration and remittances: (1) a small-scale survey questionnaire, (2) a survey questionnaire for migrant sending countries, (3) a questionnaire for immigrant receiving countries, and (4) a training manual for conducting household surveys on migration and remittances. The small-scale questionnaire was piloted in Ethiopia and it has been revised and is being implemented in household surveys in Burkina Faso, Kenya, Nigeria, Senegal, South Africa, and Uganda. The project has already completed a survey in Ghana. The project has hired leading household survey experts to advise the local research institutions in the countries where the surveys are being conducted to ensure quality data outputs.

Project findings have been presented at the following: Technical Training Workshop on Household Survey for the Africa Migration Project, Pretoria, South Africa (June 2009); Technical Meeting on Household Surveys, World Bank, Washington, D.C. (May 2008); and a training workshop for local research institutions selected to undertake the surveys, Pretoria (June 2009).

Responsibility: Development Prospects Group, Migration and Remittances Team—Dilip Ratha (Dratha@worldbank.org) and Sonia Plaza. With Richard Bilsborrow, University of North Carolina; Richard H. Adams, Jr.; and Mario Navarette.

Project Code: P108576.

Completion date: Ongoing.

Countries: Ghana, Burkina Faso, Kenya, Nigeria, Senegal, South Africa, and Uganda.

Migration Africa-Regional Program

This research project is a comprehensive study of migration and remittances across 10 Sub-Saharan African countries, and in two destination countries outside Africa. The project aims to fill the knowledge gap on the impact of migration and remittances on development, and to strengthen the capacity of policy makers, local researchers, and institutions to analyze relevant trends, determinants, and impacts. Through research, surveys, analysis, and consultation, the project is generating the first comprehensive body of information on migration and remittances in Africa.

The study on the trends, determinants, and development impacts of remittances is collecting data on remittance inflows and outflows in African countries and exploring likely determinants of the magnitude of remittance flows. The study is also examining the range of formal and informal remittance transfer mechanisms within the continent and internationally for the poorest migrants, and the costs and other determinants of the use of formal versus informal remittance systems.

The study on mobilizing other diaspora resources focuses on the fact that there are some 15 million African migrants abroad. The African diaspora (especially the 4.5 million diaspora residing in high-income countries) could become a major source of entrepreneurship, knowledge transfers, and capital for their countries of origin. The study is conducting a comprehensive review of the literature, drawing on the experiences of other regions, and conducting case studies of recent initiatives by diaspora groups and other institutions.

Another study is focusing on skilled emigration and brain drain. Sub-Saharan Africa has the highest emigration rate of tertiary-educated individuals (13 percent) to high-income OECD countries among all developing regions. The study is

undertaking a thorough examination of this issue will develop policy recommendations.

There is also a study of policies to enhance the development impact of migration and remittances in Africa. Based on the literature review and the results of the surveys, the project will provide some preliminary recommendations on policies that could enhance the development benefits of migration and diaspora resources.

The project is developing survey instruments that will provide tools that enable the project to obtain primary data that previous research was unable to do. The project is building a database using the following instruments: the Central Banks Survey, which has survey submissions from 105 countries worldwide, including 34 African countries; the Remittance Service Providers Survey, which has been implemented in Burkina Faso, Cape Verde, Ethiopia, France, Ghana, Kenya, Nigeria, Senegal, Uganda, and the United Kingdom; the Household Survey in Sending and Destination Countries; the Diaspora Survey, which includes African embassies (in the United States, France, the United Kingdom, and the United Arab Emirates), diaspora associations (in the United States, the United Kingdom, France, and South Africa), Associations of African students (in U.S. universities and colleges), and case studies of diaspora individuals; analysis of brain drain, especially of doctors and the top 10 students of the top universities in Ghana over the past 10 years; and the Governance of Migration Survey.

The team organized an advisory committee meeting in Washington, D.C. in March 2008 and the second advisory committee meeting and technical workshop at the African Development Bank in Tunis, Tunisia in April 2009. This provided an opportunity to share some of the project's research findings and to ensure that relevant policy issues were being considered in the project.

The following capacity-building workshops were held: a household survey on migration and remittances capacity-building and training workshop, Pretoria, South Africa (June 2009); Virtual Technical Review of the Remittance Service Provider Survey (June-July 2009); African Parliamentary Forum, Morocco (May 2009); Making Finance Work for Africa: African Remittances Round Table (April 2009); Technical Workshop, Tunis (March 2009); Second Euro African Ministerial Conference on Migration and Development, Paris, France (November 2008); Central Bank Consultations on the sidelines of the World Bank-IMF Annual Meetings (October 2008); Household Survey Technical Workshop, World Bank, Washington, D.C. (May 2008); and Technical Workshop on Africa Migration Project, World Bank, Washington, D.C. (December 2007).

The following institutions have contributed funding for the project: African Development Bank; Canadian International Development Agency; Danish Ministry of Foreign Affairs; French Ministry of Immigration, National Identity and Co-Development; International Fund for Agricultural Development; Swedish International Development Cooperation Agency; and the United Kingdom Department of International Development.

The following institutions have participated in the research: Consortium pour la Recherche Economique et Sociale (CRES); Universite Cheikh Anta, Senegal; Danish Institute for International Studies, Denmark; Developing Markets Associates, United Kingdom; Group de Recherche et d'Echanges Technologiques (GRET), France; Human Sciences Research Council (HSRC), South Africa; Makerere Statistical Institute, Uganda; University of Nairobi, School of Economics, Kenya; University of Ouagadougou, Burkina Faso; and Zibah Consults Limited, Nigeria.

Responsibility: Development Prospects Group, Migration and Remittances Team—Dilip Ratha (Dratha@worldbank.org), Sonia Plaza, and Sanket Mohapatra; Development Research Group—David McKenzie and Caglar Ozden. With Alemayehu Geda, Addis Ababa University; Anthony Kusi and Peter Quartey, University of Ghana; Chukwuma Agu, African Institute for Applied Economics; Fatou Cisse, Universite Cheikh Anta Diop de Dakar; Mario Navarrete, Sistemas Integrales; Robert Lucas, Boston University; Rose W. Ngugi, University of Nairobi; Richard Bilsborrow, University of North Carolina; Yiriyibin Bambio, University of Ouagadougou; Ani Sidwal, Jacqueline Irving, Neil Ruiz, Zhimei Xu, George Joseph, Georgiana Pop, Manka Angwafo, Richard Adams Jr., Seifu Mehari, Sohini Chatterjee, William Shaw, Claudia Carter, Farai Jena, Maria Mboono Nghidinwa, Orphe Olympio, Rebecca Russ, and Virginia Barreto, World Bank.

Project Code: P110562.

Completion date: Ongoing.

Countries: Africa: Burkina Faso, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Nigeria, Senegal, Somalia, Sudan, South Africa, Uganda.

Destination Countries: United States, Canada, United Kingdom, France, Denmark.

Publications

Adams, Richard H. Jr. 2008. "The Demographic, Economic and Financial Determinants of International Remittances in Developing Countries." World Development.

Adams, Richard H. Jr., Alfredo Cuccuecha, and John Page. "Remittances, Consumption and Investment in Ghana." Policy Research Working Paper 4515. World Bank, Washington,

D.C. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2008/02/12/000158349_20080212092546/Rendered/PDF/wps4515.pdf.

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———. April 2007. "Migration in Africa: A Review of the Economic Literature on International Migration in 10 Countries." World Bank, Washington, D.C.

International Trade and Investment

Product Variety in Trade and Factor Prices

This research project aimed to understand how product variety may increase country productivity. The project provided evidence on the monopolistic competition model with heterogeneous firms and endogenous productivity.

The analysis used a nonlinear system of simultaneous equations to estimate the parameters of the GDP function. It used data from UNIDO and a UN industry dataset for industry revenue. It used WITS and an NBER trade dataset for detailed commodity-level trade data to construct the share of new product variety in the total revenue of the industries. Endowment data on various types of capital came from the Summer-Heston Penn-World dataset. The project used a Barro and Lee dataset on endowment data on various types of labor according to their skill levels. World Bank World Development Indicators provided comparable data on GDP across countries and years.

Estimating the model over 48 countries from 1980 to 2000, the findings showed that the model has a well-defined GDP function where relative export variety enters positively. Average export variety to the United States increased by 3.3 percent per year, so it nearly doubled over two decades. The total increase in export variety was associated with a 3.3 percent average productivity improvement for exporters over the two decades.

Overall, the model explained 31 percent of the within-country variation in productivity (52 percent for the OECD countries), but only a very small fraction of the between-country variation in productivity.

The study was presented at the NBER International Trade and Investment Program Winter Meeting (2005), and the American Economic Association Annual Meeting (2004).

Responsibility: Development Research Group, Trade Team—Hiau Looi Kee (hlkee@worldbank.org). With Robert Feenstra, University of California at Davis.

Project Code: P077507.

Completion date: Project closed in 2003 but paper was produced in 2008.

Countries: Global.

Publications

Feenstra, Robert, and Hiau Looi Kee. 2008. "Export Variety and Country Productivity: Estimating the Monopolistic Competition Model with Endogenous Productivity." *Journal of International Economics* 74(2): 500–18.

Research in Industrial Organization

With a specific focus on the electricity and telecommunications sectors, this research project had three main objectives. First, it reviewed the legal, regulatory, and institutional frameworks of several member states of the Economic Community of West African States (ECOWAS) and assessed the progress made toward regulatory effectiveness (i.e., in meeting the requirements of regulatory independence, transparency, and accountability). Second, it identified regulatory issues that could be incorporated into regional trade negotiations and the elements of regulatory policy (e.g., rules governing access to bottleneck infrastructural facilities, tariff rebalancing, competitively neutral mechanisms to promote universal service, licensing and other administrative procedures, and free choice of suppliers). These issues should be given priority attention for regional harmonization in order to remove the frictions and distortions between the regional economies, thereby facilitating cross-border trade flows. Third, it identified practical options for implementing regional harmonization of market structures and regulatory convergence. It also proposed a draft timetable specifying the evolution from a model that is feasible at this stage to regulatory harmonization/integration options that are most likely to enhance regulatory effectiveness and capacity, promote efficient trade, and deepen economic integration in the region.

The research was based on analytic modeling (e.g., dynamic optimization techniques), structural analysis, country-level infrastructure structure, and conduct and performance analysis.

The findings showed that under a variety of assumptions that are realistic in the context of the countries in the region, the public could be better off if the regional utilities were accorded substantial flexibility in setting prices to address existing service backlogs. The findings showed that even the best-regulated franchise electricity companies may deliver prices that are out of line with the efficient price, and this mismatch can be particularly severe if the industry is under reform, and/or when new investment is required.

Demand-side constraints have been a major barrier to implementing effective electricity restructuring in many countries, particularly developing countries. The transition to a non-fossil energy supply infrastructure in the region will be challenging because of the modest energy density of the alternative fuels, the low conversion efficiency and power density of renewable energy extraction, and problems of intermittency—the

big exception being hydro power, which does not suffer from most of these problems.

A carefully-crafted analytic framework, which includes rigorous cost-benefit calculus, could shift the focus toward supporting investments in strategic regional energy infrastructure projects. These include inter-regional transmission lines, natural gas pipelines, and even electricity and natural gas distribution lines.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Ioannis N. Kessides (Ikessides@worldbank.org). With Omar Chisari, Universidad Argentina de la Empresa and CONICET; David Newbery, University of Cambridge; Michael Pollitt, University of Cambridge; Raffaele Miniaci, Università di Brescia; Carlo Scarpa, Università di Brescia; Paola Valbonesi, Università di Padova; David Wade, Argonne National Laboratory; Frank Wolak, Stanford University; Achilles Adamantiades, ICG Aeolian Energy; Aira Htenas; Robert Owen, University of Nantes; and Li Tang, University of Maryland.

Project Code: P081965.

Completion date: June 30, 2009.

Countries: Member states of Economic Community of Western African States (ECOWAS).

Agricultural and Non-Agricultural Trade Reform under the Doha Development Agenda

Agriculture emerged as the key issue in World Trade Organization 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. The framework was extended slightly at the Hong Kong Ministerial, but huge differences remain on issues such as domestic support in the industrial countries, the nature of the tariff-cutting formula, tariff-rate-quota expansion, and the sensitive and special product exceptions sought by industrial and developing countries.

This research project drew heavily on the MacMaps dataset 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. These databases include the all-important specific tariffs in agriculture and the impacts of tariff preferences. The study conducted tariff analyses using data at a fine level of disaggregation and only then aggregated up to changes that could be input into quantitative models. The negotiations on agricultural and non-agricultural trade liberalization have become

strongly intertwined, as they are at the analytical level, so the project will cover both aspects of the negotiations.

Responsibility: Development Research Group, Trade Team—Will Martin (wmartin1@worldbank.org), Kym Anderson, and Bernard Hoekman; Development Prospects Group—Dominique van der Mensbrugge; and Agriculture and Rural Development Department. With Eugenio Diaz-Bonilla; Lionel Fontagne, Sebastien Jean, and David Laborde, CEPII (France); Harry de Gorter, Cornell University; André Nassar, ICONE (Brazil); Thomas Hertel and Roman Keeney, Purdue University; Hans Jensen; and David Orden, International Food Policy Research Institute.

Project Code: P083210.

Completion date: March 2009.

Countries: Global.

Publications

Anderson, Kym, and William J. Martin. 2007. "Agricultural Tariff and Subsidy Cuts in the Doha Round." In L. Crump and S.J. Maswood (eds.), *Developing Countries and Global Trade Negotiations*. London: Routledge.

———. Forthcoming. "Agricultural and NAMA Reform under Doha: Implications for Asia-Pacific Economies." *Pacific Economic Review* 12(3).

Anderson, Kym, and Ernesto Valenzuela. Forthcoming. "The World Trade Organization's Doha Cotton Initiative: A Tale of Two Issues." *The World Economy*.

Martin, Will, and Kym Anderson. 2007. "Exploding a Myth about Agricultural Subsidies?" *Bridges*.

Martin, William J., and Patrick Messerlin. 2007. "Why Is It So Difficult? Trade Liberalization under the Doha Agenda." *Oxford Review of Economic Policy*.

Trade Policy Data Support/Dissemination

This research project analyzed trade policy data and provided empirical evidence on dimension of trade issues facing the international trade community.

The project investigated a wide range of trade questions, including the following: (i) What are the trade patterns and performance/growth in the regions as well as in specific countries? (ii) What is the composition of trade and market share for developing countries in world markets? (iii) How is trade integrated in the regions in the content of production sharing in the development of particular markets? (iv) What are the trade barriers in OECD markets and domestic markets in developing countries, including tariff structure, agricultural subsidies, anti-dumping, and non-tariff measures?

The project carried out data collection and analysis, created

a trade flow matrix, investigated trade barriers, and developed a model for trade indicator measures. The set of trade indicators and performance variables included indices of trade intensity, intra-industry trade, revealed comparative advantage, export specialization, diversification, trade complementarity, export dynamics, market share changes, and various measures of growth in commodity trade.

The findings included information on trade performance and policy reforms in the dimension of economic growth and regional integration as well as country specific findings.

The project findings were presented at a World Trade Organization conference, Barcelona, Spain (January 2007). The dataset on import barriers and trade data can be accessed via the World Bank's trade website (www.worldbank.org/trade).

Responsibility: Development Research Group, Trade Team—Bernard Hoekman (bhoekman@worldbank.org) and Francis Ng (fng@worldbank.org).

Project Code: P083356.

Completion date: June 2009.

Countries: Global.

Publications

Hoekman, Bernard, Marcelo Olarreaga, and Francis Ng. 2007.

“The Impact of Agricultural Support Policies on Developing Countries.” Chapter 4 in A. McCalla and J. Nash (eds.), *Reforming Agricultural Trade for Developing Countries Volume 1*. Washington, D.C.: World Bank.

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Ng, Francis, and Ataman Aksoy. 2008. “Food Price Increases and Net Food Importing Countries: Lessons from the Past.” *Agricultural Economics* 39(1, December): 443–52.

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———. 2009. “International and Domestic Food Prices.” Chapter 2 in A. Aksoy and B. Hoekman (eds.), *Commodity Prices and Poverty*. Washington, D.C.: World Bank.

———. 2009. “Net Food Importing Countries: The Impact of Recent Price Increases.” Chapter 5 in A. Aksoy and B. Hoekman

(eds.), *Commodity Prices and Poverty*. Washington, D.C.: World Bank.

Ng, Francis, N. Aminian, and K.C. Fung. 2008. “Integration of Market vs. Integration by Agreement.” Policy Research Working Paper 4546. World Bank, Washington, D.C.

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———. 2007. “Turkey's Evolving Trade Integration into Pan-European Markets.” *Journal of International Trade and Diplomacy* 1(2, fall): 35–103.

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Yourish, Karen, and Francis Ng. 2008. "Biggest Need, Fewest Resources." *The Washington Post*, April 28.

Standards, Regulatory Reform, and Trade Facilitation

The relationship between technical regulations, voluntary standards, and trade is at the forefront of research and policy discussions. Issues such as the appropriate levels of protection for food safety and costs of testing and certification regulations are of critical importance to developing countries. This is especially true as tariffs decline and as developing countries seek to strengthen industrial performance, increase agricultural production, and expand export opportunities.

This research project addressed questions as to how standards and technical regulations could affect the exports of developing countries, and how multilateral policies should be formulated in reference to the international standards.

The project compiled existing data and new data sets, including the World Bank Technical Barriers to Trade data on standards and technical regulations. A survey was completed in 15 countries. It included questions on cost structures, production and exports, impediments to domestic sales and exports, and whether operations conformed to regulations. As part of this work, more than 200 statistical tables were generated. The project provided a detailed description of the contents of the database, by variable, as well as an outline of possible empirical approaches to deploying the data in analysis. The data are available at: http://econ.worldbank.org/projects/trade_costs.

Responsibility: Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org), Kym Anderson, and Tsunehiro Otsuki. With Keith Maskus, University of Colorado; Maggie Chen, University of Colorado; Jeff Randall; and Hager Ben-Mahmoud.

Project Code: P083360 (extension of P070569).

Completion date: March 2007.

Countries: Global.

Beyond Openness: Trade and Behind-the-Border Policy Reforms

The objective of this research project was to provide support for a broader research program analyzing the impacts of non-border policies and institutions on the trade costs and competitiveness of firms.

The analysis focused on the effects of service sector policies and reforms, entry and operating requirements for foreign

investors, policies to attract foreign direct investment, determinants of technology diffusion, product standards and related compliance requirements, and intellectual property rights.

The research built on existing methodologies and knowledge, and had complementarities with efforts to measure the state of the investment climate in developing countries. The program included data collection projects on specific policies, empirical and econometric analysis, and sector and country studies.

Because it was a program of research as opposed to a specific project, it supported various sub-projects that generated an array of findings. A general theme that emerged from the research on "behind-the-border" policies was that these have had important impacts on the competitiveness of firms in developing countries.

The findings showed that policies that foster competition in markets for inputs—technology and producer services—can have significant impacts on growth performance. Similarly, policies to ensure that final product markets are competitive are an important complement to an open trade regime as a source of market discipline, although trade openness tends to have a larger effect than domestic competition policies do.

Furthermore, complementary policies are important determinants of the absorption of international technologies that are transferred through trade and investment flows, and the poverty reducing effects of greater trade openness. Behind-the-border policies can raise trade costs significantly. Therefore, a focus on reducing such costs is a necessary complement to policies to liberalize trade and investment flows in order to increase the beneficial effects of openness on productivity, growth, and poverty reduction.

Responsibility: Development Research Group, Trade Team—Bernard Hoekman (bhoekman@worldbank.org), Carsten Fink, Caroline Freund, Beata Javorcik, Hiau Looi Kee, Aaditya Mattoo, Marcelo Olarreaga, and Guido Porto. With Kishore Gawande, Cristina Neagu, Alessandro Nicita, Randeep Rathindran, Kamal Saggi, Mariana Spatareanu, and Yanling Wang.

Project Code: P086752.

Completion date: March 2006.

Countries: Global.

Publications

Hoekman, Bernard, and Hiau Looi Kee. 2007. "Imports, Entry and Competition Law as Market Disciplines." *European Economic Review* 51(4): 831–58.

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Doha, Trade, and Poverty

The Doha Development Agenda is an ambitious attempt to use trade to promote development. However, little has been done to ensure that the negotiations will actually do this. The objective of this research project was to help identify ways in which the negotiations might be given a stronger orientation on development and poverty reduction.

The study analyzed the consequences of changes in tariffs and other policy instruments at a very detailed level. The project built these into estimates of the reforms at a more aggregated level that could be analyzed using computable general equilibrium models, which were then used to analyze the effects on economies. Finally, in order to form assessments of poverty impacts, the project evaluated the impacts of price and other changes on individual households. Subsequent research building on these foundations has allowed investigation of the distributional consequences of reforms.

Another element of the project focused on endogenous productivity effects. The researchers developed a computable general equilibrium comparative static model of the Russian economy. The goal was to assess the impact of accession to the World Trade Organization on income distribution and the poor.

A key finding was that greater agricultural liberalization in developing countries creates larger reductions in poverty compared with policies that focus on defensive approaches. The project also highlighted the country-specific nature of the impacts on poverty in individual countries. This provided a basis for recommendations on ways to reduce poverty that would complement the impacts of trade reform. Recent work on services trade liberalization points to large potential reductions in poverty from liberalization in key service sectors.

Subsequent research has focused on the impacts of high food prices on poverty in low-income countries. This work provided the basis for the widely-cited result that the food price crisis of 2008 moved an additional 100 million people into poverty.

Responsibility: Development Research Group, Trade Team—Will Martin (wmartin1@worldbank.org), L. Alan Winters, Guido Porto, Maros Ivanic, Alessandro Nicita, Dominique van der Mensbrugge, Jorge Balat, and M. Bussolo. With C. Arndt, Joaquim Bento de Souza Ferreira-Filho, M. Horridge, M. Kuiper, F. Tongeren, J. Lay, Zhai Fan, A. Robilliard, S. Robinson, J. Cockburn, C. Ermini, C. Cororaton, Annabi Corong, Selilm Raihan, B. Decaluwe, T. Rutherford, and O. Shepotylo.

Project Code: P089139.

Completion date: June 2007.

Countries : Global.

Publications

- Hertel, T., Roman Keeney, Maros Ivanic, and L. Alan Winters. 2007. "Distributional Effects of WTO Agricultural Reforms in Rich and Poor Countries." *Economic Policy* 50: 289–337.
- . 2007. "Why Isn't the Doha Development Agenda More Poverty Friendly?" World Bank, Washington, D.C.
- Ivanic, M., and W. Martin. 2008. "Implications of Higher Global Food Prices for Poverty in Low-income Countries." *Agricultural Economics* 39:405–16.
- Rutherford, Thomas, and David Tarr. 2007. "Regional Poverty Effects of Russian WTO Accession." World Bank. Mimeo.

Global Trade Architecture

This research project explored options that could help enhance the development dimension of the World Trade Organization, including complementary measures and "aid for trade."

The project focused on what could be done to enhance the coherence between the activities of the development community (aid, technical assistance) and the World Trade Organization's trading system. What is the impact of global trade reform on poverty and what complementary measures are needed to enhance the benefits of trade liberalization? How large is preference erosion? What is the distributional impact of trade reforms?

The project carried out a mix of theoretical analyses of the incentives for multilateral trade cooperation, econometric analyses of product-level trade and trade policy data combined with household level information on consumption, and development of databases on trade policy (antidumping, safeguards) and dispute settlement.

The findings showed that aid for trade interventions to lower trade costs would help poor households to exploit trade opportunities. However, global trade liberalization alone would not have large effects on the poor in poor countries where preference erosion is a major issue. The findings also showed that poor countries do not directly benefit from the World Trade Organization's enforcement mechanisms, and that policy space and flexibility mechanisms in the World Trade Organization do not do much to promote better development outcomes.

The main impact of this research program was to bolster the case for "aid for trade" to complement trade negotiations and enhance the benefits of trade reforms for poor countries.

Project findings have been presented at seminars in Arusha, Zanzibar, Dar es Salaam, Hong Kong, Toronto, Oxford, Brussels, Cairo, Cotonou, New Haven, Geneva, London, and Windhoek.

Responsibility: Development Research Group, Trade Team—Bernard Hoekman (bhoekman@worldbank.org), Marcelo

Olarreaga, and Guido Porto. With Kyle Bagwell, Chad Bown, Felix Eschenbach, Simon Evenett, Joseph Francois, Kishore Gawande, Philip Levy, Nuno Limao, Vlad Manole, Patrick Messerlin, Alessandro Nicita, Dominique Njinkeu, Howard Pack, Sheila Page, Kamal Saggi, Isidro Soloaga, Robert Staiger, and Thierry Verdier.

Project Code: P091490.

Completion date: March 2007.

Countries: Global.

Publications

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Suwa-Eisenman, Akiko, and Thierry Verdier. 2007. "Aid, Trade and FDI." *Oxford Review of Economic Policy*.

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Poverty Alleviation through Reducing Distortions to Agricultural Incentives

Because a large proportion of the world's poor live in farm households in the poorest countries, improved understanding of the effects of government distortions to agricultural incentives would be useful for more-informed policy debate. This research project sought to increase understanding of the ways in which trade-related policies distort the prices faced by farmers in poor countries.

The project studied using price comparisons to estimate the distortions to farmer and consumer food prices from a

wide variety of interventions. The project collected data and analyzed around two-thirds of farm products in more than 50 developing countries (nearly half of them low-income countries) plus 20 industrial countries. Together these countries account for about 90 percent of global agriculture. The data cover up to 50 years.

From the project findings, agricultural protection rates have been rising with per capita income; those rates are higher the lower the agricultural comparative advantage of a country. Anti-agricultural bias on average has almost disappeared. For import competing goods, a bias toward protection has emerged. However, the anti-trade bias in agricultural policies remains, and the standard deviation of assistance across commodities is still very high, suggesting that much would be gained in improved resource allocation and greater agricultural productivity growth if further reforms were to follow.

The first stage of the project generated five volumes, several papers, and a price distortions database. These were key inputs in the second stage, which analyzed in much more depth, including through cross-country comparisons, the effects of alternative policies on income distribution and poverty and the political economy reasons behind those policy choices. Lessons and policy implications from the analyses have been drawn out for various types of International Development Association countries in the seven books produced through the project.

The methodology has been placed on the project's web site (www.worldbank.org/agdistortions). An overview of the project results was presented at the International Association of Agricultural Economists meeting in Beijing (August 2009).

Responsibility: Development Research Group, Trade Team—Kym Anderson (kanderson@worldbank.org) and Will Martin.

Project Code: P093895 and P105591.

Completion date: June 2009.

Countries: Global.

Publications

Anderson, K. (ed.). 2009. *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007*. London: Palgrave Macmillan, and Washington DC: World Bank.

Anderson, K., and W. Martin (eds.). 2009. *Distortions to Agricultural Incentives in Asia*. Washington, D.C.: World Bank.

Anderson, K., and W.A. Masters (eds.). 2009. *Distortions to Agricultural Incentives in Africa*. Washington, D.C.: World Bank.

Anderson, K., and J. Swinnen (eds.). 2008. *Distortions to Agricultural Incentives in Europe's Transition Economies*. Washington, D.C.: World Bank.

Anderson, K., and A. Valdés (eds.). 2008. *Distortions to Agricultural Incentives in Latin America*. Washington, D.C.: World Bank.

Trade Facilitation

This research project examined the link between trade costs, trade facilitation, and development. It explored issues related to trade facilitation and development, including customs and border controls and impact on trade costs, international security and trade, World Trade Organization negotiations on trade facilitation and developing country interests, standards and regulations affecting trade costs, the role of infrastructure in driving trade transactions costs, and regional agreements on trade facilitation and developing country interests, among others.

The project addressed trade facilitation in a broad context, beyond issues only associated with border controls. It produced research and policy papers on the above noted topics, as well as new data sets on issues related to trade costs.

The project findings were presented at seminars in Washington, D.C. (May and October 2006); Bonn, Germany (May 2006); Adelaide, Sanctuary Cove, and Canberra, Australia (August 2006); Cincinnati, Ohio (November 2006); New Haven, Connecticut (February 2007); Cairo, Egypt (March 2007); and Berlin, Germany (November 2007).

Responsibility: Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org). With Ben Shepherd and Matthias Helble.

Project Code: P095689.

Completion date: September 2007.

Countries: Global.

Publications

Francois, Joseph, and Miriam Manchin. 2007. "Institutions, Infrastructure, and Trade." Policy Research Working Paper 4152. World Bank, Washington, D.C.

Trade Costs, Export Competitiveness, and Development Prospects

This research project set out to develop an outline for new indicators of trade facilitation, building on several databases at the World Bank. The project explored, for example, new methods to leverage a firm-level database on standards from 15 countries and approximately 690 firms. It also updated the trade facilitation data of 75 countries. This involved creating a matrix and outline for possible new indicators that would quantify the costs of delays in transport, customs clearance, and meeting duplicative standards requirements on international trade.

The project combined two lines of exploration: the impact of standards on trade, and the impact of trade facilitation

indicators on trade, with a focus on developing countries. The project findings included empirical evidence that harmonized standards have affected export competitiveness, in particular through Mutual Recognition Agreements. The findings also showed that country and regional gains to trade are associated with increasing capacity in trade facilitation.

Responsibility: Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org). With Yoko Yamamoto and Ayako Suzuki.

Project Code: P096129.

Completion date: June 2007.

Countries: Global.

Publications

Chen, Maggie, Ayako Suzuki, and John S. Wilson. "Mutual Recognition Agreements and Trade." World Bank, Washington, D.C.

Wilson, John S. Forthcoming. "Standards and Developing Country Exports: A Review of Selected Studies and Suggestions for Future Research." International Agricultural Research Consortium.

Wilson, John S., and Tsunehiro Otsuki. "Regional Integration in South Asia: What Role for Trade Facilitation?" World Bank, Washington, D.C.

Export Crops, Marketing Costs, and Poverty

The objective of this project was first to establish whether households that produce export crops (like cotton, tea, or coffee) are richer, on average, than households specialized in subsistence agriculture. Second, the project explored a possible explanation for this finding: that marketing costs matter. Indeed, districts with lower marketing costs foster export cropping and this in turn leads to lower poverty.

Farmers, especially the poorest, may not benefit from enhanced export opportunities (like those generated by the Doha Development Agenda) if complementary factors are missing. Based on parametric and non-parametric econometric analysis of household surveys produced by the Uganda Bureau of Statistics, the project identified some of these complementary factors, like transport costs and market access for inputs and outputs.

The findings showed that districts with higher marketing costs tended to be poorer. One reason behind this fact was that when marketing costs were high, export crop participation was low. Because export crops are high-return crops, an improvement in marketing costs led to lower poverty in rural Uganda.

The research results were presented in the following workshops and seminars: Duke University, the NBER, Penn State

University, the University of Connecticut, and a Workshop on Trade Costs (Entebbe, Uganda).

Responsibility: Development Research Group, Trade Team—Guido Porto (gporto@worldbank.org). With Jorge Balat, Yale University; Mariano Negri, World Bank; and Ethel Fonseca, Rutgers University.

Project Code: P100061.

Completion date: June 2009.

Countries: Uganda.

Publications

Balat, J., I. Brambilla, and G. Porto. Forthcoming. “Realizing the Gains from Trade: Export Crops, Marketing Costs, and Poverty.” *Journal of International Economics*.

Deep Integration and the Adjustment Process in Mexico

The first part of the research project used a case study approach to explore the effects of membership in NAFTA and GATT on innovation and trade in the Mexican soaps, detergents, and surfactants industry. Several basic findings have emerged.

First, the most fundamental effect of NAFTA and GATT on this industry has been to help induce Wal-Mart to enter Mexico. Once there, Wal-Mart changed the retail sector, forcing firms in the soaps, detergents, and surfactants industry to cut their profit margins and/or innovate. Those unable to respond to this new environment tended to lose market share and, in some cases, disappear altogether.

Second, partly in response to Wal-Mart, many Mexican producers have logged impressive efficiency gains. The gains have come from both labor shedding and innovation, which in turn were fueled by innovative input suppliers and multinationals bringing new products and processes from their headquarters to Mexico.

Finally, although Mexican detergent exports have captured an increasing share of the U.S. detergent market over the past decade, Mexican sales in the United States have been inhibited by a combination of excessive shipping delays at the border and artificially high input prices (due to Mexican protection of domestic caustic soda suppliers). Two additional factors have held back sales: lack of brand recognition among non-Latin consumers, and the zero-phosphate laws in many regions of the United States.

The second part of the research project examined the impact of foreign direct investment on industry structure, productivity performance, and the rate of innovation of domestic firms by studying the entry of Wal-Mart into Mexico following the 1994 North American Free Trade Agreement.

The resulting study presents a dynamic industry model in

which firms decide whether to sell their products through Wal-Mart, or use traditional retailers. Wal-Mart provides access to a larger market, but it puts continuous pressure on its suppliers to improve the appeal of their products, and it forces them to accept relatively low prices.

Simulations of the model show that the arrival of Wal-Mart separates potential suppliers into two groups. Those with relatively appealing products choose Wal-Mart as their retailer, whereas those with less appealing products do not. For the industry as a whole, the model predicts that the associated market share reallocations, adjustments in innovative effort, and exit patterns increase productivity and the rate of innovation.

These results accord well both with the case study findings and with regression results based on a panel of Mexican producers.

The research findings have been presented at the International Economics Section Summer Workshop, Princeton University (June–July 2009); the Technological Progress and Productivity Measurement Conference, NBER, Cambridge, Massachusetts (March 2009); and the Latin America and Caribbean Economic Association Conference, Bogota, Colombia (October 2007).

Responsibility: Development Research Group, Trade Team—Beata Javorcik (bjavorcik@worldbank.org). With Wolfgang Keller, University of Colorado, Boulder; and James Tybout, Pennsylvania State University.

Project code: P100168.

Completion date: August 2009.

Countries: Mexico.

Publications

Iacovone, Leonardo, Beata Javorcik, Wolfgang Keller, and James Tybout. 2009. “Wal-Mart in Mexico: The Impact of FDI on Innovation and Industry Productivity.” University of Oxford. Mimeo.

Javorcik, Beata, Wolfgang Keller, and James Tybout. 2008. “Openness and Industrial Response in a Wal-Mart World: A Case Study of Mexican Soaps, Detergents, and Surfactant Producers.” *The World Economy* (December).

Trade: Regulatory Governance Harmonization for Promoting Trade and Deepening Economic Integration in West Africa

With a specific focus on the electricity and telecommunications sectors, this research project had three main objectives. The first was to review the legal, regulatory, and institutional frameworks of several member states of the Economic Community of West African States (ECOWAS) and assess the progress

made toward regulatory effectiveness. The second was to identify regulatory issues that could be incorporated into regional trade negotiations and the elements of regulatory policy. This should be given priority attention for regional harmonization in order to remove the frictions and distortions between the regional economies, thereby facilitating cross-border trade flows. The third objective was to identify practical options for implementing regional harmonization of market structures and regulatory convergence. This objective sought to propose a draft timetable specifying the evolution from a model that is feasible at this stage to regulatory harmonization/integration options that are most likely to enhance regulatory effectiveness and capacity, promote efficient trade, and deepen economic integration in the region.

The analysis was based on analytic modeling (e.g., dynamic optimization techniques); structural analysis; and country-level infrastructure structure, conduct, and performance analysis.

The project results show that under a variety of assumptions that are realistic in the context of the countries in the region, the public could be better off if the regional utilities were accorded substantial flexibility in setting prices to address existing service backlogs. The results showed that even the best regulated franchise electricity companies may deliver prices that are out of line with the efficient price. This mismatch can be particularly severe if the industry is under reform, and/or when new investment is required.

Demand-side constraints have been a major barrier to implementing effective electricity restructuring in many countries, particularly those in the developing world. The transition to a non-fossil energy supply infrastructure in the region will be challenging because of the modest energy density of the alternative fuels, the low conversion efficiency and power density of renewable energy extraction, and problems of intermittency. Finally, a carefully-crafted analytic framework that includes rigorous cost-benefit analysis could shift the focus toward supporting investments in strategic regional energy infrastructure projects.

The research findings have been presented at: Turning Crises into Opportunities through Regulatory Reforms, World Bank, Washington, D.C. (March 2009); Annual SPAID Infrastructure Sector Conference 2008 in South Africa, Johannesburg (November 2008); USAID training workshop, Washington D.C. (December 2008); Competition Policy for Regulated Industries, Istanbul (September 2008); Florence School of Regulation Workshop, Florence (October 2008); Economists' Forum (April 2008); and Infrastructure Regulation Workshop, World Bank, Washington, D.C. (November 2008).
Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Ioannis Kessides (Ikessides@

worldbank.org) and AFT: PREM 4—Nancy Benjamin. With David Newbery, University of Cambridge; Michael Pollitt, University of Cambridge; Raffaele Miniaci, Università di Brescia; Carlo Scarpa, Università di Brescia; Paola Valbonesi, Università di Padova; David Wade, Argonne National Laboratory; Frank Wolak, Stanford University; Achilles Adamantiades, ICG Aeolian Energy; Aira Htenas; and Robert Owen, University of Nantes.

Project Code: P100441.

Completion date: June 30, 2009.

Countries: Economic Community of West African States.

Publications

- Adamantiades, A., and I. Kessides. 2009. "Nuclear Power and Sustainable Energy Policy: Current Status and Future Prospects." *Energy Policy*.
- Chisari, O., and I. Kessides. 2009. "Integration of Electricity Markets: Hold-up, Option Value of Waiting to Integrate and Self-Enforcing Agreements."
- . 2009. "Pricing Dynamics of Network Utilities in Developing Countries." *Review of Network Economics*.
- . 2009. "Threat of Regulation, Reputational Capital and the Doomsday of the Regulated Firm." World Bank, Washington, D.C.
- Htenas, A. 2009. "Regionalization to Promote Foreign Direct Investment in West Africa." World Bank, Washington, D.C.
- Kessides, I., R. Miniaci, C. Scarpa, and P. Valbonesi. 2009. "Towards Defining and Measuring Affordability of Public Utility Services." Policy Research Working Paper 4915. World Bank, Washington, D.C.
- Kessides, I., R. Noll, and N. Benjamin. 2008. "Regionalizing Infrastructure Reform in Developing Countries." World Bank, Washington, D.C.
- . 2008. "Regionalizing Telecommunications Reform in West Africa." Policy Research Working Paper 3872. World Bank, Washington, D.C.
- Kessides, I., and D. Wade. 2009. "Towards a Sustainable Global Energy Supply Infrastructure: Net Energy Balance and Density Considerations." World Bank, Washington, D.C.
- Miniaci, R., C. Scarpa, and P. Valbonesi. 2009. "The Affordability of Public Services." World Bank, Washington, D.C.
- Newbery, D. 2009. "Regulating State-owned Electricity companies and the Problem of Under-pricing." World Bank, Washington, D.C.
- Pollitt, M. 2009. "Energy Regulation in Developing Countries in the Light of Climate Change." World Bank, Washington, D.C.
- Wolak, F. 2009. "Managing Demand-Side Economic and Political Constraints on Electricity Industry restructuring Processes." World Bank, Washington, D.C.

———. 2009. “Regulating Competition in Wholesale Electricity Supply.” World Bank, Washington, D.C.

Transnational Production Networks in East Asia and the Pacific

The goal of this research project was to provide a quantitative, empirical assessment of the impact of different trade policy and trade facilitation measures on the growth of transnational production networks involving developing countries. A complementary aim was to compare the sensitivity of trade flows within networks to each of the different interventions.

Previous research on transnational production networks has largely focused on description, in particular identification of trade in parts and components—as a proxy for network trade—using standard international trade classifications. The approach in this project focused on the identification of the policy impacts on such trade flows, both in absolute and relative terms.

The analysis was based on a standard gravity model of international trade. The model was estimated using bilateral trade data from the Comtrade database (accessed via World Integrated Trade Solution software). Trade in parts and components versus trade in final goods was identified using the SITC Revision 2 classification.

The results highlighted the importance of parts and components trade in the East Asia and Pacific region, underscoring the rapid growth in transnational production networks in sectors such as electronic goods. The results also showed that trade in parts and components (a proxy for network trade) is responsive to trade policy measures such as tariffs, as well as broader trade facilitation measures such as export/import costs, transport costs, contract enforceability, and services sector infrastructure. However, additional work is required to ensure the robustness of these results.

The preliminary project results were presented at the European Trade Study Group meetings in Athens, Greece (September 2007).

Responsibility: Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org). With Ben Shepherd, Matthias Helble, and Witold Czubala.

Project Code: P104431.

Completion date: November 2007.

Countries: East Asia and the Pacific Region.

Publications

Helble, Matthias, Ben Shepherd, and John S. Wilson. 2007. “Trade Costs and International Production Networks: Lessons from the Asia-Pacific Experience.” World Bank, Washington, D.C.

Services Analysis, Modeling, and Capacity-Building

This research project analyzed the impacts of service sector liberalization and the role of different modes of supply of services (especially foreign direct investment and cross-border trade); the interactions between service sector reforms that lower service costs and trade in goods (export competitiveness, patterns of trade); and the role of services in adjusting to liberalization. The project also constructed better measures of the welfare consequences of liberalization of trade in goods and services.

The project developed a computable general equilibrium model that incorporates recent theoretical developments regarding services and foreign direct investment, thereby allowing assessment of the impacts of reforms in these areas. The project included data collection on services policies in Kenya and Tanzania, and estimation of the ad valorem equivalents of barriers in the business services sectors.

The research revealed that both Kenya and Tanzania could obtain substantial gains from liberalization of their costly regulatory barriers against providers of services, both domestic and multinational. In Tanzania, regulatory barriers are especially costly in the maritime and road transportation sectors and in banking services.

The research findings were presented at: the Tenth Anniversary Conference of the Global Trade Analysis Project (GTAP), Purdue University (June 2007); the World Bank Institute seminar on Agricultural Trade Liberalization, Dar es Salaam, Tanzania (December 2007); the Eleventh Conference of the Global Trade Analysis Project (GTAP), Helsinki, Finland (June 2008); and the Training Workshop on CGE modeling of services and FDI in Africa, Dar es Salaam, Tanzania (September–October 2008).

Responsibility: Development Research Group, Trade Team—Ana Margarida Fernandes (afernandes@worldbank.org). With David Tarr; Thomas Rutherford, ETH, Zurich; Edward Balistreri, Colorado School of Mines; Jesper Jensen, Teca Training; and Borislava Mircheva, American University.

Project Code: P105190, P106655, P111401.

Completion date: December 31, 2008.

Countries: Kenya and Tanzania.

Publications

Balistreri, Edward, Thomas Rutherford, and David Tarr. 2009. “Modeling Services Liberalization: The Case of Kenya.” *Economic Modeling* 26: 668–79.

———. 2009. “Modeling Services Liberalization: The Case of Kenya.” Policy Research Working Paper 4544. World Bank, Washington, D.C. Available at: <http://econ.worldbank.org/external/default/main?searchTxt=balistreri&detailMenuPK=642647>

48&docTY=620265&menuPK=64264748&pagePK=64166018
&piPK=64165415&siteName=EXTDEC&theSitePK=469372.

Jensen, Jesper, Thomas Rutherford, and David Tarr. 2009. "Modeling Services Liberalization: the Case of Tanzania." Policy Research Working Paper 4801. World Bank, Washington, D.C. Available at: http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000158349_20081228230212.

Analysis of Agricultural Tariff-Based Import Barriers

This research project was undertaken primarily by developing country analysts from ICONE of Brazil, an institute that plays an active role in analysis of options for multilateral trade reform, particularly through the G-20 coalition of developing countries. The research proved detailed data and timely analysis on key policy issues such as: the impacts of tariff reduction and quota expansion formulae; Sensitive and Special Product exclusions; quota underfill/overfill and administration methods and regulations; and "water" in the tariffs, gains/losses due to preferential tariff/quota erosion for developing countries and special safeguards. The project also examined the implications for poor households of changes in food prices.

This study focused on detailed assessments of the implications of key policy questions considered by developing country negotiators, taking into consideration the overall, global implications of reforms. It was designed to complement earlier work by examining features that could only be examined by special investigations focusing on particular reforms, such as the Special Products and the Special Safeguard Mechanism, or by examining outcomes of particular changes for households.

The analysis used detailed data on tariffs, tariff-rate quotas, and quota rents not available elsewhere.

The study concluded that Sensitive and Special Products will result in substantial losses of market access gains to developing countries. It also provided important guidance on key technical issues, such as the tradeoff between benefits from tariff reduction and those available from expansions in tariff-rate quotas. It examined the implications of the Special Safeguard Mechanism and concluded that the price trigger under this mechanism would discriminate against developing countries by comparing the unit value of imports from developing countries against the average unit value of all imports—including imports from industrial countries, which tend to have higher unit values.

The research results have been presented at the following: the Food and Agriculture Organization, Rome (July 2007); WTO Secretariat, Geneva, Switzerland (January 2007); an AAEA-organized symposium, Portland, OR (July-August 2007);

a workshop organized by the International Policy Council/International Center for Trade and Sustainable Development, Glion, Switzerland (January 2007); European Commission Conference on Export Restrictions on Raw Materials, Brussels (September 2008); and National Agricultural Outlook Conference, Canberra, Australia (2007).

Project results are available at www.iconebrasil.com.br. The analysis of alternative TRQ expansion formulas is available at <http://www.agritrade.org/blog/2007/07/10/trq-expansion-creating-opportunities-for-trade/>

http://www.agritrade.org/blog/Member_Activities/TRQ_expansion.pdf.

Responsibility: Development Research Group, Rural Development Team—Will Martin (Wmartin1@worldbank.org). With Cinthia Cabral, Erika Kliauga, Mario Jales, Andre Nassar, Instituto de Estudos do Comércio e Negociações Internacionais (ICONE), Brazil; Harry de Gorter, Cornell University; and Maros Ivanic.

Project Code: P105588.

Completion date: 2008.

Countries: Global.

Publications

- de Gorter, H. 2008. "The Economics of Tariff Rate Import Quotas." Princeton Encyclopedia of the World Economy, Princeton, NJ.
- de Gorter, H., A. Green, and E. Kliauga. 2008. "Estimates of Preferential Rents Including Tariff-Rate Quotas." World Bank, Washington, D.C. Unpublished paper.
- de Gorter, H., and E. Kliauga (in conjunction with ICONE). 2007. "Breaking the Doha Impasse on Agricultural Modalities for Sensitive Products and Tariff Rate Quota Expansion." World Bank, Washington, D.C.
- de Gorter, H., and E. Kliauga. 2007. "Key Issues for Developing Countries in the Doha Negotiations on Agriculture." Cornell University. Mimeo.
- de Gorter, H., E. Kliauga, and A. Nassar. 2009. "How Current Proposals on the SSM in the Doha Impasse Matter for Developing Country Exporters." <http://www.iconebrasil.org.br/en/?actA=8&areaID=8&secaoID=73&artigoID=1741>
- de Gorter, H., and W. Martin. 2007. "Breaking the Deadlock on the Modalities for Sensitive Products and Tariff Rate Quota Expansion." Cornell University. Mimeo.
- Nassar, A., C. Cabral da Costa, and L. Chiodi. 2008. "Implications for Brazil of the July 2008 Draft Agricultural Modalities." International Centre for Trade and Sustainable Development, Geneva, Switzerland.

A New African Trade Database

This research project aimed to address the limitations of earlier

databases on African production and trade by disaggregating the African continent in GTAP to a total of 31 countries and regions. The World Bank supported African researchers through capacity building and technical advice to help them obtain the needed input-output data from national sources. Outputs include a special version of GTAP, which is publicly available, and a series of studies undertaken by African researchers drawing on this database.

African policy makers are increasingly requesting quantitative assessments of trade agreements currently under negotiation, particularly the Economic Partnership Agreements and the Doha Development Agenda. The UN Economic Commission for Africa, the European Commission, and the World Bank, among other international institutions, have sought to support these requests. However, they have been fundamentally limited by data availability.

The previous GTAP database disaggregated just 15 of the 54 countries in Africa, and the remaining regional groupings (of which there are 4) were not well-suited to supporting these negotiations.

For 22 countries (Egypt, Morocco, Tunisia, Côte d'Ivoire, Senegal, Ghana, Nigeria, Cameroon, Ethiopia, Kenya, Sudan, Botswana, South Africa, Congo, Madagascar, Malawi, Mauritius, Mozambique, Tanzania, Uganda, Zambia, and Zimbabwe), it was possible to obtain input-output data as a basis for evaluation. Other African countries were matched to countries at comparable stages of development. A representation for their economies was obtained by adjusting this internal structure to data on imports and exports for 57 trade categories.

A major problem was ensuring adequate representation of trade given missing values. This was dealt with in two stages. First, the researchers examined the data record on bilateral imports and bilateral exports. Second, if data were available for both flows, the two were reconciled, giving a preference for the more reliable reporter. If they were not available, an assessment was made using Probit techniques of whether the trade flow was likely zero, or whether it was missing.

The database has been made publicly available. In addition, a group of African researchers was trained in the use of the database and modeling techniques. These researchers made presentations in a special session of the conference on Global Economic Analysis held in Helsinki in June 2008.

The database is available free of charge at <https://www.gtap.agecon.purdue.edu/databases/Africa/default.asp>.

Responsibility: Development Research Group, Rural Development Team—Will Martin (Wmartin1@worldbank.org) and Poverty Reduction and Economic Management Network, International Trade Department—Phillip Schuler. With Terrie Walmsley, Thomas Hertel, and Nelson Villoria,

Purdue University; Christian Emini, University of Yaounde; Youssof Kone, University of Bouake; Guylain Ngeleza, currently at IFPRI, Washington, D.C.; Khalid Siddig, currently at Justus-Liebig University of Giessen, Germany; Charles Adjusi, Department of Finance, Business School, University of Ghana; and Belay Fekadu, IFPRI-Addis Ababa.

Project Code: P105589.

Completion date: June 30, 2008.

Countries: Egypt, Morocco, Tunisia, Côte d'Ivoire, Senegal, Ghana, Nigeria, Cameroon, Ethiopia, Kenya, Sudan, Botswana, South Africa, Congo, Madagascar, Malawi, Mauritius, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe. All other African countries covered using representative-country information and combined into regions that correspond with the economic partnership agreements being formed as part of Africa's Economic Partnership Agreements with the European Union.

Publications

Emini, Christian Arnault. 2008. "Breaking Down the Poverty and Growth Effects of the Economic Policy Package: A Double-Calibration Analysis for Cameroon Using a Microsimulation CGE Model." Paper presented to the 11th Conference on Global Economic Analysis, Helsinki, June. www.gtap.org

Emini, Christian Arnault, and Dorine Feunou Kanmi. 2008. "Decomposing the Effects of Economic Policies on Poverty Trends in Cameroon: A Double Calibration Micro Simulated General Equilibrium Analysis." Poverty and Economic Policy Research Network Working Paper No. MPIA-2008-18. Available at SSRN: <http://ssrn.com/abstract=1349907>.

Karingi, Stephen, and Belay Fekadu. 2009. "Beyond Political Rhetoric—The Meaning of the Grand Eastern and Southern Africa FTA." Conference on Global Economic Analysis, Chile, June. www.gtap.org.

Ngeleza, Guylain. 2008. "Preferential Trade Agreements between Central African and European Union: Stumbling or Building Blocks? A General Equilibrium Approach." Paper presented to the 11th Conference on Global Economic Analysis, Helsinki, June. www.gtap.org.

———. 2009. "Preferential Trade Agreements between the Monetary Community of Central Africa and the European Union: Stumbling or Building Blocks? A General Equilibrium Approach." IFPRI Discussion Paper 859. IFPRI, Washington, D.C. <http://www.ifpri.org/publication/preferential-trade-agreements-between-monetary-community-central-africa-and-european-uni>.

Siddig, Khalid. 2009. "From Bilateral Trade to Multilateral Pressure: A Scenario in the EU Relation with Sudan." Submitted to the World Institute for Development Economics Research (WIDER), United Nations University, Finland. www.gtap.org.

- Siddig, Khalid, and Hatim Mahran. 2008. "The Impact of Trade Liberalization and Domestic Tax Policies on the Sudanese Economy." Paper presented to the 11th Conference on Global Economic Analysis, Helsinki, June. www.gtap.org.
- Villoria, N. 2008. "Estimation of Missing Intra-African Trade." Paper presented to the 11th Conference on Global Economic Analysis, Helsinki, June. www.gtap.org.
- Youssef, Kone. 2008. "Economic and Social Impacts of the Prospective EU-ECOWAS Economic Partnership Agreement (EPA): The Evidence for Côte d'Ivoire." Paper presented to the 11th Conference on Global Economic Analysis, Helsinki, June. www.gtap.org.

Transparency and Competitiveness

This research project is analyzing transparency, trade, and competitiveness, including issues related to the changing nature of the global trade and financial architectures (GTFA). The GTFA has two main lines of action: it officiates as a forum for exchanging ideas and pulling together or instigating research in areas of relevance to the global trade and finance agenda; it also aims to translate the results of this process into concrete policy recommendations and actions that contribute to shape the international dialogue and reform agenda in the areas of global trade and finance.

The GTFA research program is primarily dedicated to help formulate evidence-based policy and identify areas for international cooperation. It has two components: first, it takes stock and builds on existing research programs, distilling key policy options and recommendations; second, it sponsors original research in areas where knowledge and policy formulation gaps have been identified.

This research project represents an extension of DECRG-Trade's past work in related areas and seeks to expand on this foundation in new areas of importance to development in regard to transparency, trade, and the global financial and trade systems. Various methods are being leveraged, including gravity modeling and computable general equilibrium frameworks and data from the World Bank and other sources on trade, governance, financial systems, and firm-level data.

The research has been presented at the following conferences, seminars, and outreach activities: Asian Development Bank Institute Seminar (August 2008); Development Research Group, Trade Seminar (June 2008); Columbia University Roundtable on Structural Reform, New York (June 2008); APEC-World Bank Workshop on Regional Integration, Transparency and Economic Development, Cairns (June 2007); Lowy Institute Conference on Enhancing Transparency in the Multilateral Trading System, Sydney (July 2007); APEC

Press Briefing World Bank Research Report Release, Sydney (September 2007); Launch of Global Trade Alert, Washington D.C. (June 2009); Valuing International Trade Rules, Pfaeffikon (June 2009); Launch of Global Trade Alert, London (June 2009); The Trade Implications of Policy Responses to the Crisis, Brussels (May 2009); Antidumping Use across the World, Washington, D.C. (April 2009); The Political Economy of Trade Policy in the BRICS, New Orleans, LA (March 2009); and GTFA Steering Committee, New Haven, CT (March 2009).

Project databases include the Transparency of Trade Policy in APEC Data: New indicators finalized on two dimensions of transparency, predictability (reducing the cost of uncertainty), and simplification (reducing information costs). Using the Asia Pacific Economic Cooperation (APEC) member economies as a case study, new indices of importer and exporter transparency have been constructed for the region.

Databases: Global Antidumping Database: (http://people.brandeis.edu/~cdown/global_ad/); Global Trade Alert: (<http://www.globaltradealert.org>).

Additional funding for the research was provided by the Department for International Development (United Kingdom) and the Department of Foreign Affairs and Trade (Australia). **Responsibility:** Development Research Group, Trade Team—John S. Wilson (jswilson@worldbank.org) and Poverty Reduction and Economic Management Network, International Trade—Bernard Hoekman. With Olivier Cattaneo and Benjamin Taylor.

Project Code: P106110.

Completion date: December 31, 2012.

Countries: Global.

Publications

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- Gootiiz, Batshur, and Aaditya Mattoo. 2009. "Services in Doha: What's on the Table?" Policy Research Working Paper 4903. World Bank, Washington, D.C.
- Hoekman, Bernard, Will Martin, and Carlos A. Primo Braga. 2009. Trade Preference Erosion. Measurement and Policy Response. Palgrave Macmillan and World Bank.
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- Wilson, John S., and Kazutomo Abe. 2008. "Governance, Corruption, and Trade in the Asia Pacific." Policy Research Working Paper 4731. World Bank, Washington, D.C.
- . 2008. "Trade, Transparency, and Welfare in the Asia Pacific." *Journal of International Economic Studies* 12(2): 35–78.
- Wilson, John S., Matthias Helble, and Ben Shepherd. 2009. "Transparency, Trade Costs, and Regional Integration in the Asia-Pacific." *The World Economy* 32(3): 479–508.

International Diversification

This research project is studying the lack of perfect international diversification by analyzing how mutual funds established to purchase assets around the world invest in other countries, and assessing the implicit costs, if any, involved in their investment strategies. The analysis will address three questions related to international investment and access to international capital markets. First, does the structural change in the mutual fund industry toward more "aggregation" (favoring large funds that invest globally over smaller funds that invest in more specific regions or countries) affect countries and firms? Second, are investors forgoing gains from international diversification by the shift to more global funds? Third, what explains the shift in the international mutual fund industry toward more global funds, particularly if diversification gains are being forgone?

The project is collecting holding and return data for the universe of actively managed open-ended U.S. mutual funds established to purchase assets around the world, using data from Bloomberg and Morningstar. Given the regular reporting requirements for mutual funds, asset-level portfolios can be constructed and traced over time since their inception period. This characteristic of the mutual fund industry is unique and

contrasts with other types of investors, such as hedge funds, pension funds, and individual international investors, for which portfolio information is not publicly available. The data on holdings contain asset-level annual portfolios between 1991 and 2005. The portfolio holdings have been matched to identify the country to which each stock belongs, tracking holdings over time.

The researchers are constructing a unique micro dataset of actual asset-level portfolios for a group of important institutional investors (U.S. mutual funds) to study in detail the behavior of international investment and the extent of international diversification. The findings so far show that although there is increasing flexibility to invest across countries and regions, mutual funds invest in a very restrictive manner, holding few stocks and forgoing gains from international diversification. This investment practice is not explained by the lack of available instruments or information, a better ability of global funds to minimize tail risk, or transaction costs. Instead, it is largely driven by mutual fund family (company) effects.

Project findings have been presented at the following venues: the American Economic Association Annual Meetings (Chicago), the European Central Bank, Harvard's Kennedy School of Government (Cambridge, MA), the IMF, the IMF Ninth Jacques Polak Annual Research Conference, the LACEA Annual Meetings (Mexico City), and the NIPFP-DEA Workshop on Capital Flows (New Delhi).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Sergio Schmukler (Sschmukler@worldbank.org) and Latin America and Caribbean, Chief Economist's Office—Tatiana Brandao and Roberto Rigobon. With Francisco Ceballos, Mercedes Politi, and Juan Carlos Gozzi.

Project Code: P106371.

Completion date: June 30, 2010.

Countries: Global.

Publications

Didier, Tatiana, Roberto Rigobon, and Sergio L. Schmukler. 2009. "Unexploited Gains from International Diversification: Patterns of Portfolio Holdings around the World." World Bank, Washington, D.C. Work in progress.

Corruption and Trade

In order to gain a better understanding of the factors that may hamper private sector development in low-income countries, this research project measured the extent and impact of corruption in freight transportation and logistics on firms engaged in international trade in Mozambique and South Africa. The study aimed to identify patterns of bribe payments in the

movement of freight, and to determine the impact of bribe payments on firms' strategic choice of transport route, mode, and shipment composition.

The study used three sources of data: a tracking study, a mystery client exercise, and a firm-level survey. The tracking study of cargo movements along the main transport corridors of South Africa and Mozambique identified cost, delay, and bribe escalators. South Africa and Mozambique represent key nodes in Southern and Eastern Africa's transport network. Through the "mystery client" exercise, the researchers obtained the pricing strategies of freight forwarders to understand how costs, delays, and bribes are internalized or passed on to firms. The study identified firms' response to this structure of cost, delays, and bribe payments through a survey of 900 firms in both countries. The survey obtained information on firms' choice of location, transport mode, route, and input/output shipment characteristics.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Jose Ernesto Lopez-Cordoba and Rita Ramalho (RRamalho@worldbank.org). With Sandra Maria Sequeira; Shital Shah; Isaac Wohl; Giovanni Zambotti; Kulunga, Mozambique; Wits Commercial Enterprise Pty, South Africa; Nomad Freight Pty Ltd, South Africa; and Mags Logistics CC, South Africa.

Project Code: P106556.

Completion date: February 29, 2008.

Countries: Mozambique, South Africa.

The WTO and Economic Development

This research project analyzed the short-run impact of an unexpected foreign trade liberalization shock on exporting firms at the product level for a developing country. The economic environment was created when major importers—such as the United States, the European Union, and China—imposed new safeguard trade barriers in 2002. The trade barriers were on steel imports deriving from developed countries and implicitly provided developing country exporters an unexpected preferential market access shock of up to 30 percent by exempting them from the barriers.

The analysis used firm-level data from Prowess to estimate the differential impact of this trade liberalization shock on Indian steel firms and the products they produce. There was evidence that Indian firms with historic export ties to these markets responded more quickly to the changing market conditions in order to increase sales, exports, and profits. There was evidence of hysteresis—i.e., exports continued to expand even after the termination of the preferential market access conditions via the removal of the discriminatory import restrictions.

In terms of firm-level use of inputs, although the Indian firms that produced these preferenced products increased capacity utilization on average, the historic exporters responded more quickly by making new investment to expand existing capacity. The data also allowed analysis of the role of product-switching to examine the characteristics and behavior of firms that entered into these new preferenced-product categories. Entry into these new products was predominantly undertaken by larger firms that had previous experience exporting other types of steel products, a result with implications for understanding how firms overcome the fixed costs of exporting.

The research was presented at the World Trade Organization (May 2008); World Bank (September 2008); Yale University (September 2008); Dartmouth College (December 2008); George Washington University (February 2009); Syracuse University (April 2009); and European University Institute, Florence, Italy (June 2009).

Responsibility: Development Research Group, Trade Team—Bernard Hoekman (Bhoekman@worldbank.org). With Chad Bown and Guido Porto.

Project Code: P106888.

Completion date: October 31, 2008.

Countries: India and Venezuela.

Publications

Porto, Guido, and Chad Bown. 2009. "Exporters in Developing Countries: Adjustment to Foreign Market Access after a Trade Policy Shock." Brandeis University. Manuscript.

U.S. Anti-dumping on Vietnamese Catfish

The goal of this research project was to study the micro-economic impacts of anti-dumping policies in developing countries and to draw lessons for the design of policies to ease the transition following a trade reform.

The project studied the anti-dumping duties imposed by the United States on imports of catfish fillets from Vietnam in 2003. It explored patterns of household adjustment among Mekong farmers. In world markets where export barriers (sometimes intertwined with export preferences) abound, one of the main concerns with the intervention of developed countries is the impact on poverty in affected trade partners in the developing world. Therefore, the project focused on adjustments in the process of generation of household income. That is, it documented whether households adjusted and, if so, how income adjustment took place and whether the adjustment involved intra-household spillovers from the activities directly affected by the trade shocks (like catfish) to other household occupations (like agriculture).

The researchers estimated a panel data model using two rounds of the Vietnam Household Living Standards Survey for 2002 and 2004 (the reform took place in 2003). The analysis led to various interesting findings and conclusions. First, larger farmers suffered significantly larger losses than smaller ones. Second, the anti-dumping shock triggered significant exit out of catfish farming. Third, households adjusted by moving out of catfish aquaculture and into wage labor markets and agriculture (and not into other aquaculture activities, such as shrimp or mollusks, for instance). Fourth, there was evidence of intra-household spillovers.

The findings have been presented at the University of Virginia, the Paris Conference on Anti-Dumping, George Washington University, Michigan University, Michigan State University, the World Bank, the Inter-American Development Bank, and the USITC.

Responsibility: Development Research Group—Guido Porto (gporto@worldbank.org). With Mariano Negri and Matias Horenstein.

Project Code: P106891.

Completion date: August 2008.

Countries: Vietnam and Argentina.

Aflatoxin Standards and Agri-Food Trade: Barrier, Catalyst, or Distraction? Standards, Competitiveness, and Africa's Groundnut Exports to Europe

Can the “poor” export performance of Sub-Saharan Africa’s groundnut export industry be explained by the stringency of aflatoxin regulations in the European Union market? This project sought to improve the understanding of the apparent trade effects of EU aflatoxin standards on edible groundnut exports from Sub-Saharan Africa. It provided insights on the varied industry, country, and donor responses to the challenges associated with compliance with EU aflatoxin regulatory developments in groundnut exporting countries.

Most of the research aimed at analyzing the impacts of standards on developing country trade has focused on demonstrating the negative impacts of those measures on developing country trade volumes and performance. This research project presented compliance with standards as just one element of industry/country competitiveness, thus emphasizing the notion of strategic options to compliance challenges, and extending the analytical framework to cover various aspects that determine industry competitiveness. The research also highlighted cases when more stringent standards have catalyzed industry and regulatory upgrades.

The research applied a case study methodology and used several data resources for qualitative and quantitative

information, including: COMTRADE data, the EU Rapid Alert System for Food and Feed (nearly 1,000 notifications were analyzed), and findings from prior global or country-specific studies pertaining to groundnut industry development and trade. Interviews were also conducted with selected industry, regulatory, research, and service representatives in several groundnut-exporting countries, as well as with selected groundnut importers and distributors and regulatory authorities in Europe.

The analysis found that Sub-Saharan Africa’s decreasing trend in exports began years before the European Union’s aflatoxin regulation entered into force. It also found that African countries face difficulties in providing safety assurance even under the levels established by Codex. Overall, the adverse direct effects of EU aflatoxin regulation on developing country exports to the European Union (as a measure of the proportion of trade comprised of notifications) have been modest, even for Sub-Saharan African exports.

The discussion on the aflatoxin problem needs to be re-focused. One message should be that there are basic agronomic, post-harvest, and quality control measures that can (cost-)effectively manage the risk of aflatoxin build-up. Another message is that managing this risk is an important part of achieving sustained competitiveness in the groundnut trade—whether the orientation of trade is to Europe or anywhere else.

The research findings were presented at the WTO/SPS Committee (Geneva, June 2008); used as a reference document for the e-learning course “Standards and Trade: Challenges and Opportunities for Developing-Country Agri-food Exports ” (June 2008); distributed to research institutions and practitioners; and published on the web site of the World Bank’s ARD Department and the Trade Standards Practitioners Network, www.tradestandards.org.

Responsibility: Agriculture and Rural Development—Steven Jaffee (Sjaffee@worldbank.org). With Luz Diaz Rios.

Project Code: P108565.

Completion date: November 2007.

Countries: Regional, sub-Saharan Africa, with focus on groundnut export countries. Data from other leading world producing countries was also gathered.

Publications

Diaz, L., and S. Jaffee. 2008. “Barrier, Catalyst, or Distraction? Standards, Competitiveness, and Africa’s Groundnut Exports to Europe.” Agriculture and Rural Development Discussion Paper 39. World Bank. Washington, D.C. <http://siteresources.worldbank.org/INTARD/825826-1111055015956/21663468/ARDDiscussionPaper39.pdf>.

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Competitiveness, and Africa's Groundnut Exports to Europe. Trade." Note 35. International Trade Department. World Bank. Washington, D.C. http://siteresources.worldbank.org/INTRANETTTRADE/Resources/239054-1126812419270/Trade_Note_35_Aug4_08.pdf.

Services Trade Policy

This research project aims to contribute to improvements in services trade policy at the country level and more fruitful international cooperation on services trade. The research addresses a range of questions and draws on new data on trade and trade policy. The findings have shown that services trade is weathering the current crisis much better than goods trade, and that trade in a range of business, professional, and technical services has continued to grow, albeit at diminished rates. A new survey of applied trade policies is shedding light on patterns of protection in the major services sectors of 100 industrial and developing countries. The initial results reveal that at this stage the Doha negotiations offer somewhat greater security of market access but not liberalization. The best offers submitted so far improve slightly on Uruguay Round commitments but remain much more restrictive than actual policies.

Studies on Eastern Europe, India, Chile, and Sub-Saharan Africa demonstrate that services reform has contributed to the increased productivity of manufacturing firms. Research on telecommunications reform in developing countries shows 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. A study on Zambia found that it obtained substantial benefits from the reform of telecommunications, transport, financial, and tourism services. But past liberalization in weak and inappropriate regulatory contexts has led to perverse results and undermined the case for further reform. Studies on temporary migration demonstrate the benefits from, and constraints to, international cooperation on migration. These findings will help in building 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 particular policy research question, and thus have ranged from theoretical analysis motivated by stylized facts, to econometric analysis using panel data, to analysis of

World Trade Organization rules and institutions using data on commitments by countries.

The research is being undertaken in collaboration with other institutions, such as the World Trade Organization and the International Telecommunication Union, and research networks and institutions, such as the African Economic Research Consortium and the Economic Research Forum for the Arab Countries, Iran, and Turkey.

Responsibility: Development Research Group, Trade Team—Aaditya Mattoo (amattoo@worldbank.org), Ana Margarida Fernandes, and David Tarr. With Ingo Borchert and Batshur Gootiiz.

Project Code: P110919.

Completion date: December 2010.

Countries: Global.

Publications

- Amin, Mohammed, and Aaditya Mattoo. 2007. "Migration from Zambia: Ensuring Temporariness through Cooperation." Policy Research Working Paper 4145. World Bank, Washington, D.C.
- . 2008. "Human Capital and the Changing Structure of the Indian Economy." Policy Research Working Paper 4576. World Bank, Washington, D.C.
- Arnold, Jens, Beata Javorcik, and Aaditya Mattoo. 2007. "The Productivity Effects of Services Liberalization: Evidence from the Czech Republic." Policy Research Working Paper 4109. World Bank, Washington, D.C.
- Borchert, Ingo, and Aaditya Mattoo. 2009. "The Crisis-Resilience of Services Trade." Policy Research Working Paper 4917. World Bank, Washington, D.C.
- Chellaraj, Gnanaraj, Keith Maskus, and Aaditya Mattoo. 2008. "The Contribution of Skilled Immigration and International Graduate Students to U.S. Innovation." *Review of International Economics* 16: 444–62.
- . 2009. "Labour Skills and Foreign Investment in a Dynamic Economy: Estimating the Knowledge Capital Model for Singapore." Policy Research Working Paper 4950. World Bank, Washington, D.C.
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- Fernandes, Ana Margarida, and Aaditya Mattoo. 2009. "Professional Services and Development: A Study of Mozambique." Policy Research Working Paper 4870. World Bank, Washington, D.C.
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- Cooperation, Aid for Trade and the GATS.” *Pacific Economic Review* 12: 399–418.
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- Hoekman, Bernard, Aaditya Mattoo, and Andre Sapir. 2007. “The Political Economy of Services Trade Liberalization: A Case for International Regulatory Cooperation.” *Oxford Review of Economic Policy* 23: 367–91.
- Jens, Arnold, Aaditya Mattoo, and Gaia Narcisco. 2008. “Services Inputs and Firm Productivity in Sub-Saharan Africa: Evidence from Firm-level Data.” *Journal of African Economies* 17: 578–99.
- Jensen, Jensen, Thomas Rutherford, and David Tarr. 2007. “The Impact of Liberalizing Barriers to Foreign Direct Investment in Services: The Case of Russian Accession to the World Trade Organization.” *Review of Development Economics* 11(3, August): 482–506.
- Martin, Will, and Aaditya Mattoo. Forthcoming. “The Doha Development Agenda: What’s on the Table?” *Journal of International Trade and Development*.
- Mattoo, Aaditya. 2008. “The General Agreement on Trade in Services.” In Ramkishan Rajan and Kenneth Reinert (eds.), *The Princeton Encyclopaedia of the World Economy*. Princeton University Press.
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- . 2009. “Exporting Services.” Chapter 9 in R. Newfarmer, W. Shaw, and P. Walkenhorst (eds.), *Breaking into New Markets: Emerging Lessons for Export Diversification*. Washington, D.C.: World Bank.
- . 2009. “Services, Openness and Growth in South Asia, in Accelerating Growth and Job Creation in South Asia.” In Sadiq Ahmed and Ejaz Ghani (eds.). Oxford University Press: India.
- Mattoo, Aaditya, and N.S. Batshur Gootiiz. Forthcoming. “Services in Doha: What’s on the Table?” *Journal of World Trade*.
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- Mattoo, Aaditya, Ileana Cristina Neagu, and Caglar Ozden. 2008. “Brain Waste? Educated Immigrants in the US Labor Market.” *Journal of Development Economics* 87: 255–69.
- Mattoo, Aaditya, and Lucy Payton. 2007. “Services Trade for Zambia’s Development.” Washington, D.C.: Palgrave-Macmillan and World Bank.
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- Mattoo, Aaditya, and Arvind Subramanian. 2009. “Multilateralism beyond Doha.” *Foreign Affairs* (January/February).
- . Forthcoming. “Currency Undervaluation and Sovereign Wealth Funds: A New Role for the World Trade Organization.” *World Economy*.
- Rutherford, Thomas, and David Tarr. 2008. “Poverty Effects of Russia’s WTO Accession: Modeling ‘Real Households’ with Endogenous Productivity Effects.” *Journal of International Economics* 75(1): 131–50.

Exports and Growth

What makes exports boom and how can countries grow through trade? This research project analyzes how to stimulate export growth. It uses new firm-level transactions data, across a range of countries, to explore how firms discover new markets and new products. It also examines the importance of trade policy, including regional agreements and trade costs (such as paperwork, shipping, and infrastructure) in limiting export growth.

The analysis is using newly available customs transactions data across a wide range of countries. Data have been obtained from country customs offices in Bolivia, Peru, Tanzania, Malawi, and Senegal; the project hopes to add Bulgaria, Colombia, and Guatemala as well. Standard sources, such as WDI, Comtrade, and Doing Business are also being used. The methodology is standard data and regression analysis as well as some case studies.

The findings so far show that the real exchange rate is extremely important. An overvalued exchange rate not only reduces exports, but also limits the discovery of new products and new markets. For small countries, an undervalued exchange rate can be a useful tool in generating the discovery of new products and new markets. The findings also show that regional integration has increased trade and promoted external trade liberalization in ASEAN members, without negative effects on trade with external trade partners. High transport costs present a severe hurdle to African exporters. Bureaucratic and shipping costs are relatively less burdensome.

The research findings have been presented at a World Bank trade seminar series; Essex University; London School of Economics; Oxford University; the Dallas Fed-SMU Conference on International Trade; a Hong Kong conference on regionalism in Asia; a conference in Geneva on Empirical Evidence on Regional Integration; and the XVIII Cycle of Economic Lectures of Banco de Guatemala.

Responsibility: Development Research Group, Trade Team—Caroline Freund (cfreund@worldbank.org). With Martha Denisse Pierola and Pierre Louis Vezina, Geneva Institute for Graduate Studies; Matias David Horenstein; and Nadia Rocha, WTO.

Project Code: P111050.

Completion date: December 31, 2010.

Countries: Cross-Country. Special studies of Peru, Africa, ASEAN countries. Other countries/regions underway.

Publications

Calvo-Pardo, H., C. Freund, and E. Ornelas. 2009. “The ASEAN Free Trade Agreement: The Impact on Trade Flows and External Trade Barriers.” Policy Research Working Paper 4960. World Bank, Washington, D.C.

Freund, C., and M.D. Pierola. 2008. “Export Surges: The Power of a Competitive Currency.” Policy Research Working Paper 4750. World Bank, Washington, D.C.

Freund, C., and M.D. Pierola. Forthcoming. “Export Entrepreneurs: Evidence from Peru.” Policy Research Working Paper. World Bank, Washington, D.C.

Web Design and Maintenance

This research project will update and maintain the World Bank’s Trade Research websites. The websites will support effective outreach and dissemination of knowledge by maximizing outreach and access to research findings, policy products, and learning and analytical tools.

Responsibility: Development Research Group, Trade Team—Inna Peoria (ipeoria@worldbank.org).

Project Code: P111828.

Completion date: July 31, 2010.

Countries: Global.

Competitive Africa—Strategies to Leverage the New Global Economy

The objective of this research program is to inform policies and institutional approaches by which African countries can improve their competitiveness to help achieve sustained and inclusive economic growth.

The program seeks to answer two main questions. First, how can the main constraints to competitiveness be identified, given the long list of possible constraints affecting most African countries? Second, how should the critical mass of these constraints be addressed, given the political and capacity issues affecting most African countries?

The answers will vary by country and, crucially, by type of

industry. This will be the first research initiative on Africa’s competitiveness to cover the six industry groups accounting for most of the global trade flows: light manufacturing, agribusiness, tourism, information and communications technology, heavy manufacturing, and mining. Industry analysis is necessary because many of the most important constraints to competitiveness are industry specific and often overlooked. It is also at the industry level that one can best establish causality relationships between firms’ performance and their external environment and thus best assess the relative importance of (cross-cutting as well as industry specific) constraints.

The research will combine the industry and country dimensions by analyzing for each industry group the performance of a representative sample of countries (including benchmarks from outside Africa). It will build on a vast amount of information and analysis available at both the country and industry levels (from within and outside the World Bank). It will also draw on the expertise and experience of industry and country experts from both the public and private sectors (including the International Finance Corporation).

The research will follow a participative in-country process to ensure it is grounded and practical. The results will be put online as soon as they are available and be continuously updated following a “wiki” process. The objective is to provide a platform for knowledge and communication to develop, share, challenge, and improve practical insights on how African countries can increase their competitiveness.

Responsibility: Africa, Finance and Private Sector Development—Vincent Palmade (vpalmade@worldbank.org), Marilou Uy, Hannah Messerli, and Papa Demba Thiam; Agricultural and Rural Development—Martien van Nieuwkoop; Development Research Group—Hinh Dinh; Policy Division (IBRD Telecommunications and Infrastructure)—Randeep Sudan; and IBRD Oil, Gas and Mining—Gary McMahon. With Tugba Gurcanlar (AFTFP), Dileep Wagle (AFTFP), Uri Dadush, (Carnegie Institute), and Louise Twining-Ward.

Project Code: P116483.

Completion date: January 2011.

Countries: Sub-Saharan Africa.

Macroeconomics and Growth, and Investment Climate

Poverty Alleviation and the Composition of Economic Growth

No lasting poverty reduction can occur in the absence of sustained production growth. However, the sheer size of growth does not appear to be a sufficient condition for rapid poverty reduction. This research project found that not only the size of economic growth matters for poverty alleviation, but also its composition in terms of intensive use of unskilled labor, the input that the poor can offer to the production process.

The analysis developed a two-sector theoretical model that clarified the mechanism through which the sector composition of growth and associated labor intensity can affect workers' wages and, thus, poverty alleviation. Based on insights from the model, it conducted a cross-country empirical analysis. The findings showed that the impact of growth on poverty reduction varies from sector to sector and that there is a systematic pattern to this variation. Value-added growth in sectors that are more labor intensive (i.e., agriculture, manufacturing, and construction) tends to have a stronger effect on poverty alleviation.

After this sector-driven empirical analysis, the research conducted a more direct test of the model by considering poverty reduction as a function of not only aggregate growth (which would represent the size effect of growth), but also a measure of labor-intensive growth (which would represent its composition effect). The results confirmed that poverty alleviation indeed depends on the size of growth. However, they also indicated that poverty reduction is stronger when growth has a labor-intensive inclination. This central result is robust to the influence of outlier and extreme observations, holds true for various poverty measures, and is not driven away by alternative explanations. Finally, the analysis on the mechanisms through which labor-intensive growth reduces poverty led to the conclusion that this positive effect does not require or imply redistribution from rich to poor. Although labor-intensive growth improves the relative standing of the poor, its main effect on poverty is given by its beneficial impact on their absolute income.

From a normative perspective, this project did not provide grounds for "industrial" (or selective) policies because it did not deal with the sources of sector growth, the complex links across sectors, or the political economy of government intervention. Instead, the research suggests that policy distortions that discourage labor employment or induce capital-biased technological innovation are ill-advised to reduce poverty.

The project's preliminary findings were presented at the World Bank, the International Monetary Fund, Rutgers University, Brown University, and the Meetings of the Latin American Economic Association in Colombia.

Responsibility: Development Research Group, Growth and Macroeconomics Team—Norman V. Loayza (nloayza@worldbank.org) and Claudio Raddatz.

Project Code: P080834.

Completion date: December 2008.

Publications

Loayza, Norman, and Claudio E. Raddatz. 2009. "The Composition of Growth Matters for Poverty Alleviation." *Journal of Development Economics*.

Finance and Macroeconomics

Although most of the empirical literature has focused on the unconditional relation between financial development and economic growth, this research project pays special attention to other aspects of macroeconomic performance, such as macroeconomic volatility and the transmission of shocks. It also looks at the interaction between financial development and other structural characteristics, such as the degree of international integration and labor market institutions, in the amplification or dampening of external shocks. Furthermore, the project aims to provide systematic empirical evidence on the role of political economy considerations in explaining why some countries are more financially developed than others. In particular, it looks at the role that incumbents in the industrial and financial sector have in resisting the development of financial markets, and explores the potential ways in which these private interest explanations for financial underdevelopment take place.

The analysis exploits the differences observed across industries, firms, and countries. It uses disaggregated data and differences-in-differences estimation techniques to identify structural relations. The main data sources consist of existing databases of macroeconomic and microeconomic variables for large panels of countries, industries, and firms, such as WDI, IFS, Worldscope, Bankscope, Compustat, and UNIDO-INDSTAT.

The project has already yielded several findings. First, financial development has an important, causal effect on the reduction of macroeconomic volatility. Second, the beneficial effect of domestic financial development for growth is

especially important in countries that are closed to trade and capital flows. Third, the process of international integration reduces the demand for domestic financial development, since firms producing tradable goods can more easily access international funds. Fourth, political economy considerations play an important role in explaining the observed differences in financial development across countries. Fifth, although financial development does not seem to have a direct role in reducing the impact of shocks on the terms of trade, it does have an indirect role that operates through interaction with other structural characteristics. Sixth, the use of supplier's credit as an alternative to bank credit as a source of working capital financing results in an increased transmission and amplification of shocks across firms and sectors through the credit chains established among firms.

There are also several preliminary findings from the ongoing parts of the project. First, incumbent firms in a country's financial sector seem to hire former politicians as members of their board of directors as an indirect way of securing more favorable (i.e., pro-incumbent) regulation. Second, the negative output consequences of sudden stops seem to be related to their impact on the availability of liquid funds to finance working capital expenditures. Third, the availability of financial instruments to hedge exchange rate risk seems to reduce the tendency of a country's export patterns to favor firms in sectors that, through the correlation of their international prices and a country's exchange rate, offer a natural hedge against exchange rate fluctuations. Finally, there is evidence that the increased reliance of banks around the world on wholesale sources of funds has played an important role in the international transmission of the ongoing financial crisis.

The project findings have been presented at LACEA (2006, November 2008); University of Chile, Santiago, Chile (2007, August 2008); Panel Meeting of Economía, Yale, New Haven (May 2007, May 2008); LACEA (2007); Latin American Finance Network, Bogota, Colombia (2007); Banco Central de Chile (2007); Universidad Adolfo Ibañez (2007); Conference on Country Insurance organized by the Office of the Chief Economist of the Latin America and Caribbean Region, World Bank (2007); Conference on Current Account and External Financing organized by the Central Bank of Chile (2006); Conference on Financial and Commercial Integration jointly organized by the Journal of International Money and Finance and the University of California at Santa Cruz (September 2006); Conference on the Growth and Welfare Consequences of Macroeconomic Volatility jointly organized by CEPR, CREI, and the World Bank (2006); Emerging Markets Finance Conference, Cass Business School, London (2005); IADB Economics Seminar (2005); Western Finance

Association (2005); NBER Conference on Corporate Finance, Latin American Financial Network, Cartagena (2004); Inter-American Development Bank (2004); and World Bank (2004). **Responsibility:** Development Research Group, Macroeconomics and Growth Team—Claudio Raddatz (craddatz@worldbank.org).

Project Code: P089886.

Completion date: June 2010.

Countries: Global.

Publications

Braun, M., and C. Raddatz. 2006. "The Politics of Financial Development: Evidence from Trade Liberalization." *Journal of Finance* 60(3).

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The Impact of Macroeconomic Policies on Poverty and Income Distribution: Macro-Micro Evaluation Techniques and Tools

Economists have long been interested in measuring the effects of economic policies on poverty and on the distribution of welfare among individuals and households. The different methodologies devised can be roughly classified in two groups: microeconomic techniques and macro-micro techniques.

This research project produced a volume that focuses on a recent, sophisticated group of techniques. The unifying methodological theme of the volume is the description and the

applications of the variants of a single modeling framework—a macro model linked with a household-level micro model. Such a macro-micro approach enables different questions to be asked about the poverty and distribution consequences related to policy changes, and answering these questions was a main motivation for the book.

The research attempted to measure the complete set of micro, macro, first and second-round effects of economic policies by using more than one data set. The studies show that great gains can be made by using many data sets. In policy-relevant terms, this basically means it provides a better chance to identify specific interventions that can complement growth-oriented development policies. But, as shown by the contributions in the volume, looking simultaneously at macro and micro data also presents great challenges.

Responsibility: Latin America and Caribbean Region, Economic Policy Sector—Maurizio Bussolo (mbussolo@worldbank.org) and Development Research Group, Operations and Strategy—Luiz Pereira Da Silva. With Francois Bourguignon, Paris School of Economics.

Project Code: P090083.

Completion date: 2009.

Countries: Global.

Publications

Bourguignon, Francois, Luiz Pereira da Silva, and Maurizio Bussolo (eds.). 2006. *The Impact of Macroeconomic Policies on Poverty and Income Distribution: Macro-Micro Evaluation Techniques and Tools Toolkit Volume II*. Oxford: Oxford University Press.

The Investment Climate and the Micro Underpinnings of Growth

This research project looks at the micro determinants of growth and the extent to which improvements in the investment climate can improve growth, investment, innovation, job creation, and exporting at the firm level. The aim is to measure the impact of different investment climate policies, with particular attention to the distributional effects on smaller firms, to help prioritize areas for reform.

The World Bank's Investment Climate Enterprise Surveys were launched in 2001 to collect and make available detailed information on a broad range of investment climate policies and firm performance. The surveys have generated data on more than 80,000 firms in more than 100 countries.

This research project draws on the Investment Climate Surveys, supplements the survey data, and, where possible, links the survey data to industrial census data to connect the micro dynamics to the aggregate performance of a country. For

some countries, only a cross-section of information is available. However, panel data are starting to come available and much of the work will focus on these data sets.

Although some of the work is country specific, most of the studies combine several countries, such as in Sub-Saharan Africa. With questionnaires following a common core and implementation strategy, the data are comparable across countries. Productivity work can be done on specific sectors as the sampling strategy focused on key manufacturing sectors in each country. The surveys ask for three years of data. This allows for some growth trends to be studied, and supplies lagged values that can be used as instruments or in Levinsohn-Petrin estimates of productivity to control for the endogeneity of inputs in the production function estimates. The analyses reinforce the importance of investment for firm productivity, growth, and investment.

The work has been supported by the Microeconomics of Growth Conferences, held in Beijing, China (November 2005); Washington, D.C. (May 2006, May 2007, and June 2008); and Delhi, India (December 2006).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Mary Hallward-Driemeier (mhallward@worldbank.org), Ana Fernandes, George Clarke, Giuseppe Iarossi, Taye Mengistae, and Lixin Colin Xu. With Sergio Kurlat; Reyes Aterido; and Brooke Helppie, University of Michigan.

Project Code: P095875, P099282.

Completion date: Ongoing.

Countries: Global.

Publications

Aterido, Reyes, and Mary Hallward-Driemeier. 2008. "How Different Is Employment Growth in Africa?" World Bank, Washington, D.C. Mimeo.

Clarke, George. 2005. "Beyond Tariffs and Quotas: Why Don't African Manufacturers Export More?" Policy Research Working Paper 3617. World Bank, Washington, D.C.

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Hallward-Driemeier, Mary, and Reyes Aterido. Forthcoming. "Comparing Apples to...Apples: Making (More) Sense of Subjective Rankings of Constraints to Business." *Economics Letters*.

Hallward-Driemeier, Mary, and Brooke Helppie. 2007. "Why Don't Firms Take Advantage of More Flexible Labor Options? Regulation, Enforcement and Corruption." Paper presented at International Labor Conference, University of Michigan and Cornell University.

Lall, Somik, and Taye Mengistae. 2005a. "Business Environment, Clustering and Industry Location: Evidence from Indian Cities." Policy Research Working Paper 3675. World Bank, Washington, D.C.

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Aid and the Millennium Development Goals

Research can help inform donor agencies and their constituencies on the effectiveness of alternative approaches to aid, but no single approach to assessing aid effectiveness is sufficient or even best. This research project addresses several research questions.

First, the research is investigating the determinants of aid levels and public support for aid. The project is examining the impact of past financial crises on donor countries' aid levels, and analyzing public opinion data regarding support for aid provision.

Second, the project is studying the impacts of aid on tax and other policies in recipient countries. This research is primarily empirical, using cross-country data and correcting for the endogeneity of aid.

Third, the project is analyzing the costs of aid fragmentation and the benefits of using country systems. This research combines theory and cross-country empirical approaches to document the increase in fragmentation of aid across donor organizations in recipient countries. The analysis is testing hypotheses regarding the adverse effects of aid fragmentation on development. Ongoing work is also investigating why sometimes recipient country systems manage aid and why in other cases donors micro-manage aid.

Responsibility: Development Research Group, Human Development and Public Services Team—Halsey Rogers (hrogers@worldbank.org), Varun Gauri, Waly Wane, and Stephen Knack. With Pamela Paxton, Ohio State University; Nick Eubank; and Hai-Anh Dang.

Project Code: P096746.

Completion date: December 2009.

Countries: Global.

Publications

Heckelman, Jac, and Stephen Knack. 2008a. "Aid, Economic Freedom and Growth." *Contemporary Economic Policy* 27(1): 46–53.

———. 2008b. "Foreign Aid and Market-Liberalizing Policy Reform." *Economica* 75(August): 524–48.

Knack, Stephen. Forthcoming. "Sovereign Rents and Quality of Tax Policy and Administration." *Journal of Comparative Economics*.

Knack, Stephen, and Pamela Paxton. 2008. "Individual and Country-Level Factors Affecting Support for Foreign Aid." Policy Research Working Paper 4714. World Bank, Washington, D.C.

Knack, Stephen, and Aminur Rahman. 2007a. "Aid Fragmentation in the Transition Countries." In A. Korhonen and D. Lehrer (eds.), *Western Aid in Postcommunism*. Palgrave Macmillan.

———. 2007b. "Donor Fragmentation and Bureaucratic Quality in Aid Recipients." *Journal of Development Economics* 83(1, May): 176–97.

———. 2008. "Donor Fragmentation." In W. Easterly (ed.), *Reinventing Foreign Aid*. MIT Press.

Why Are Developing Countries So Slow in Adopting New Technologies?

One of the most important developments in the world economy in the past three decades has been the process of globalization. From the poorest to the most advanced regions, countries are opening up not only to external trade and finance, but also to the flow of new people, new policies, new ideas, and new technologies. Few countries, however, are taking full advantage of the opportunities brought about by globalization. Indeed, there is large diversity regarding the rate of adoption and adaptation of even inexpensive technologies generated elsewhere in the world. This leads to the central question of this research project: Why are some countries so slow in adopting new technologies? The answer focuses on the Schumpeterian process of firm renewal and the potential restrictions to its optimal functioning.

This project studied how firm dynamics can serve as the mechanism through which technological innovation occurs. If firm renewal is not restrained, domestic enterprises are able to incorporate the advances of a rising technological frontier made available through, for instance, trade and financial liberalization. In contrast, if there are obstacles to the process of resource reallocation, a country's ability to adopt new technologies can be severely handicapped. Some of these impediments are related to the development status of the economy, such as poor governance and lack of human capital, both of which exacerbate the contractual, financial, and adaptation costs of new technologies. Other impediments, however, result from governments distorting interventions in private markets, such as excessive labor regulations, subsidies to inefficient sectors and firms, barriers to the establishment of new plants, and burdensome bankruptcy laws.

The project presented some motivating evidence based on comparative data across countries on the importance of

developmental and regulatory characteristics for the purpose of technological innovation. Using the availability of personal computers and incidence of Internet users as proxies for technological progress in a country, the project analyzed how they are related to indicators of governance, schooling, and regulatory freedom in a large cross-section of countries.

In order to understand these relationships, the project constructed a stochastic general equilibrium model with heterogeneous firms. Technological innovation was modeled as adoption of exogenous productivity shocks, where the adoption process requires firm renewal to be implemented. Developmental barriers—such as poor governance and education—were modeled as a parameter that affects the adjustment cost of investment. Regulatory barriers were, in turn, modeled as either subsidies to inefficient firms or taxes to labor. Using this framework, the project conduct simulation exercises to analyze, first, the independent impact of each developmental and regulatory barrier and, second, the complementarities between the two.

The project's preliminary findings were presented at the World Bank, University of Minnesota, University of Chile; and the Meetings of the Society of Economic Dynamics Association in Istanbul, Turkey.

Responsibility: Development Research Group, Macroeconomics and Growth Team—Norman V. Loayza (nloayza@worldbank.org). With Raphael Bergoing, University of Chile and Facundo Piguillem, University of Minnesota.

Project Code: P102585.

Completion date: June 2009.

Countries: Global.

Firm Dynamics and Growth

This research project examines the firm dynamics underlying aggregate growth. In particular, it looks at how firm characteristics and the broader business environment affect entry, exit, and allocative efficiency, and how these dynamics generate broader patterns of growth, investment, and productivity.

The work uses firm level data (including Investment Climate Enterprise Surveys and census data) to examine the determinants of firm dynamics and how these aggregate to explain macro performance. The project relies primarily on panel data to evaluate the impact of changes in policies and investment climate measures.

Using both developed and developing country census data, the decomposition of productivity demonstrates the importance of firm dynamics in improving allocative efficiency. But there is considerable variation in the contribution of firm turnover across countries. To date, the project has explored these

patterns by looking at differences across sectors or age/size classes of firms.

The project will also analyze the broader investment climate in which the firm operates. Some work looking at differences across sectors on the impact of regulation on entry rates in Europe is promising in this regard. In addition, preliminary analysis highlights the importance of competition and property rights in raising the relative probability that more productive firms survive. The project uses new panel and census data to advance the understanding of the contribution of firm dynamics to productivity growth and the role that the investment climate plays in this process.

This work is identifying areas of reform of the investment climate that will strengthen private sector development, productivity growth, and job creation.

The project has also been supported by the Microeconomics of Growth Conferences, held in Delhi, India (December 2006) and Washington, D.C. (June 2007).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Mary Hallward-Driemeier (mhallward@worldbank.org), Luis Servén, Ana Fernandes, Taye Mengistae, and Rita Almeida. With Susanto Basu, Boston College; Fabio Schianterelli, Boston College; John Haltiwanger, University of Maryland; Sergio Kurlat; and Reyes Aterido.

Project Code: P104056.

Completion date: Ongoing.

Countries: Global.

Publications

Aterido, Reyes, Mary Hallward-Driemeier, and Giuseppe Iarossi. 2007. "From Benchmarking to Impact." African Competitiveness Report. World Economic Forum.

Aterido, Reyes, Mary Hallward-Driemeier, and Carmen Pages. 2007. "Investment Climate and Employment Growth: The Impact of Regulations, Access to Finance and Corruption Across Firms." IZA Working Paper.

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Hallward-Driemeier, Mary. 2006. "Who Survives? The Role of Competition, Property Rights and Corruption across Firms." Paper presented at ISNIE Conference, Boulder, Colorado; World Bank Macro Seminar; and the Microeconomics of Growth Conference, Washington, D.C.

Hallward-Driemeier, Mary, and Brooke Helppie. 2007. "Why Don't Firms Take Advantage of More Flexible Labor Options? Regulation, Enforcement and Corruption." Paper presented at International Labor Conference, University of Michigan and Cornell University.

Hallward-Driemeier, Mary, Taye Mengistae and Fraser Thompson.

- 2009a. "The Productivity Effects of Firm Turnover in Moroccan Manufacturing." World Bank, Washington, D.C. Mimeo.
- . 2009b. "Who, Where, Whether: The Impact of Productivity and Location on Firm Turnover." World Bank, Washington, D.C. Mimeo.
- Hallward-Driemeier, Mary, and Bob Rijkers. 2009. "Business as Usual or Business Unusual? The Impact of the East Asian Financial Crisis on Indonesian Firm Dynamics and Productivity." World Bank, Washington, D.C. Mimeo.

The Evolution of Development Economics and the Role of the World Bank: Archival Inquiries, 1948–1968

This research project aimed to contribute to a better understanding of the role of the World Bank as an originator and disseminator of knowledge and ideas on development. The project supplemented previous findings contained in official World Bank Group histories, various biographies of the World Bank Group's Presidents, and associated historical studies.

The project examined primary sources in the World Bank Group Archives to uncover lessons and insights from the past that could serve to inform today's development policy debates. The project closely scrutinized records related to the work of key participants in the World Bank's early development work to shed light on the early Bank's decision making process, and the internal and external factors that influenced that process.

Analysis of several economists' papers confirmed that the common opinion that the early Bank's economists poorly contributed to debates that were taking place inside development economics must be reassessed.

The project shed light on three issues: the role that development economists played in the relations between the World Bank and member countries; the different opinions about the tools that the institution and the countries could use to foster economic development; and ideologies that lie beneath what may appear as "neutral" or "technical" economic decisions.

Responsibility: Information Solutions Group, Consumer Solutions and Support—Elisa Liberatori-Prati (Eliberatoriprati@worldbank.org) and Barbara Buckingham; and Development Research Group, Operations and Strategy—Jean-Jacques Dethier. With Michele Alacevich, University of Palermo.

Project Code: P104288.

Completion Date: June 2008.

Countries: Colombia, Italy.

Publications

- Alacevich, Michele. 2007. "Early Development Economics Debates Revisited." Policy Research Working Paper 4441. World Bank, Washington, D.C.

- . 2007. "Report #01 on the Research 'The Evolution of Development Economics and the Role of the World Bank: Archival Inquiries, 1946–1968.'" For internal use only.
- . 2008. "Albert O. Hirschman and Project Evaluation at the World Bank." X Aispe Conference, March 27–29, Treviso, Italy, and 35th Annual Meeting of the History of Economics Society, June 27–30, Toronto, Canada.
- . 2008. "The Rise and Fall of the World Bank Economic Department. Economic Research at the World Bank in the Early 1950s." Paper presented at the IX Annual Summer Institute for the Preservation of the History of Economic Thought, George Mason University, Center for Study of Public Choice. http://www.gmu.edu/centers/publicchoice/SummerInstitute/si_index08.htm; to be presented at the 2009 Annual Economic Business History Association/Business History Conference
- . 2008. "The World Bank's Early Reflections on Development: A Development Institution or a Bank?" Policy Research Working Paper 4670. World Bank, Washington, D.C. And in 2009 in *Review of Political Economy* 21(2, April).
- Alacevich, Michele, and Paola Villa. 2007. "Institutions and Economic Analysis: the Need for a Historical Approach. The World Bank's Changing Conceptualisation of Development." Paper presented at the IV Storep Conference, Pollenzo, June 1–3.

Microeconomics of Productivity Growth in Eastern Europe and the Former Soviet Union

This research project documented and assessed the patterns and policy determinants of productivity growth in the Europe and Central Asia (ECA) region at the aggregate, sector, and firm levels. The research focused on productivity as the key to prosperity, which is in line with the growing consensus that productivity differences account for most of the cross-country variation in long-run per capita income. Another aspect of the research was its focus on the microeconomic underpinnings of aggregate performance. Further, because the various available sources of firm-level data suffer from different idiosyncratic limitations, the project combined various sources of data: a harmonized panel data set from manufacturing censuses, the Amadeus database of Eastern European firms, and the investment climate survey data (BEEPS), which already have a panel dimension for ECA countries.

Four key findings emerged from the analysis. First, there was a productivity surge in ECA during 1999–2005. Second, much of the productivity surge was the result of efficiency gains in existing firms. Third, both globalizing factors and domestic policies contributed to the productivity surge. And fourth, as the transition matures, the reform agenda is shifting from accelerating resource reallocation across firms toward

promoting firm expansion through factor market competition, financial deepening, and innovation.

The project examined the micro-foundations of growth in ECA from 1999 to 2005. It showed that during this period, countries in the region enjoyed substantial productivity gains from the reallocation of labor and capital to more productive sectors and firms, the entry of new firms and the exit of obsolete firms, and the more efficient use of resources.

The research project generated a report that illustrates that policy reforms that promote governance and macro stability, market competition, infrastructure quality, financial deepening, labor market flexibility, and skill upgrading are important in achieving higher productivity growth. However, the report argues that significant challenges remain in sustaining productivity growth in the region. It notes that for the early reformers (most of the 10 new members of the European Union, plus Turkey), policy reforms aimed at improving the ability of firms to innovate and compete in global markets are a main concern. By contrast, for the late reformers (most of South Eastern Europe and the Commonwealth of Independent States), policy reforms aimed at addressing the legacy of transition continue to be a top priority.

The research results were discussed and presented at meetings at the World Bank, Washington, D.C. (January, March, April, and June 2007); EBRD, London (March 2007); OECD, Paris (March 2007); European Central Bank, Frankfurt (March 2007); European Commission, Brussels (March 2007); World Bank, Moscow Office (March 2007); and CEFIR, Center for Strategic Studies (March 2007). The report is available at www.worldbank.org/eca/productivity.

Responsibility: Europe and Central Asia Region, Poverty Reduction/Economic Management Unit—Paloma Anos Casero (panoscasero@worldbank.org), Asad Alam, Charles Udomsaph, Ana Fernández, Cesar Calderon, and Faruk Khan. With Stefano Scarpetta, OECD; Eric Bartelsmann, Vrije University; John Earle, Upjohn Institute, Michigan; David Brown, Heriott University; Almos Telegdy, Budapest University; Saso Polanec, Slovenia University; Jaan Masso, Estonia University; Mihails Hazans, Latvia University; Ondrej Rigval, Prague University; Marcin Piatkowski, International Monetary Fund; Mark Schaffer, Heriott University; Zvi Lerman, Hebrew University; Jo Swinnen, Lille University; and Liesbet Vranken, Lille University.

Project Code: P105160.

Completion date: December 2007.

Countries: Eastern Europe and the Former Soviet Union.

Publications

Alam, Asad, and P. Anos-Casero. 2008. *Unleashing Prosperity,*

Productivity Growth in Eastern Europe and the Former Soviet Union. Washington, D.C.: World Bank.

Anos-Casero, P., and C. Udomsaph. 2009. "What Drives Firm Productivity Growth?" Policy Research Working Paper 4841. World Bank, Washington, D.C.

Bartelsman, E., and S. Scarpetta. 2007. "Firm Dynamics and Demographics in Baltic Countries: Transition and Integration." World Bank, Washington, D.C.

Brown, D., J. Earle, and A. Telegdy. 2007. "What Makes ECA Firms Productive? Ownership, Age, Market Structure and Import Penetration in Georgia, Hungary, Romania, Russia and Ukraine." World Bank, Washington, D.C.

Calderon, C. 2007. "Policy Determinants of Aggregate Productivity Growth in ECA Countries." World Bank, Washington, D.C.

Fernandes, A. 2007. "Service Productivity in ECA Countries: Patterns, Performance and Policy Drivers." World Bank, Washington, D.C.

Lerman, Z. 2007. "Agriculture Productivity in CIS Countries." World Bank, Washington, D.C.

Swinnen, J., and L. Vranken. 2007. "Agriculture Productivity in ECA Countries." World Bank, Washington, D.C.

Van Ark, B., and M. Piatkowski. 2007. "The Role of ICT in Productivity Growth in ECA Countries." World Bank, Washington, D.C.

Gemloc Advisory Services

The Global Emerging Markets Local Currency Bond (Gemloc) program was established to help develop local currency bond markets and to increase their investibility. This research project analyzed issues for the development of local currency bond markets. It constructed a database that is a useful tool for the country specific Gemloc Advisory Services work.

The project used several data sources, including Bloomberg, WEO, and country-specific web sites. Country templates were produced based on the type of data required for the country-specific technical assistance.

The project, especially the database, is supporting directly our country-specific advisory services for the development of local currency bond markets in countries such as Egypt and Nigeria. A guest commentary is available on the Gemloc Advisory Services website, www.gemloc.org.

Responsibility: Financial and Private Sector Development, Securities Markets-WB—Anderson Silva (asilva3@worldbank.org), Alison Harwood, and Ying Lin. With Barry Eichengreen, University of California, Berkeley.

Project Code: P112315.

Completion Date: June 30, 2009.

Countries: Global.

Publication:

Eichengreen, Barry. "Field of Dreams: Measures for Overcoming the Obstacles to Bond Market Development." http://siteresources.worldbank.org/INTGEMLOC/Resources/5507104-1238185840258/Eichengreen_guest_commentary_2.p.

Pro-cyclical Effects of Capital Requirements: Theory, Evidence, and Policy Lessons for Middle-Income Countries

Many developing countries (i.e., middle-income countries) have already implemented or are in the process of implementing financial sector regulations and are asking for policy advice because of the global financial crisis. This research project provides a re-assessment of the relationship between financial sector regulations (especially those around Basel II) and pro-cyclicality.

The project built a static analytical framework with general equilibrium properties and credit market imperfections. Lending rates were set as a premium over the cost of borrowing from the central bank, with the premium itself depending on firms' effective collateral. It analyzed the macroeconomic effects of various shocks (a drop in output, an increase in the refinance rate, and a rise in the capital adequacy ratio) under both binding and nonbinding capital requirements.

The analysis showed that different types of bank capital regulations affect in different ways the transmission process of exogenous shocks to bank interest rates, prices, and economic activity. It also showed that, even if capital requirements are not binding, a "bank capital channel" may operate through a signaling effect of capital buffers on deposit rates. If there is some degree of inter-temporal substitution in consumption, this channel may generate significant effects on the real economy.

Several policy lessons can be drawn from the analysis. First, regulators should pay careful attention to the impact of risk weights on bank portfolio behavior when they implement regulations. Second, capital buffers may not actually mitigate the cyclical effects of bank regulation; in the model, capital buffers, by lowering deposit rates, are actually expansionary. Thus, if capital buffers are increased during an expansion, with the initial objective being counter-cyclical, they may actually turn out to be pro-cyclical.

The research was presented at: the Bank for International Settlements (BIS), Basel, Switzerland (May 2009); the International Center for Monetary and Banking Studies, Geneva, Switzerland (May 2009); and the World Bank, DECVP Seminar (June 2009).

Responsibility: Office of the Senior Vice President Development Economics/Chief Economist—Mohammad Zia Qureshi (Mqureshi@worldbank.org) and Luiz Pereira da Silva. With Pierre-Richard Agénor, University of Manchester.

Project Code: P116077.

Completion date: August 2009.

Countries: No specific country coverage.

Publications

Agénor, Pierre-Richard, and Luiz A. Pereira da Silva. 2009. "Cyclical Effects of Bank Capital Requirements with Imperfect Credit Markets." World Bank, Washington, D.C.

Pereira da Silva, Luiz A. 2009. "Assessing the Cyclical Effects of Bank Capital Requirements in Middle-Income Countries: A Review of Methods, Evidence and Policy Issues." World Bank, Washington, D.C.

Africa and the Global Economic Crisis

This research project is reviewing, interpreting, and evaluating African governments' responses to the global economic crisis of 2008–9.

The global crisis is unprecedented. It also comes at a time when the economic policy environment in Africa is as good as it has ever been. This combination has never been studied.

The analysis is based on case studies by African authors; these include framework papers by distinguished scholars on specific aspects of the topic.

The papers will be presented at a conference in Nairobi (December 2009).

Responsibility: Africa Region, Office of the Chief Economist—Shantayanan Devarajan (Sdevarajan@worldbank.org) and Office of Senior Vice President Development Economics/Chief Economist—Justin Yifu Lin. With the African Economic Research Consortium.

Project Code: P116268.

Completion date: May 2010.

Countries: All African countries.

Poverty and Inequality

LSMS IV: Research for Improving Survey Data

The objective of this research project is to increase knowledge on methods and techniques for generating household level data for research and policy purposes. This program of research is designed to ensure that the Living Standards Measurement Survey (LSMS) program meets the new demands for data that are arising from the international community's commitment to the Millennium Development Goals and the Heavily Indebted Poor Country Initiative with the related Poverty Reduction Strategies. This demand calls for the validation of, or improvement in, the tools used to measure concepts of interest to policy makers and researchers as well as the development of means to measure new concepts. The research is designed to ensure that the LSMS remains at the forefront of survey methodology and welfare measurement.

The project builds and expands on work already done in the area of survey methodology by developing and implementing controlled experiments. Each experiment is designed to allow the comparison of different techniques and measures to determine the effect measurement differences may have on overall findings and assessments of impacts. In close connection with this, attention is also being given to the latest technologies that can be used to improve data collection.

Two separate types of activities have been carried out so far under this research project. The first is a review of the state of the art in survey data collection on two topics of importance: migration and gender. The second area of activity comprises methodological and technological experiments aimed at increasing current knowledge on survey methodologies. Funding from the RSB, GAP, and KCP have supported a series of experiments, which range in status from being fully completed with a research paper written to ones that are still in the planning stage.

Responsibility: Development Research Group, Poverty Team—Kinnon Scott (Kscott1@worldbank.org), Calogero Carletto, Diane Steele, Kathleen Beegle, Kristen Himelein, and Talip Kilic.

Project Code: P027082, P102013.

Completion date: December 2010.

Countries: Global.

Publications

Beegle, Kathleen, Kristen Himelein, and Martin Ravallion. 2009. "Frame of Reference Bias in Subjective Welfare Regressions."

Policy Research Working Paper 4904. World Bank, Washington, D.C.

Calogero, Carletto. 2009. "Migration and Child Growth in Rural Guatemala." World Bank, Washington, D.C. Mimeo.

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Cull, Robert, and Kinnon Scott. Forthcoming. "Measuring Household Usage of Financial Services: Does It Matter How or Whom You Ask?" Policy Research Working Paper. World Bank, Washington, D.C.

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Doss, Cheryl. 2008. "Collecting Survey Data for Gender Analysis." World Bank, Washington, D.C.

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World Poverty Monitoring

This research project started around 1990 with the aim of improving the data available for monitoring progress in reducing aggregate poverty using a consistent compilation of distributional data from household surveys. The project is using primary data sources and re-estimating all poverty measures on a consistent basis, converting local currencies to constant purchasing power parity values. It is testing the robustness of comparisons across regions and over time to measurement assumptions. The data set covers more than 115 countries using 750 nationally representative household surveys, with data for two or more points in time for most countries.

The project has combined a new data set on national poverty lines with new price data from the 2005 round of the International Comparison Program and almost 750 household surveys to estimate a new series of absolute poverty measures for the developing world for 1981–2005. The estimates show that 25 percent of the population of the developing world lived in extreme poverty in 2005—as judged by what "poverty" means in the world's poorest countries. This is higher than past estimates. Overall progress against poverty is still evident; the corresponding poverty rate was 52 percent in 1981. Progress was uneven across regions, with a dramatic reduction in the poverty rate in East Asia, and far less progress in Sub-Saharan

Africa. The trends over time are reasonably robust to various changes in methodology, although precise poverty counts at any one date are more sensitive.

The project results are reported in various World Bank reports every year, including the World Development Report, World Development Indicators, Global Monitoring Report, Global Economic Prospects, Annual Report, IDA report, and many regional reports. The web site—PovcalNet—under this project is widely used by the international development community to measure poverty. The average number of users is more than 400 per day. PovcalNet is an interactive computational tool that allows users to replicate the calculations made by the World Bank's researchers in estimating the extent of absolute poverty in the world, including the \$1 a day poverty measures. This web site includes about 700 income/consumption distributions over 120 countries spanning 25 years.

Responsibility: Development Research Group—Martin Ravallion (mravallion@worldbank.org) and Shaohua Chen (schen@worldbank.org).

Project Code: P027088.

Completion date: Ongoing.

Contires: Global.

Publications

Chen, Shaohua, and Martin Ravallion. 2008. "The Developing World Is Poorer Than We Thought, but No Less Successful in the Fight against Poverty." Policy Research Working Paper 4703. World Bank, Washington, D.C. Forthcoming in *Debates in the Measurement of Poverty*. Oxford University Press.

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Measures for the Developing World, 1981–2004." *Proceedings of the National Academy of Sciences* 104.

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World Income Distribution

The objective of this research project is to study and analyze the contemporary evolution of global income distribution, emphasizing the inequality aspect. The project is also looking at the historical evolutionary patterns of global inequality.

Is migration driven by large inter-country differences in incomes? What are the implications of global income inequality for global inequality of opportunity? Is global inequality rising and why? Are countries' incomes converging? To answer these questions, the project is updating the results of earlier research on global inequality, for example by including new data on purchasing power parity (PPP) and more recent surveys. The project is extending the analysis further into the past by working with historical data.

The key data sources are household surveys for the recent period (the past 20–50 years) and social tables for the earlier years.

The research shows an extremely high level of global inequality, which was found to be even higher than originally thought after the results of the new PPPs were published in 2007–2008. Global inequality is far higher than inequality in even most unequal countries, like South Africa. The main determinant of this high inequality is large inter-country differences in mean incomes. However, as they catch up with high-income countries, India and China's high growth rates exert a downward pressure on global inequality. The evolution of global inequality in the next century will therefore depend on how successfully this catch-up process continues,

whether income divergence between high-income countries and, in particular, Africa stops, and whether within-country income inequalities increase.

This research has been disseminated at the following: London School of Economics (January 2007); Wooster College, Oberlin University, and the University of North Carolina (February 2007); Duke University (March 2007); World Bank conference on global distributive justice (May 2007); Fundacion Sistema, Madrid (May 2007); Universidad Complutense, Madrid (May 2007); World Bank Poverty and Applied Micro Economics seminar (June 2007); Salamanca (June 2007); Manchester University (June 2007); ESPI Institute, Belgrade (July 2007); Seoul (September 2007); Beijing (September 2007); Beijing Normal University, Peking University, and Renmin University (September 2007); Neue Galerie, Graz (September 2007); Free University Amsterdam (November 2007); Congress of Spanish Association for Regional Studies, Leon (November 2007); Universidad Carlos III, Madrid (December 2007); World Bank (February 2008); George Washington University, Washington, D.C. (February 2008); University of Maryland (March 2008); Ethics Center, San Diego State University (April 2008); University of Texas, Austin (April 2008); Center for Global Development (September 2008); an Economist-organized forum of financial leaders, Doha (November 2008); Columbia University (December 2008); an Economist-organized forum, Athens (January 2009); World Bank (February 2009); New School, New York (February 2009); Rumi Forum, Washington, D.C. (March 2009); Fundacion Ramon Areces, Madrid (May 2009); Carlos III University, Madrid (May 2009); First World Social Science Forum, Bergen (May 2009); University of Leuven (May 2009); and a conference organized by Université de Paris and Centre national de recherche scientifique, Istanbul (May 2009).

The project database is available at <http://econ.worldbank.org/projects/inequality>.

Responsibility: Development Research Group, Poverty Team—Branko Milanovic (brmilanovic@worldbank.org). With Gouthami Padam.

Project Code: P067674.

Completion date: June 2012.

Countries: Global.

Publications

Bourguignon, Francois, Francisco Ferreira, Branko Milanovic, and Martin Ravallion. 2008. "Global Inequality and Poverty." Entry for the Princeton Encyclopedia of the World Economy.

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Milanovic, Branko, Peter Lindert, and Jeffrey Williamson. 2007. "Measuring Ancient Inequality." National Bureau of Economic Research Working Paper No. 13550. Published in 2007 as Policy Research Working Paper 4412. World Bank, Washington, D.C.

Poverty and Health

This research project is developing and applying methods for addressing a broad range of policy and operational questions related to inequalities in the health sector between the poor and the non-poor, and the factors that give rise to such inequalities. It also aims to make these methods more accessible to researchers through practical hands-on guides and a new software package.

The project has developed decompositions to help assess the sources of inequalities, added measures of catastrophe and impoverishment to the measures of progressivity previously used to assess equity in health finance, introduced more general measures of health inequality that allow the analyst to specify attitudes toward inequality, and developed an achievement index that allows inequality to be traded against the mean level of health.

The methods have been outlined in a step-by-step, easy-to-use manual, which is freely downloadable from www.worldbank.org/analyzinghealthequity. In addition, researchers can download for free customizable Stata 'do' files, and self-paced Powerpoint lectures.

In 2009, a health module was developed for the World Bank's computer software program ADePT that simplifies and streamlines the computation of standard tables and charts

in this research field. Recent work has also examined methodological issues in the measurement of financial protection in health, and in risk and vulnerability in health, with the development and piloting with the Bank's East Asia Human Development unit of a risk and vulnerability questionnaire. New work is planned with funding from the European Union on health equity and financial protection in six East Asian countries; much of the work will focus on the impacts of programs and policies on health equity and financial protection in health.

The project has applied the methods in a number of countries. Standardized tables on inequalities in health outcomes and service utilization have been produced in collaboration with the World Bank's Human Development Network for more than 50 countries using Demographic and Health Survey data. The tables are available at <http://www.worldbank.org/povertyandhealth>.

Responsibility: Development Research Group, Human Development and Public Services Team—Adam Wagstaff (awagstaff@worldbank.org). With Eddy van Doorslaer, Erasmus University; and Owen O'Donnell, University of Macedonia.

Project Code: P070134.

Completion date: Ongoing.

Countries: East Asia and Pacific Region.

Publications

O'Donnell, O., E. van Doorslaer, and A. Wagstaff. 2007. *Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and Their Implementation*. Washington, D.C.: World Bank.

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Looking Beyond Averages: A Research Program on Poverty and Inequality

This research project on poverty and inequality had two components. The first component aimed to improve the data and methodological tools for monitoring and describing poverty and inequality, and for assessing policies that aim to reduce poverty. Part of this work dealt with the discrepancies between surveys and national accounts as part of a wider effort to improve cross-country databases for assessing overall progress in achieving

the Millennium Development Goals. The second component focused on why some growth processes have more impact on poverty than others do.

The project developed new methods for calculating purchasing power parity exchange rates using unit value data from household surveys, and applied the method to data from India and Indonesia. The study found that there could be substantial disagreement between subjective perceptions of economic welfare and standard objective measures.

A component of the research program focused on the development of tools to produce "poverty maps." The specific methods explored by the team involved combining data from household surveys with unit record data from population censuses so as to overcome the constraint posed by survey data in terms of small sample sizes. The methods were judged to be quite promising and efforts were launched to develop poverty maps in a variety of countries.

The project helped to develop and apply better tools for the impact evaluation of anti-poverty programs. A number of lessons emerged, including the finding that neither randomization nor baseline surveys are essential for credible ex-post impact assessments. However, high-quality data are essential.

A major part of the work supported under this component was to find ways to improve and expand data through the Comparative Living Standards Project, designed to facilitate the use of Living Standards Measurement Surveys. The project supported the construction of two databases—a searchable meta database, and a database contains a subset of variables common to most Living Standards Measurement Surveys.

The project explored the extent to which economic growth is "pro-poor"—and what that means. The project proposed a better measure of pro-poor growth, namely the mean growth rate of the poor, which indicates the direction of change in a theoretically defensible measure of the level of poverty. The project also embarked on a series of country case studies on the determinants of the rate of pro-poor growth.

Furthermore, the project looked at a range of non-income dimensions of welfare, such as mental health and cultural and social factors, in determining inequality and poverty and access to public services by the poor. The analysis also examined the role of political incentives in resource allocation.

The project results have been presented at universities and research institutes around the world. The latest results are available at <http://econ.worldbank.org/programs/poverty/>.

Responsibility: Development Research Group, Poverty and Inequality Team—Martin Ravallion (mravallion@worldbank.org), Kathleen Beegle, Shaohua Chen, Quy-Toan Do, Francisco Ferreira, Jed Friedman, Emanuela Galasso, Peter Lanjouw, Michael Lokshin, Ghazala Mansuri, Branko Milanovic, Berk

Ozler, Vijayendra Rao, Prem Sangraula, Kinnon Scott, Diane Steele, and Michael Woolcock.

Project Code: P076607, P079124.

Completion date: June 2008.

Countries: Global.

Publications

- Araujo, M.C., Francisco H.G. Ferreira, Peter Lanjouw, and Berk Ozler. 2008. "Local Inequality and Project Choice: Theory and Evidence from Ecuador." *Journal of Public Economics* 92: 1022–46.
- Campante, Filipe, and Francisco H.G. Ferreira. 2007. "Inefficient Lobbying, Populism and Oligarchy." *Journal of Public Economics* 91(5–6): 993–1021.
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Luiz Pereira da Silva, and Maurizio Bussolo (eds.), *The Impact of Economic Policies on Poverty and Income Distribution: Advanced Evaluation Techniques and Tools*. Oxford: Oxford University Press.

Long-Run Impacts of Health Shocks in Africa

Household-level socioeconomic data and research that examines the dynamics of the impact of an AIDS death on survivors are scarce for short-run impacts and even less available for long-run implications. The lack of quantitative studies of the impact of an adult death at the household or individual level perhaps stems in large part from the difficulty in collecting data with the appropriate information to analyze the impact of adult mortality within households.

The goal of this project is to understand how individuals are affected in the long run by health shocks due to HIV/AIDS and other economic shocks, drawing on analysis of a re-survey of respondents originally surveyed in the northwest region of Tanzania in 1991–94. It is one of the few household surveys to collect data over such a long period and that can address questions concerning the long-term effects of a wide array of topics: orphanhood, disability, lack of education, mortality, morbidity, etc. As such, it is a unique opportunity to assess who stayed in poverty over this period and why, and who moved out of poverty and how.

The objective of the 2004 survey was to re-interview all individuals who were household members in any round of the survey in 1991–94. Data collection was completed in October 2004 and data entry was completed in December 2004. More than 92 percent of all households and more than 80 percent of all surviving respondents were successfully re-interviewed. The survey made considerable efforts to track people who and migrated out of their baseline community (including tracking to other regions of Tanzania). Additional data cleaning continued to June 2005, as well as construction of analytical files (consumption aggregate, asset valuation, and price indices). Concurrently, analytical work started in January 2005.

The research results have been presented at the following workshops and conferences: Research and Analysis Working Group, Dar es Salaam, Tanzania (February 2007); Centre for the Study of African Economies Africa Conference, Oxford (March 2007); HIV/AIDS Collaborative Research Seminar, Oxford (June 2007); Hewlett Foundation Dissertation Fellows Workshop, World Bank, Washington, D.C. (June 2007); CGD (MADS) Seminar, Washington, D.C. (November 2007); Migration and Development Thematic Group, World Bank, Washington, D.C. (January 2008); NIH Orphans and Vulnerable Children: Developing Research Priorities Meeting,

Rockville, Maryland (March 2008); University of Pennsylvania, Philadelphia, Pennsylvania (April 2008); University of Michigan, Ann Arbor, Michigan (November 2008); and Amsterdam Institute for International Development, Amsterdam (December 2008).

External funding was received from DANIDA (Denmark) for FY05 and from Rockwool Foundation for FY09/10.

Responsibility: Development Research Group, Poverty and Inequality Team—Kathleen Beegle (kbeegle@worldbank.org) and Human Development Network, Social Protection—Johannes Hoogeveen. With Joachim De Weerd, EDI, Bukoba, Tanzania; Stefan Dercon, Oxford University; Flora Kessy, ESRF, Tanzania; Godlike Koda, University of Dar es Salaam; Gideon Kwesigabo, IPH Muhimbili; Phare Mujinja, IPH Muhimbili; and Innocent Semali, IPH Muhimbili.

Project Code: P082486.

Completion date: December 31, 2010.

Countries: Tanzania.

Publications

Adhvaryu, Achyuta, and Kathleen Beegle. 2008. "The Impacts of Adult Deaths on the Elderly in Tanzania." World Bank, Washington, D.C. Mimeo.

Beegle, Kathleen, Joachim De Weerd, and Stefan Dercon. 2006. "Adult Mortality and Economic Growth in the Age of HIV/AIDS." *Economic Development and Cultural Change* 56(2): 299–326.

———. 2006. "Orphanhood and the Long-Run Impact on Children." *American Journal of Agricultural Economics* 88(5): 1266–72.

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———. Forthcoming. "The Long-run Impact of Orphanhood." *Demography*.

Beegle, Kathleen, and Sofya Krutikova. 2008. "Adult Mortality and Children's Transition into Marriage." *Demographic Research* 19(42): 1551–74.

Aid Effectiveness

In the aid-to-results chain, what are the roles of donors, domestic leadership, governance, institutions, and knowledge in effecting final outcomes? Given uncertainty, weak links along the chain, and known areas of diminishing returns, can aid be scaled up to meet the Millennium Development Goals (MDGs)? What are the necessary conditions?

This research project explored the relationship between external assistance and development outcomes, focusing on policy formulation and how policies shape final outcomes. It

also explored the conditions necessary for aid to contribute to development outcomes.

The analyses used country data and cross-country financial flows data. The work on aid effectiveness highlighted the limitations (and fallacies) of the cross-country analysis employed in most of the literature. The project results showed that the complex causality chain linking external finance to development results needs to be broken into discreet elements that permit a more complete picture of aid effectiveness based on existing knowledge. This would help in prioritizing additional research issues.

Efficient scaling-up of aid to reach the MDGs would require linking macro elements with specific, strategic approaches at the sector level. This would help in identifying the optimal sequencing of public investment and institutional interventions to reduce total costs over time, including the potentially adverse impact on export performance.

The project provided a new conceptual framework on aid and outcomes, and helped clarify the limitations of conventional analysis and discourse on aid effectiveness. The work on scaling-up explored the interface between the microeconomics and macroeconomics of large aid inflows, providing new approaches on absorptive capacity and aid sequencing.

Responsibility: Office of Senior Vice President Development Economics/Chief Economist—Mark Sundberg (Msundberg@worldbank.org), and Punam Chuhan-Pole (Pchuhan@worldbank.org).

Project Code: P098521.

Completion date: December 2007.

Countries: Global.

Publications

Bourguignon, François, and Mark Sundberg. 2007. "Aid Effectiveness: Opening the Black Box." *American Economic Review* 97(2, May). Presented at the 2007 Annual Economics Association meetings in Chicago.

———. 2007. "Straight Talk: Aid Can Work." *Finance and Development* 44(1, March).

Sundberg, Mark, and François Bourguignon. 2007. "Building Absorptive Capacity to Meet the Millennium Development Goals." In George Mavrotas and Anthony Shorrocks (eds.), *Advancing Development: Core Themes in Development Economics*. Palgrave MacMillan Press.

Equity and Development: A Research Program on Poverty and Inequality

This research project aimed to enhance the quality and quantity of existing data on poverty and inequality, as conventionally

measured in terms of current incomes. It built on both new data initiatives and past work by members of the group including the global poverty monitoring task and PovcalNet. The study focused on the main sources of comparability problems and assessed their implications for the measurement of poverty and inequality. The research explored various approaches to operationalizing the concept of using case studies. It also examined the implications for survey data collection and analysis. It included related work on economic mobility and measurement error problems.

The second part of the project examined newer approaches in measurement, which aimed at capturing the concepts of inequality of opportunity, empowerment, and agency. Extra information on people's own perceptions of well-being was brought into the picture by setting equivalence scales and cost-of-living indices. That information could also throw new light on the importance of relative deprivation. In addition to exploring the scope for using subjective and qualitative data in more systematic and credible ways, some of the analysis related to measuring empowerment and "voice," including direct indicators of power or "agency." As part of that approach, the project also looked at the somewhat novel issues of global inequality of opportunity. Because of the huge importance that national average income (say, GDP per capita) has in determining one's overall income and position in the global income distribution, the research found that, globally, inequality of opportunities is much more constrained than in even in most unequal countries.

Another part of the work focused on three specific micro-institutional manifestations: political inequality, judicial inequality, and social inequality.

Given that all policies affect inequalities in income and other dimensions, even when that is not their primary aim, the research focused on a narrow set of policies for improving distribution. The specific policies included community-driven development, disaster relief, institutional reforms for promoting local democracy, land reforms, judicial reforms, institutional reforms for promoting local democracy, programs for the extreme poor, poor-area development programs, and transfer schemes (workfare and conditional cash transfers).

Responsibility: Development Research Group, Poverty and Inequality Team—Martin Ravallion (mravallion@worldbank.org) and Peter Lanjouw (planjouw@worldbank.org).

Project Code: P099861.

Completion date: December 2008.

Countries: Global.

Publications

Almeida, Rita, and Emanuela Galasso. Forthcoming. "Jumpstarting

Self-Employment? Evidence among Welfare Participants in Argentina." *World Development*.

Azzarri, Carlo, and Gero Carletto. "Modeling Migration Dynamics in Albania: A Hazard Model Approach." 2009. Policy Research Working Paper 4945. World Bank, Washington, D.C.

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Barros, Ricardo Paes de, Francisco H. G. Ferreira, José Molinas, and Jaime Saavedra. 2008. *Measuring Inequality of Opportunities in Latin America and the Caribbean*. Washington, D.C.: Palgrave MacMillan and World Bank.

Beegle, Kathleen. 2008. "Health Facility and School Surveys in the Indonesia Family Life Survey." In Samia Amin, Jishnu Das, and Markus Goldstein (eds.), *Are You Being Served?* Washington, D.C.: World Bank.

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Beegle, Kathleen, Deon Filmer, Andrew Stokes, and Lucia Tiererova. 2009. "Orphanhood and the Living Arrangements of Children in Sub-Saharan Africa." Policy Research Working Paper 4889. World Bank, Washington, D.C.

Beegle, Kathleen, Kristen Himelein, and Martin Ravallion. 2009. "Frame-of-Reference Bias in Subjective Welfare Regressions." Policy Research Working Paper 4904. World Bank, Washington, D.C.

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- Ferreira, Francisco H.G., and Jérémie Gignoux. 2008. "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America." Policy Research Working Paper 4659. World Bank, Washington, D.C.
- . Forthcoming. "Inequality of Opportunity for Education: An Application to Turkey." In Ravi Kanbur and Michael Spence (eds.), *Equity and Growth*.
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Urban Poverty Project Evaluation—Indonesia

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According to conservative calculations, the World Bank’s lending for Community Driven Development (CDD) projects increased from \$325 million in 1996 to \$2 billion in 2003. Yet a recent literature review shows that few CDD projects have undergone rigorous evaluations. This research project will provide some answers about whether a major effort to use CDD to address the needs of poor is effective in urban areas.

The study is conducting a quantitative evaluation of the Urban Poverty Project II, a \$250 million CDD project targeted toward the urban poor in Indonesia. The basic evaluation design matches 160 treatment communities with 100 control communities, selected on the basis of a regression discontinuity design, that have not received the project. These are matched on the basis of village level data on poverty, infrastructure availability, and the provision of public services. A baseline survey of both treatment and control communities was conducted with an extensive survey instrument in June 2006, before the onset of the project. In June 2007, a mid-term follow-up survey was conducted that tracked the formation of the community leaders, project groups, and micro-credit beneficiaries. A third and final round was conducted in 2008 and is currently being analyzed.

The evaluation methodology uses a regression discontinuity design. The sub-districts were selected for the Urban Poverty Project II funds on the basis of a poverty score calculated from census data. All sub-districts in a district that fell below a cut-off of the poverty score received the project (the score varied from province to province). Therefore, at the point of the “discontinuity,” i.e., the poverty score, the sub-districts just below the cut-off that received the project, were very similar to those just above the cut-off that did not receive it.

The project conducted three rounds of panel surveys of 150 “treatment” communities and 200 randomly chosen “control” communities. The analysis used difference-in-differences between similar treatment and control communities and across time.

Preliminary analysis of the Urban Poverty Project II CDD program shows that there were improvements in infrastructure and community empowerment in both the treatment and control areas. In other words, the project did not seem to be doing any better than other interventions the government was conducting. The analysis also shows that there has been elite dominance of community-based organizations.

Responsibility: Development Research Group, Poverty and Inequality Team—Vijayendra Rao (vrao@worldbank.org) and East Asia and Pacific, Indonesia Sustainable Development—

Yulia Herawati. With Menno Prasad Pradhan, University of Amsterdam; and Victoria Beard, University of California-Irvine.

Project Code: P100067.

Completion date: Ongoing.

Countries : Indonesia.

Publications

Bardhan, Pranab, and Isha Ray (eds.). 2008. "Symbolic Public Goods and The Coordination of Collective Action: A Comparison of Local Development in India and Indonesia." Chapter 10 in *Contested Commons: Conversations Between Economists and Anthropologists*. Wiley-Blackwell Publishers.

Beard, Victoria, Menno Pradhan, Randi Cartmill, Rivayani, and Yulia Herawati. 2008. "Decentralization and Elite Capture: The Selection of Leaders and Beneficiaries in Community-Driven Projects in Indonesia." In Victoria Beard, Faranak Miraftab, and Christopher Silver (eds.), *Planning and Decentralization: Contested Spaces for Public Action in the Global South*. Routledge.

Trade, Growth, and Poverty in the Least Developed Countries

Trade liberalization can create economic opportunities, but women and men cannot take advantage of these opportunities on an equal basis. Women and men differ in their endowments, control over resources, access to labor markets, and roles within the household. It may seem obvious that gender differences play an important role in transmitting the effects of trade expansion to poverty, especially in developing countries, where gender inequality is usually more pronounced. However, few studies have examined this issue directly. Although the literature includes numerous analyses on the links between trade and poverty and between gender inequality and poverty, it seems not to have combined these two sets of studies in a consistent empirical framework.

This research project produced a book that summarized the findings of a major international research project examining the links between trade, gender, and poverty. The main objective of the research project was to fill, at least in part, the gap in the literature between trade and poverty, and gender inequality and poverty.

In methodological terms, assessing how relevant gender differences are in the transmission of the effects of trade liberalization to poverty meant tracing and gauging the links between this macroeconomic policy and the microeconomic-level consequences of its implementation. Most of these links are not direct. They tend to be mediated by the characteristics of labor markets, household endowments, and intra-household

allocation behavior. All of these elements are highly specific to individual countries, which is why the project opted for a set of country-specific case studies. The case studies included Ghana, Senegal, and Uganda. In choosing the country case studies, particular attention was paid to Sub-Saharan Africa. In this region, many countries have adopted market-friendly reforms, including deep trade liberalization, but they have not universally reaped significant growth and poverty reduction benefits. As documented by ample evidence, gender inequality in Africa tends to be wider than that in other developing-country regions, another reason to study the links between trade, gender, and poverty on this continent.

Although no generally applicable policy prescriptions emerged from the research collected here, two relevant policy messages can be distilled. First, combining trade reforms with well-designed, gender-aware social policies can produce larger gains than can isolated trade reforms. The design of these social policies will depend on the characteristics of the specific country. Second, counterbalancing trade-related, widening gender disparities can have positive outcomes in the long run. In some cases, decreasing women's incomes are shown to have negative effects on investment in human capital and on output response in agriculture.

Preliminary project findings were presented at a WIDER project meeting in Accra, Ghana (May 2007); the Sixth PEP Network General Meeting, Lima, Peru (June 2007); the GTAP Annual Conference, Purdue University (2007); and the PEGNet Conference in Berlin, Germany (September 2007).

Responsibility: Development Prospects Group—Maurizio Bussolo (mbussolo@worldbank.org). With Rafael De Hoyos, World Bank; Jann Lay, Kiel Institute for the World Economy; John Cockburn, Bernard Decalwe, Veronique Robichaud, and Ismael Fofana, Laval University; Charles Ackah, Institute of Statistical, Social, and Economic Research; and Oscar Nuñez.

Project Code: P100407.

Completion date: January 2008.

Countries: Ghana, Senegal, Uganda.

Publications

Bussolo, M., and R. De Hoyos. 2007. "Agricultural Distortions, Poverty, and Gender in Senegal." World Bank, Washington, D.C.

Bussolo, Maurizio, and Rafael De Hoyos (eds.). 2009. *Gender Aspects of the Trade and Poverty Nexus: A Macro-Micro Approach to Trade, Growth, and Poverty in the Least Developed Countries*. Washington, D.C.: Palgrave Macmillan and World Bank.

Bussolo, M., R. De Hoyos, and O. Nunez. 2007. "Can Maquila Booms Reduce Poverty? Evidence from Honduras." World Bank, Washington, D.C.

Golan, J., and J. Lay. 2007. "More Coffee, More Cigarettes? Coffee

Market Liberalisation, Gender, and Bargaining in Uganda.” Kiel Institute for the World Economy, Germany.

Poverty Impacts of Egypt’s Social Fund for Development

Egypt’s Social Fund for Development, together with its development partners such as the World Bank, wanted to evaluate the Fund’s socioeconomic impacts to assess the future direction of expansion of such programs in Egypt. With this objective in mind, the Social Fund for Development financed and supported the country’s data collection agency (which is called CAPMAS) in designing and implementing surveys to generate appropriate data to help evaluate social fund interventions. The World Bank Institute provided technical support in designing and implementing the surveys.

This research project applied propensity-score matching using household survey data for 2004–05. It found that the Social Fund for Development programs have clear and measurable effects on relevant household outcomes in the expected direction. The six programs considered for the analysis were education, health, potable water, sanitation, roads, and micro-credit. Social Fund for Development road projects generated benefits that, by some estimates, exceeded their costs, as did health and potable water interventions. However, this was less evident for programs in education and sanitation. Social Fund for Development programs that supported microcredit were strongly pro-poor; the other programs analyzed appeared to have a more modest pro-poor orientation.

The study was disseminated at a seminar held in Washington, D.C. (June 2008).

Responsibility: World Bank Institute, Trade Program Division—Shahidur Khandker (skhandker@worldbank.org).

Project Code: P100416.

Completion date: June 2008.

Countries: Egypt.

Publications

Abou-Ali, Hala, Hesham El-Azony, Heba El-Laithy, Jonathan Haughton, and Shahidur R. Khandker. 2009. “Evaluating the Impact of Egyptian Social Fund for Development Programs.” World Bank, Washington, D.C. Mimeo.

Seasonality, the Hardcore Poor, and Micro-Finance: A Case Study of Bangladesh

This research project is investigating the role of micro-credit in smoothing the consumption of seasonally deprived rural households in Bangladesh, in particular those in the northwest region of Bangladesh. It is examining a credit program sponsored by

the premier micro-finance institution in Bangladesh, which is called PKSF and is specially designed to reach the seasonally and chronically poor.

The project seeks to understand the extent of the chronic and transitory nature of poverty in the northwest region of Bangladesh. Although transient poverty may be addressed by offering credit and/or aid through safety net programs to stabilize income and consumption, the issue of chronic poverty must be addressed through long-term investments in human and physical capital. The project is analyzing the importance of program interventions in influencing chronic and extreme poverty.

The analysis is based on estimation of cross-section and panel data. The cross-section estimation uses an exogenous eligibility rule to determine observational differences between participants and non-participants among the eligible (hardcore poor) households. It uses a matching technique to estimate micro-credit impacts on seasonal consumption. The panel estimation uses different variations of difference-in-difference techniques.

The data for this research come from two sources. The first is the Household Income Expenditure Surveys of 2000 and 2005, which were collected by the Bangladesh Bureau of Statistics. These surveys are representative of the entire rural population of Bangladesh. The second data source is a 2006 survey administered in the northwest region of Bangladesh by the Institute of Microfinance. This survey was limited to the hardcore or extreme poor of greater Rangpur, overwhelmingly those who have been the victims of the adverse effects of seasonality. An in-depth follow-up survey has recently been carried out for a subsample of the 2006 households, which will also be used in this research.

The findings suggest that micro-credit programs indeed help smooth the seasonal volatility of consumption in northwest Bangladesh. However, coverage of micro-credit programs is quite low (roughly 30 percent of poor households have access to micro-credit). The hard-core poor do not appear to have benefited from micro-finance.

The Institute of Microfinance in Bangladesh provided funds for carrying out the survey.

Responsibility: Development Research Group, Sustainable Rural and Urban Development Team—Shahidur Khandker (Skhandker@worldbank.org). With Hussain Samad.

Project Code: P100448.

Completion date: March 31, 2010.

Countries : Bangladesh.

Publications

Khandker, Shahidur. 2009. “Poverty and Income Seasonality in

Bangladesh.” Policy Research Working Paper 4923. World Bank, Washington, D.C. (http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2009/04/30/000158349_20090430133459/Rendered/PDF/WPS4923.pdf)

Khandker, Shahidur, Baqui Khalily, and Hussain Samad. 2009. “Seasonal Hunger and Its Mitigation in Northwest Bangladesh.” World Bank, Washington, D.C. Mimeo.

Software Tools for Applied Economic Analysis

This research project aimed to provide policy makers and researchers with easily accessible analytical tools that incorporate the latest developments in micro-econometrics. The researchers developed an innovative software platform called ADePT, which has been used extensively by dozens of countries and research institutions to analyze economic conditions in the labor market, poverty and inequality, gender, social protection, and education.

ADePT software has been used in the World Bank for the production of poverty assessments on more than 50 countries. The social protection module of ADePT is widely used for the benefit-incidence analysis of social protection programs in many countries. ADePT EDU has helped the Human Development anchor to process 111 DHS surveys for more than 60 countries.

Workshops on ADePT have been conducted in all regions of the World Bank; in local offices in Vietnam, Russia, and Lebanon; and in international institutions such as IFPRI, MDC, and IDB. The software itself, user manuals, documentation, and examples of the reports are available at: www.worldbank.org/adept.

Responsibility: Development Research Group, Poverty and Inequality Team—Michael Lokshin (Mlokshin@worldbank.org).

Project Code: P101196.

Completion date: July 2009.

Countries: Global.

Poverty in Marginal Areas: Evidence from Small-Area Estimates of Local Welfare

This research project linked results from an ongoing effort to estimate poverty and other economic welfare outcomes at the local level to spatially defined indicators that capture different dimensions of what are commonly referred to as “marginal areas.” The goal of this exercise was to strengthen the empirical base around which discussions of the poverty status of households located in marginal areas are centered.

The project aimed to generate basic descriptive material

around which ideas could be organized and more in-depth analysis could be considered. As such, the analytical approaches were very simple. Whatever complexity exists arose from the fact that the basic data that were being examined were not all directly available.

In particular, the relatively straightforward adaptation of the poverty mapping procedure has allowed for estimation of poverty rates by remoteness and agro-potential zone in the five countries considered in the project (Thailand, Brazil, Cambodia, Kenya, and Ecuador). Additional work consisted of identifying and refining geo-referenced data on agro-potential and remoteness, and merging these geo-referenced data with the poverty estimates.

The project found some support in the data for the contention that poverty rates are particularly high in remote areas and areas with low agro-potential. However, the study also showed that although poverty rates might be high in such areas, by far the largest numbers of poor people reside in relatively less remote areas, with better agro-potential. The project also showed that, in the specific case of Brazil, remoteness need not always be thought of with reference to a large city. In Brazil, the observation that patterns of poverty decline with proximity to an urban center applies as strongly to small towns as to large cities.

The research was presented at a conference on rural poverty in Brasilia, Brazil (April 2007); a retreat by the Spatial and Local Development Team, World Bank, Washington, D.C. (June 2007); and a conference of the Development Policy Forum, Berlin (September 2007).

Responsibility: Development Research Group, Poverty and Inequality Team—Peter Lanjouw (Planjouw@worldbank.org) and Sustainable Rural and Urban Development Team—Piet Buys. With Céline Ferré, UC Berkeley; and Timothy Thomas.

Project Code: P104024.

Completion date: December 31, 2007.

Countries : Global.

Publications

Buys, P., C. Ferré, P. Lanjouw, and T. Thomas. 2007. “Rural Poverty and Geography: Towards Some Stylized Facts.” World Bank, Washington, D.C.

Lanjouw, P. 2009. “Some Stylized Facts about Rural Poverty and Geography and a Question for Policy.” In B. Pleskovic (ed.), *Reshaping Economic Geography*, Berlin Workshop Series. Washington, D.C.” InWent and World Bank.

Thomas, Timothy. 2008. “Is There Evidence of an Urban-Rural ‘Spillover’? An Empirical Analysis Using Spatially Explicit Data from Three Countries.” World Bank, Washington, D.C. Mimeo.

Social Hierarchy and Cooperation

This research project aimed to better understand obstacles to coordination and collective action in one of the poorest states of India, and to create an analytical approach that would make it possible to analyze those obstacles elsewhere. The project conducted two studies in which it used an exogenous source of individual variation in social position—caste—in a historically extreme social hierarchy (the caste system of rural North India) to examine the effects of affiliation to the top or bottom of the social hierarchy on social preferences and obstacles to coordination and collective action.

The analysis was based on evidence from experimental games and field studies. It looked at how the social structure of a society affects (a) people's ability to develop new conventions of cooperation, and (b) their willingness to sanction norm violations.

The data were from a set of four experiments undertaken over several years in hundreds of villages in Uttar Pradesh. First, aversion to earning the “sucker's payoff” when cooperation is not met by cooperation is a major obstacle to coordination by high-caste individuals, but not by low-caste individuals. Second, low-caste members punish violations of cooperation norms that hurt members of their own caste much less than do high-caste members. These cultural differences may contribute to the perpetuation of the low castes' economic vulnerability and exploitability. Both sets of results represent “warning flags” against relying on historically highly unequal communities to solve development problems.

The first study, “Playing Safe in Coordination Games: The Role of Social Preferences,” found that high-caste individuals are much less able to coordinate successfully than either low-caste individuals or university student populations in the West. The results of a coordination game showed that high-caste individuals, but not low-castes individuals, were willing to sacrifice social efficiency in order to avoid receiving a lower payoff than their anonymous partner. Because caste status can be taken as exogenous, our findings may represent the impact on fear of loss of face of a caste culture that puts extreme emphasis on the social status of the high castes.

The second study, “Caste and Punishment: The Legacy of Caste Culture in Norm Enforcement,” found that well-functioning social groups are characterized by social norms that restrain opportunism. The study showed that low-caste members punish norm violations that hurt members of their own caste much less than do high-caste members. These cultural differences in the willingness to punish norm violations may inhibit low caste individuals' ability to enforce informal agreements and sustain collective action, and so may contribute to

the low castes' economic vulnerability and exploitability and the perpetuation of the hierarchy that shaped these cultural differences.

The research was presented at: Trento Festival of Economics, Trento, Italy (May 2008); Princeton University (April 2009); Institute for Advanced Studies, Princeton, Social Norms and Cooperation Seminar (December 2008); Princeton University, Politics and Identity Seminar (December 2008); University of Arizona (October 2008); Indian Statistical Institute, Delhi (July 2008); University of Zurich (April 2008); Ohio State University (April 2008); American Economic Association (January 2008); Georgetown University Law Center, Law and Economics Workshop (October 2007); University of Manchester (July 2007); University of Texas at Dallas (May 2007); Economists' Forum 2007, World Bank (April 2007); University of Maryland, School of Public Policy (March 2007); George Washington University (March 2007); Harvard University (March 2007); Cornell University (November 2006); and World Bank, Poverty and Applied Micro Seminar Series (November 2006).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Karla Hoff (khoff@worldbank.org). With Mayuresh Kshetramade, Sonal Vats, and Mukta Joshi

Project Code: P107043.

Completion date: 2008.

Countries: India.

Publications

Fehr, Ernst, Karla Hoff, and Mayuresh Kshetramade. 2008. “Spite and Development.” *American Economic Review, Papers and Proceedings* 98(2, May): 494–99.

Hoff, Karla, Ernst Fehr, and Mayuresh Kshetramade. Forthcoming. “Caste and Punishment: The Legacy of Caste Culture in Norm Enforcement.” Working Paper. World Bank, Washington, D.C., and University of Zurich.

Hoff, Karla, and Priyanka Pandey. 2009. “Playing Safe in Coordination Games: The Role of Social Preferences.” World Bank, Washington, D.C.

New Initiatives in Small Area Estimation: Validating Poverty Maps, Mapping Undernutrition, Constructing Pseudo-Panels

This project undertook three initiatives aimed at extending the ambit of the World Bank's methodology for poverty mapping and consolidating its underlying validity. First, the project funded a detailed and comprehensive validation study of the basic poverty mapping methodology in Brazil. Second, it sought to advance methodological work on the extension of the poverty mapping methodology to the small area estimation

of undernutrition in the basic poverty map software. Third, it explored the feasibility of applying the poverty mapping methodology (and software) to a survey-to-survey application aimed at using two cross-sectional household surveys to construct a pseudo-panel dataset that would permit the analysis of poverty dynamics in a setting where historically such analysis was not feasible.

Each of the project sub-components focused on a different set of questions. Component 1 attempted to assess the extent to which the poverty mapping methodology produces valid poverty estimates and accompanying standard errors; the validation exercise made use of rare data for Brazil. Component 2 explored methodological issues associated with the combination of data from two different data sources (survey-to-survey or survey-census). The study focused on two applications of welfare analysis in Tanzania, looking at poverty and undernutrition of children. Component 3 developed further the survey-to-survey analysis methodologies to explore the feasibility of a specific application, namely the development of pseudo-panel data from a series of cross-sectional data in order to study poverty dynamics in settings where the data would not normally permit such analysis.

The analysis undertaken in this project applied statistical tools from econometrics and from the field of small-area statistics in combination with household survey and/or population census data from a variety of developing countries, including: Brazil, China, Indonesia, Kenya, Russia, Tanzania, and Vietnam.

The pseudo-panel component of the research project has yielded promising results as to the feasibility of deriving basic inferences about poverty dynamics (the duration of poverty, incidence of “chronic” poverty, etc.) in settings where panel data are not available. By combining data using the basic poverty mapping methodology, the analysis showed that pseudo-panels can be constructed from cross-sectional data and that these can then be used to shed light on issues of welfare mobility.

Responsibility: Development Research Group, Poverty and Inequality Team—Peter Lanjouw (Planjouw@worldbank.org) and David McKenzie, and Human Development Network, Social Protection—Philippe Leite. With Chris Elbers, Vrije (Free) University; Jill Luoto, UC Berkeley; Roy van der Weide, University of Amsterdam; and Yongming Du.

Project Code: P107113.

Completion date: June 30, 2008.

Countries: Global.

Publications

Christiaensen, L., P. Lanjouw, J. Luoto, and D. Stifel. 2009. “Tracking

Poverty Over Time: The Reliability of SAE Prediction Methods.” World Bank, Washington, D.C. Mimeo.

Elbers, C., P. Lanjouw, and P. Leite. 2008. “Brazil within Brazil: Testing the Poverty Map Methodology in Minas Gerais.” Policy Research Working Paper 4513. World Bank, Washington, D.C.

Fujii, T., and R. van der Weide. 2009. “Combining Surveys with Applications to Poverty and Child Malnutrition in Tanzania.” World Bank, Washington, D.C. Mimeo.

Lanjouw, P., J. Luoto, and D. McKenzie. 2009. “Using Repeated Cross Sections to Explore Movements in and out of Poverty.” World Bank, Washington, D.C. Mimeo.

Inequality of Opportunity

What part of the inequality observed in a particular country is due to unequal opportunities, rather than to differences in individual effort or luck? This project seeks to do two things. First, using national household income and expenditure surveys, it will estimate a lower bound for the opportunity share of inequality in labor earnings, household income per capita, and household consumption per capita in six Latin American countries, as well as Turkey. Following John Roemer, inequality of opportunity is associated with outcome differences that can be accounted for by morally irrelevant, pre-determined circumstances, such as race, gender, place of birth, and family background. Thus defined, unequal opportunities account for between 24 and 50 percent of inequality in consumption expenditure in the sample. Brazil and Central America are more opportunity-unequal than Colombia, Ecuador, or Peru.

The second objective is to identify the social groups with the most limited opportunity sets in each particular society. Such groups are listed in “opportunity profiles,” which are shown to be distinct from poverty profiles. In Latin America, for instance, ethnic origin and the geography of birth are markedly more important as determinants of opportunity deprivation than of outcome poverty, particularly in Brazil, Guatemala, and Peru. Opportunity profiles can also be constructed for educational achievement, and these can be analyzed in detail within one country (as was done for Turkey), or compared across countries. The researchers argue that such profiles provide a natural targeting frame for a number of assigned policies aimed at reducing poverty and promoting equal opportunities.

This analysis compares inequality in educational achievements across five Latin American countries and a number of advanced economies. The focus is on the share of inequality in test scores that can be accounted for by socially inherited circumstances, such as gender, family background, and geographic location. The findings show that one particular measure of inequality of opportunity (which is both scale

and translation invariant) is capable of capturing the share of inequality explained by socially inherited circumstances. Based on PISA standardized test-score data for 15-year-old students, the findings indicate that inequality of opportunity in educational achievement is of the order of one-fifth to one-quarter of observed inequality in Latin America. It is considerably smaller in Canada, Scandinavia, and Italy; a little smaller in France, Spain, and the United Kingdom; and similar or higher in Germany and the United States. In the process, the researchers have developed an original non-parametric method to address the selection bias arising from incomplete participation in the standardized tests.

The research findings have been presented at conferences and workshops at the following: Brookings Institution, Washington, D.C. (July 2008); IARIW, Portoroz, Slovenia (August 2008); International Association on Human Capabilities, Montevideo, Uruguay (October 2008); Bank SPO, Ankara, Turkey (October 2008); LACEA, Rio de Janeiro, Brazil (November 2008); University of Essex, Colchester, United Kingdom (March 2009); Middle East Technical University, Ankara, Turkey (June 2009); Education Research Initiative, Istanbul, Turkey (June 2009); and Latin American Studies Association, Rio de Janeiro, Brazil (June 2009).

Responsibility: Development Research Group, Poverty and Inequality Team—Francisco H. G. Ferreira (fferreira@worldbank.org) and Peter Lanjouw. With Anna Crespo, Inter-American Development Bank; and Jeremie Gignoux.

Project Code: P111937.

Completion date: December 31, 2009.

Countries: Brazil, Colombia, Guatemala, Mexico, Panama, Peru, Turkey.

Publications

Barros, Ricardo P., Francisco Ferreira, José Molinas, and Jaime Saavedra. 2008. "Measuring Inequality of Opportunities in Latin America and the Caribbean." World Bank, Washington, D.C.

Crespo, Anna, and Francisco Ferreira. Forthcoming. "Inequality of Opportunity in Latin America: Economic Wellbeing, Education and Health." In Merike Blofield (ed.), *The Great Gap: Inequality and the Politics of Redistribution in Latin America*.

Ferreira, Francisco, and Jérémie Gignoux. 2008. "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America." Policy Research Working Paper 4659. World Bank, Washington, D.C.

———. 2009. "Inequalities in Educational Achievement: Measurement and Evidence from the Programme of International Student Assessment." Policy Research Working Paper. World Bank, Washington, D.C.

———. Forthcoming. "Inequality of Opportunity for Education:

An Application to Turkey." In Ravi Kanbur and Michael Spence (eds.), *Equity and Growth*. Washington, D.C.: Growth Commission Books.

Ferreira, Francisco, Jeremie Gignoux, and Meltem Aran. 2009. "Inequality of Economic Opportunity in Turkey: An Assessment Using Asset Indicators and Women's Background Variables." Policy Research Working Paper. World Bank, Washington, D.C.

Experiments on Fairness and Role Models

In this project, the researchers conducted a pilot experiment in India to study whether using a role model of an individual in a professional occupation improved the cognitive task performance of low-caste junior high school children.

The experiment randomly assigned children to the role model intervention. It tested the hypothesis that performance would improve because the role model effect reduces the stigma of low caste. Thus, seeing a role model who is low caste would improve average performance only if the cognitive test was characterized as diagnostic of an ability needed for a professional career.

Based on a small sample, the evidence suggested that the role model intervention improved the performance of low-caste boys but not that of low-caste girls. Seeing a role model had no effect on average performance when the test was characterized as diagnostic of ability used in ordinary daily life. Consistent with the view that performance improves because a low-caste child sees a role model, showing a successful low-caste individual in a profession had no effect on the average performance of high-caste children.

The implication of these results is that an intervention that would be virtually costless (showing photographs of low-caste individuals in professional occupations, or having students meet actual low-caste professional individuals) might improve the performance of low-caste students and raise their aspirations for jobs from which they were traditionally excluded.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Xavier Gine (xgine@worldbank.org) and Macroeconomics and Growth—Karla Hoff.

Project Code: P112288.

Completion date: June 2009.

Countries: India.

Private Sector Development

Informality and Growth

How do we measure profits for informal firms? How can we conduct a representative sample of firms in a developing country where most firms are not registered? Why are firms informally managed?

To answer these questions, this research project conducted representative surveys of informal and formal firms in developing countries to learn how to obtain key business measures, such as profits and management. The surveys are new and innovative, and form the basis for randomized experiments that have not been done before.

The project produced a paper that details how to measure profits in small firms. The researchers developed a methodology for conducting representative surveys of firms in developing countries. The researchers are continuing to analyze the data collected and will leverage the surveys conducted as baselines for new randomized experiments.

The results were presented at World Bank conferences, the NBER entrepreneurship conference, UCSD, and the Stanford South Asia Conference.

Responsibility: Development Research Group, Finance and Private Sector Development Team—David McKenzie (dmckenzie@worldbank.org). With Suresh de Mel, University of Peradeniya; and Christopher Woodruff, UCSD.

Project Code: P100108.

Completion date: 2009.

Countries: Sri Lanka, India.

Publications

De Mel, Suresh, David McKenzie, and Christopher Woodruff. 2009.

“Innovative Firms or Innovative Owners? Determinants of Innovation in Micro, Small, and Medium Enterprises.” Policy Research Working Paper No. 4934. World Bank, Washington, D.C.

———. 2009. “Measuring Microenterprise Profits: Must We Ask How the Sausage Is Made?” *Journal of Development Economics* 88(1): 19–31.

———. Forthcoming. “Who Are the Microenterprise Owners? Evidence from Sri Lanka on Tokman v. de Soto.” In Josh Lerner and Antoinette Schoar (eds.), *International Differences in Entrepreneurship*.

World Bank Group Entrepreneurship Database

New data from the 2008 World Bank Group Entrepreneurship Survey indicates a very strong and statistically significant relationship between entrepreneurship and a better business environment.

This research project has collected data for 100 countries on the number of total and newly registered corporations over an eight-year period (2000–07). It has collected data directly from registrars of companies around the world. Data have also been collected on the functioning and structure of business registries. Empirical evidence suggests that greater ease in starting a business and better governance are associated with increased entrepreneurial activity. Analysis of the data shows that, after controlling for economic development (gross domestic product per capita), higher entrepreneurial activity is significantly associated with cheaper, more efficient business registration procedures and better governance. Although the degree of progress in the modernization of business registries varies greatly, countries usually have a common goal to evolve from a paper-based business registry to a one-stop, automated, web-enabled registry capable of delivering products and services online via transactions involving authenticated users and documents. Tests show that business registry modernization (often a component of broader private sector reforms) has a positive impact not only on the ease of creating a business, but also on new business registration. Overall, the data show that a quick, efficient, and cost-effective business registration process is critical for fostering formal sector entrepreneurship.

A public website was created that includes data collected from more than 100 registered companies in over 100 countries on the number of total and new firms, the distribution of firms by size and sector, and institutional characteristics, such as the electronic collection and distribution of registrar data: <http://econ.worldbank.org/research/entrepreneurship>

The data have been presented at a UNU-Wider conference in Finland (August 2008); the IFC-BEE Conference in Belgrade (October 2008); and an IFC workshop on entrepreneurship (November 2009).

Responsibility: Development Research Group, Finance and Private Sector Team—Leora Klapper (lklapper@worldbank.org).

Project Code: P100977.

Completion date: June 2010.

Countries : Global.

Publications

- Klapper, Leora. 2007. "Entrepreneurship: New Data on Business Creation and How to Promote It." *World Bank Viewpoint* #316 (June).
- Klapper, Leora, Raphael Amit, and Mauro Guillen. 2009. "Entrepreneurship and Economic Growth." In *National Bureau of Economic Research (NBER) Handbook on International Differences in Entrepreneurship*.
- Klapper, Leora, Anat Lewin, and Juan Manuel Quesada Delgado. 2008. "Assessing the Impact of Modernized Business Registries." *DECRG Research Brief* (November). World Bank, Washington, D.C.

The Informal Sector, Business Climate and Economic Growth in the West African Economic and Monetary Union Countries: Case Studies

What are the constraints to investment and growth among informal enterprises in West Africa? What are the institutional and other forces affecting the sector and its contribution to economic growth? The objectives of this project were to generate information on the structure of the informal sector in three West African—Benin, Burkina Faso, and Senegal—countries on the determinants of the informal sector, the consequences of informality, and broad directions for policy.

A substantial literature has developed on the informal sector in other regions. Less work has been done in this area in Africa, and little work has been done in West Africa. The characteristics of the informal sector are distinct in West Africa, partly because its share of the economy—more than 80 percent—dominates the formal sector, and also because firm sizes vary greatly within the informal sector.

This research project conducted surveys in all three countries and followed up with qualitative interviews of entrepreneurs and government officials. A particular interest in the characteristics of large informal firms led to the commitment of additional resources to explore the issue in greater depth. This second round of surveys was to be completed by July 2009, and their results will be incorporated into the main study.

The results so far confirm the importance of the informal economy—for firms and employment. Africa owes its recent growth and poverty reduction performance to this sector. At the same time, the operation of this segment is suboptimal from the point of view of efficiency in the use of resources. Firm-level analysis has demonstrated the broad heterogeneity of the informal sector. Large informal firms play a major role in the respective economies and also provide important role models for the way that different governments handle and enforce

their regulatory frameworks. These trends may provide some insights for the widely-observed correlation between informality and low productivity, also established for the countries studied here. The productivity issue will be a critical one going forward.

A presentation on the results of the project was made at a World Bank workshop and posted on the site: <http://go.worldbank.org/MCNKKRLR60>.

Responsibility: Africa Technical Families, Poverty Reduction and Economic Management 4—Nancy Benjamin (nbenjamin@worldbank.org). With Aly Mbaye, Center for Research in Applied Economics.

Project Code: P102232.

Completion date: January 2009.

Countries: Africa.

Corruption in Latin America

This research project measured the extent to which firms in developing countries are the target of bribes. Using new firm-level survey data from 33 African and Latin American countries, the researchers analyzed how firms' perceptions adjust to their experience with corruption. The findings indicate that perceptions adjust slowly to firms' experience with corrupt officials and hence are an imperfect proxy for the true incidence of graft.

The researchers constructed an experience-based index that reflects the probability that a firm will be asked for a bribe in order to complete a specified set of business transactions. The analysis shows that, on average, African firms are three times as likely to be asked for bribes as are firms in Latin America, although there is substantial variation within each region. It also shows that graft appears to be more prevalent in countries with excessive regulation and where democracy is weak. In particular, the results suggest that the incidence of graft in Africa would fall by approximately 85 percent if countries in the region had levels of democracy and regulation similar to those in Latin America.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Alvaro S. Gonzalez (agonzalez4@worldbank.org), Jose Ernesto Lopez-Cordova, and Latin America and Caribbean, Human Development—Elio E. Valladares.

Project Code: P103462.

Completion date: 2007.

Countries: Africa, Latin America.

Publications

- Gonzalez, Alvaro, J. Ernesto Lopez-Cordova, and Elio E. Valladares. 2007. "The Incidence of Graft on Developing-Country Firms."

Policy Research Working Paper 4394. World Bank, Washington, D.C.

Entrepreneurship Database

The goal of this project was to collect cross-country, time-series data on entrepreneurship in the formal sector, measured as official data on firm entry and exit (where possible) and the percentage of newly registered firms. The project constructed a measure of net growth of newly registered companies and analyzed whether net growth resulted in more jobs created.

Past efforts have primarily focused on developed countries only. The global database of business registry data provides information for better understanding the changes in business demographics in developing countries. The project collected data that can be used to study which regulatory, policy, and institutional factors affect firm entry and turnover rates.

This project used a survey instrument to collect a cross-country time-series of official country level data on the number of all registered firms, new firms, and exited firms, by size, sector, and ownership. New and exited firms were defined as firms registered or de-listed in the current year, following the national requirements for registering a company. Data on total and newly registered businesses were collected from government offices in more than 100 countries.

The research suggested a strong relationship between business entry rates and the business environment, access to finance, and informality. An additional finding was the link between entry rates and electronic registries. Both suggest that operational work focusing on business environment reform and e-government initiatives in the business registry can impact business entry rates.

By establishing links between the business entry rate and the Doing Business indicators for starting a business, the project has strengthened the argument for business environment reform. In addition, by demonstrating the importance of collecting business registry data, the project hopes to encourage countries to focus on their statistical capacity.

Project findings were presented at a conference hosted by the IFC and DECRG on Entrepreneurship and Development, at the IFC, Washington, D.C. (November 2008).

Complete project data and related papers are available on the Web at: <http://econ.worldbank.org/research/entrepreneurship> (public access; no charge). The data were also incorporated into both the World Development Indicators and the Little Data Book on Private Sector Development.

Responsibility: Development Research Group, Finance and Private Sector Development Team—Leora Klapper (lklap-

per@worldbank.org) and FIAS Strategy and Analysis—Cecile Fruman.

Project Code: P103602.

Completion date: June 2007.

Countries: Global.

Publications

Klapper, Leora. 2006. “Entrepreneurship: How Much Does the Business Environment Matter?” Viewpoint Series Note 313. Financial and Private Sector Development Vice Presidency, World Bank, Washington, D.C.

Klapper, Leora, Raphael Amit, and Mauro Guillen. Forthcoming. “Entrepreneurship and Firm Formation Across Countries.” NBER Volume on International Differences in Entrepreneurship.

Klapper, Leora, and Juan Manuel Quesada Delgado. 2006. “Entrepreneurship and Economic Development.” Working Paper. Development Research Group, World Bank, Washington, D.C.

———. 2007. “Entrepreneurship: New Data on Business Creation and How to Promote It.” Viewpoint Series Note 316. Financial and Private Sector Development Vice Presidency, World Bank, Washington, D.C.

Klapper, Leora, Juan Manuel Quesada Delgado, and Anat Lewin. 2008. “The Impact of Modernized Business Registries.” Research Digest 2(2).

LAC Enterprise Surveys: Trends in the Region

The objective of the research project was to highlight how poor governance and poor institutions affect firms, particularly small and medium enterprises (SMEs) and low-performing firms.

The project sought to answer the question: What are the institutional constraints that negatively affect SMEs and low-performing firms in Latin America and the Caribbean?

This research benefited from a newly implemented large firm survey for the Latin America. The survey provided data for testing the hypothesis that informal competition has a negative effect on formal companies.

The research was stopped before the results were completed.

Responsibility: Latin America, Social Protection Sector—Francesca Lamanna (flamanna@worldbank.org). With Jose Ernesto Lopez Codova; Simeon Djankov; Adriana Cardozo; Elio Valladares.

Project Code: P104677.

Completion date: Stopped before completion.

Countries: Global.

Informal Sector Competition

This research project investigated the effects of informal competition on formal firms in Latin America. It analyzed whether firms that most resemble informal firms are more affected by informal competition. It also investigated whether the business environment exacerbates formal firms' perception of the impact of informal competition on their activities. And the project analyzed whether firms that complain about informal competition in Latin America differ from firms that do not.

The econometric analysis used a dataset of 6,466 manufacturing firms across 14 countries in Central and South America (World Bank Enterprise Surveys, 2007).

The research showed that formal and informal firms compete against each other and are not in segmented and separate markets. The research was a first attempt in identifying the firm and business environment characteristics that are associated with a higher degree of impediment to business activities from the informal sector.

The research findings were presented internally at the World Bank, Washington, D.C.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Simeon Djankov (sdjankov@worldbank.org); Latin America, Social Protection Sector—Francesca Lamanna; and Africa, Finance and Private Sector Development West and Central—Alvaro Gonzalez. With Elio Valladares.

Project Code: P105454.

Completion date: August 1, 2007.

Countries: Latin America.

Publications

Gonzalez, A., and F. Lamanna. 2007. "Who Fears Competition from Informal Sector? Evidence from Latin America." Policy Research Working Paper 4316. World Bank, Washington, D.C. http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000158349_20070814084719.

Gender Differences in Microenterprises

What accounts for the differences in returns to capital by gender, and what is the scope for microfinance to reach out to underserved populations? This project aimed to estimate the returns to capital in male and female-owned businesses.

The analysis used a randomized experiment on access to capital based on a detailed survey of microenterprises. The results found very low returns to capital for women and high returns for men. This implies that there is a large pool of male microenterprise owners who are not served by finance who

need finance. Low returns to women seem to be driven by their choice of occupation and by lack of control over resources. This suggests the need for policies to alleviate these constraints.

The project has caused microfinance efforts to rethink somewhat the exclusive efforts on women, and has led to new efforts to understand barriers to female enterprise growth.

The research was presented at a large number of conferences and workshops. It builds on earlier NSF and KCP funded work.

Responsibility: Development Research Group, Finance and Private Sector Development Team—David McKenzie (dmckenzie@worldbank.org). With Alejandrina Salcedo, Stanford University; and Christopher Woodruff, UCSD.

Project Code: P106090.

Completion date: 2008.

Countries: Sri Lanka.

Publications

De Mel, Suresh, David McKenzie, and Christopher Woodruff. Forthcoming. "Are Women More Credit Constrained? Experimental Evidence on Gender and Microenterprise Returns." *American Economic Journal: Applied Economics*.

Determinants of Competition

This research project analyzed India's retail sector using data from the Enterprise Surveys. Specifically, it looked at how the decline in the number of non-workers in India could affect the level of competition in the country's retail sector. The study focused on the opportunity cost of shopping time measured by the number of non-workers per household in the city as a determinant of competition.

The analysis was based on the survey of retail stores in India conducted in 2005 by the Enterprise Surveys. There is a large and statistically significant positive effect of more non-workers per household on the level of competition faced by retailers. Hence, in cities that are witnessing rapid declines in non-workers due to the ongoing economic boom in India, additional policy measures are required to keep the retail sector truly competitive.

The project's findings should be relevant for promoting further research on the retail sector in developing countries and on the impact of consumer behavior on market competitiveness. The retail sector is highly neglected in research, although it is one of the largest sectors in a number of developing and developed countries.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Simeon Djankov (Sdjankov@worldbank.org) and Mohammad Amin.

Project Code: P109719.

Completion date: December 14, 2007.

Countries: India.

Gender and Returns to Capital in Ghana

What are the barriers to growth of female-owned businesses? This study will test whether the finding of low returns to capital in female-owned businesses generalizes to Ghana from earlier work in Sri Lanka. It will also look at the role of occupational choice.

Building on earlier work in Sri Lanka, the analysis will be based on a randomized experiment.

Responsibility: Development Research Group, Finance and Private Sector Development Team—David McKenzie (dmckenzie@worldbank.org). With Marcel Fafchamps, University of Oxford; and Christopher Woodruff, UCSD. Oxford University has contracted surveying work to a Ghanaian survey firm.

Project Code: P111646.

Completion date: 2010.

Countries: Ghana.

Occupational Segregation in Sri Lanka

Why do women concentrate in low-income activities with little prospects for growth? What policies can help to move women out of these sectors?

This study seeks to determine whether information, training, and capital can get women to move from low-return to high-return industries. It is the first attempt to experimentally evaluate policies of this nature. The analysis is based on a randomized experiment and data from a survey in Sri Lanka that was designed by the project team. The findings could lead to new policies to address the tendency of women to cluster in low-income industries.

Responsibility: Development Research Group, Finance and Private Sector Development Team—David McKenzie (dmckenzie@worldbank.org). With Suresh de Mel, University of Peradeniya; and Christopher Woodruff, UCSD. Innovations in Poverty Action (a nongovernmental organization based in the United States) is participating in the research.

Project Code: P111648.

Completion date: 2009.

Countries: Sri Lanka.

Innovation and Informality

This research project seeks better understanding of the levels and determinants of innovation among small and medium

informal firms in developing countries. The study will determine what drives innovation, and the importance of the characteristics of firm ownership.

The researchers develop a model of innovation that incorporates the role of both owner and firm characteristics, and use this to determine how product, process, marketing, and organizational innovations vary with firm size and competition. They use a new, large, representative survey from Sri Lanka to test the model and examine whether and how owner characteristics matter for innovation. The survey also allows analysis of the incidence of innovation in micro and small firms, which have traditionally been overlooked in the study of innovation, despite the fact that these firms comprise the majority of firms in developing countries.

The analysis finds that more than one-quarter of the microenterprises are engaging in innovation, with marketing innovations the most common. As predicted by the model, firm size has a stronger positive effect, and competition a stronger negative effect, on process and organizational innovations than on product innovations. Owner ability, personality traits, and ethnicity have a significant and substantial impact on the likelihood that a firm will innovate, confirming the importance of the entrepreneur in the innovation process.

The operational and policy innovations are that small firms have the capacity to innovate, but that there are certain characteristics of the owner that predict which owners are more likely to innovate. These characteristics may be measured in other efforts and used to help select promising individuals for credit and training efforts.

The project findings have been presented at the Stanford South Asia conference, the University of Southern California, and the NBER entrepreneurship working group.

Responsibility: Development Research Group, Finance and Private Sector Development—David McKenzie (dmckenzie@worldbank.org). With Christopher Woodruff, UCSD; and Suresh de Mel, University of Peradeniya. Innovations in Poverty Action (a nongovernmental organization based in the United States) hired workers in Sri Lanka.

Project Code: P111827.

Completion date: 2009.

Countries: Sri Lanka.

Publications

De Mel, Suresh, David McKenzie, and Christopher Woodruff. 2009.

“Innovative Firms or Innovative Owners? Determinants of Innovation in Micro, Small, and Medium Enterprises.” Policy Research Working Paper 4934. World Bank, Washington, D.C.

Firm Productivity in China

Using several waves of comprehensive surveys on Chinese manufacturing firms, this research project is examining the evolving regional patterns of firm productivity over the past decade. The project will address the following questions: Is there a convergent or divergent trend of economic growth across regions in China? How much of the overall regional disparity can be attributed to within-province differences and to between-province differences?

Combining datasets of information on localities (provinces, cities, and counties) in China, the project is investigating the forces that make regions converge in productivity, and those that make regions diverge.

The analysis is using panel data from large and medium enterprises in China over a 10-year period to address the above questions. The data are from the World Bank's 120-city ICA survey.

The research will shed light on why the regional imbalance in China is so large, whether the fiscal reforms have contributed to convergence across provinces in the past few years, and whether the local business environment contributes to the productivity disparity across provinces.

Responsibility: Development Research Group, Finance and Private Sector Development Team—L. Colin Xu (Lxu1@worldbank.org) and Asli Demirguc-Kunt. With Li-An Zhou, Hongbin Cai, and Chong Liu.

Project Code: P112806.

Completion date: June 30, 2010.

Countries: China.

Determinants of Growth Enhancing Reforms

This research project looked at what sorts of countries reform more than others, using the World Bank's Doing Business project to measure the location of reforms. The objective was to understand why some countries reform and others do not.

The findings showed that growth-enhancing business reforms are more likely in countries that have a better functioning democracy and that rely less on natural resource abundance for their economic output.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Simeon Djankov (Sdjankov@worldbank.org), Rita Ramalho, and Mohammad Amin.

Project Code: P115789.

Completion date: May 12, 2009.

Countries: India.

Publications

Amin, Mohammad, and Simeon Djankov. 2009. "Democracy and Reforms." Policy Research Working Paper 4835. World Bank, Washington, D.C.

———. 2009. "Natural Resources and Reforms." Policy Research Working Paper 4882. World Bank, Washington, D.C.

Social Development, Gender, and Social Policies

Social Customs and Women's Status in Rural Pakistan

This research project sought to understand the role of culture and social norms in creating and sustaining the position of women in society. It investigated the causal link between particular norms and practices and an outcome of interest, such as women's bargaining position within marriage, or the educational opportunities of girls.

The role of culture and social norms in shaping the position of women in society has been studied for some time by non-economists. However, there is little generalizable evidence that establishes any causal relationship between specific norms or institutions and a measurable outcome, such as women's economic or psycho-social welfare bargaining position within marriage, or the educational opportunities of girls. This is the lacuna that this research has begun to fill.

The project designed and fielded a detailed household survey in rural Pakistan in 2004–05, as a follow-up to the 2001–02 Pakistan Rural Household Survey. Detailed data were collected on martial customs, social constraints—including mobility restrictions as well as accompanying data on zaat (caste)—and location.

The project findings show how informal institutions that apparently restrict marital choice can be welfare enhancing for women where formal legal structures are weak and de facto access to justice is even poorer. The findings also highlight important gender differences in school access, controlling for school distance. In particular, girls are much less likely to attend school if the school is located in a different community from where the child resides. This effect is particularly severe if the child also belongs to a lower status zaat than the majority of households in the school community or settlement.

Project findings have been presented at a World Bank workshop, Islamabad (May 2007); Duke University Development Workshop (April 2007); dissemination workshops for the Pakistan Country Gender Assessment, Islamabad and Karachi, Pakistan (May 2006); a Poverty and Applied Micro Seminar, World Bank, Washington, D.C. (April 2006); a workshop in Karachi, Pakistan (September 2006); NEUDC (September 2005); and BREAD (September 2005).

Responsibility: Development Research Group, Poverty Team—Ghazala Mansuri (gmansuri@worldbank.org), and Hanan Jacoby (hjacob@worldbank.org). The survey was done in collaboration with the Pakistan Institute of Development Economics, Islamabad, Pakistan.

Project Code: P084150.

Completion date: December 2007.

Countries: Pakistan.

Publications

Jacoby, H., and G. Mansuri. 2007. "Watta Satta: Exchange Marriage and Women's Welfare in Rural Pakistan." Policy Research Working Paper 4126. World Bank, Washington, D.C.

———. Forthcoming. "Watta Satta: Exchange Marriage and Women's Welfare in Rural Pakistan." *American Economic Review*.

Mansuri, Ghazala, and H. Jacoby. 2007. "School Enrollment and Income Gains: A Disaggregation of Period, Cohort and Age Effects Using Panel Data." World Bank, Washington, D.C. Mimeo.

———. 2008. "Crossing Boundaries: Community, Caste and School Enrollment in South Asia." World Bank, Washington, D.C. Mimeo.

Social Status in India

If discrimination against a historically oppressed social group is dismantled, will the group forge ahead? This research project analyzed the effects of making salient group identity and, in particular, a stigmatized group's identity (untouchable caste), on cognitive performance and the ability of individuals to respond to incentives. The project sought to understand social exclusion—why certain social groups in certain localities remain poor and disempowered, while others enjoy greater mobility and power.

The research used an experimental analytical approach, and all the outcome variables were experimental data. The research design combined elements of the work of the social psychologist Claude Steele and the economist Muriel Niederle.

The project gathered experimental evidence that a history of social and legal disabilities may have persistent effects on a group's earnings through its impact on individuals' expectations. In the first experiment, 321 high-caste and 321 low-caste junior high school male student volunteers in rural India performed the task of solving mazes under economic incentives. There were no caste differences in performance when caste was not publicly revealed, but making caste salient created a large and robust caste gap.

To test whether the low caste's anticipation of prejudicial treatment caused the caste gap, a second experiment manipulated the scope for discretion in rewarding performance. When

the link between performance and payoffs was purely mechanical, making caste salient did not affect behavior. Instead, it was in the case where there was scope for discretion and judgment in rewarding performance that making caste salient had an effect.

The results suggest that when caste identity is salient, low-caste subjects expect that others will judge them prejudicially. Mistrust undermines motivation. The experimental design enables the authors to exclude as explanations of the caste gap in performance socioeconomic differences.

This work has suggested new research, currently in progress, on the effect of role models in improving the performance of lower-caste school children in India. This work has also stimulated research on the effects of social exclusion in China and South Africa.

The project's database is available at <http://www.poverty-actionlab.com/data/> (public access).

The project results have been presented at the University of Manchester (August 2006); American Economic Association (January 2006); Cornell-Pew conference on Empirical Work on Identities, Communities and Networks (March 2005); MacArthur Foundation Norms and Preferences Working Group, University of Pennsylvania (January 2005); Princeton University (December 2004); Cornell/MIT/LSE Conference on Behavioral Economics, Public Economics, and Development Economics (May 2004); World Bank Panel on Social Cohesion and Poverty Reduction (May 2004); Harvard-MIT Joint Development Seminar (April 2004); and Boston University (April 2004).

Responsibility: Development Research Group, Macroeconomics and Growth Team—Karla Hoff (khoff@worldbank.org). With Priyanka Pandey.

Project Code: P087592.

Completion date: 2008.

Countries : India.

Nicaragua: Conditional Cash Transfer and Asset Creation

This research project is evaluating the long-term impacts of the innovative “Atencion a Crisis” pilot program in Nicaragua, a randomized intervention that combines a traditional conditional cash transfer (CCT) aimed at improving health, education, and nutrition with additional interventions aimed at increasing the asset base and risk management capacity of rural poor households exposed to weather risk. In particular, the project is evaluating the extent to which the program was successful at increasing households' human, physical, and social capital in a sustainable fashion. The project is also analyzing changes in households' returns to their new economic

activities, and investigating the extent to which these returns relate to households' interaction and participation with regional input and output markets (including access to complementary capital), and to local-level collaboration (or competition) between community members to increase access to regional markets.

The methodology builds on the two-stage randomized design of the *Atencion a Crisis* pilot, and the panel dataset that was collected for short-term evaluation of the pilot. The pilot was based on an experimental design, with randomly assigned allocation of communities and eligible households between control and treatment groups.

The first rounds of the panel data were collected in close collaboration with the Ministry of MIFAMILIA (round 1 in May 2005 and round 2 in August 2006). They contain rich information on human, business, and social capital assets; income generating activities; and consumption patterns. The data also include separate modules on early childhood development, gender empowerment, and community information. The third round was collected in 2008–9, more than a year after program completion, for exploration of mid to longer-term impacts.

The program had significant effects on early childhood cognitive development outcomes, especially language. Impacts were larger for older pre-school age children, who are also more likely to be delayed. The program increased intake of nutrient-rich foods, early stimulation, and use of preventive health care—all of which have been identified as risk factors for development in early childhood. Households increased expenditures on these inputs more than can be accounted for by the increases in cash income only, suggesting that the program changed parents' behavior.

Additional program information (with links to papers) can be found at: www.worldbank.org/atencionacrisisevaluation.

The research was presented at NEUDC, MIT, UC Berkeley, UC Davis, DECRG micro series, IFRPRI, SAIS, Oxford University, Georgetown, GRADE (a think tank in Peru), various events in Nicaragua, and several impact evaluation courses (HDN led).

Responsibility: Latin America and the Caribbean, Poverty Sector—Renos Vakis (rvakis@worldbank.org) and Human Development Network, Office of the Vice-President—Patrick Premand.

Project Code: P109212.

Completion date: FY10.

Countries : Nicaragua.

Publications

Macours, Karen, and Renos Vakis, 2008. “Changing Households' Investments and Aspirations through Social Interactions:

Evidence from a Randomised Transfer Program in a Low-income Country.” Johns Hopkins University and World Bank, Washington, D.C. Mimeo.

———. Forthcoming. “Cash Transfers, Behavioral Changes, and the Cognitive Development of Young Children: Evidence from a Randomized Experiment.” *American Economic Journal: Applied Economics*. Also published as Policy Research Working Paper 4759. World Bank, Washington, D.C.

Gender and Rural Labor Markets

This research project examined rural labor market decision-making across a range of developing countries, focusing on the determinants of female labor market participation and the factors affecting gender-based earning differentials. The goal of the research was to identify the individual, household, and geographic factors that drive the successful incorporation of women in rural labor markets.

The analysis was based on a method for simulating the poverty-alleviation potential of various forms of rural job creation, under a variety of assumptions. The target was to analyze how the effects on poverty and inequality reflect current wage rates, the skill levels of the unemployed, and their location with respect to the \$1 and \$2-per-day income poverty lines. The analysis also used simulations to compare the results of job creation in the agricultural and non-agricultural sectors, focusing on the different outcomes by gender.

One approach used was the Oaxaca-Blinder decomposition technique to understand the determinants of wage-gaps between men and women, between urban and rural workers, and between those employed in the rural agricultural sector versus the rural non-agricultural sector for the 14 developing and transition economies. The results from this technique provided a starting point for subsequent analysis. Regression analysis based on a common set of duly constructed explanatory variables provided the basis for analyzing the determinants of labor market decisions by gender.

The project used data from the newly constructed Rural Income Generating Activities database derived from a joint project between the World Bank and Food and Agriculture Organization to investigate rural income generating activities and rural livelihoods in developing and transition countries.

The findings show that the countries with large unexplained urban-rural gaps, such Tajikistan and Malawi, are those in which rural-to-urban migration is likely to persist even in the face of high urban unemployment rates. Furthermore, large unexplained wage gaps in favor of non-farm employment, versus paid labor in farming, exist in Tajikistan (53 percent), Ecuador (44 percent), Nepal (36 percent), Nicaragua (32

percent), and Nigeria (30 percent). These would appear to be the countries for which a shift of existing workers, with their current attributes, from the farm to the non-farm sector would have the largest impact on rural incomes.

The findings were presented at the FAO-IFAD-ILO Workshop on “Gaps, Trends and Current Research in Gender Dimensions of Agricultural and Rural Employment: Differentiated Pathways out of Poverty,” Rome (March–April 2009).

Responsibility: Development Research Group, Poverty Team—Calogero Carletto (gcarletto@worldbank.org). With Carlo Azzarri.

Project Code: P111814.

Completion date: June 30, 2009.

Countries : Ghana, Malawi, Nigeria, Bangladesh, Indonesia, Nepal, Vietnam, Albania, Bulgaria, Tajikistan, Ecuador, Guatemala, Nicaragua, Panama.

Publications

Hertz, T., C. Azzarri, G. Anriquez, A.P. de la O Campos, P. Winters, and A. Zezza. 2009. “Distributional Implications of Rural Job Creation: A Cross-country Analysis.” ESA, FAO. Mimeo.

Hertz T., A.P. de la O Campos, A. Zezza, C. Azzarri, P. Winters, E.J. Quiñones, and B. Davis. 2009. “Wage Inequality in International Perspective: Effects of Location, Sector, and Gender.” ESA Working Paper 08/08, FAO, http://www.fao.org/es/ESA/riga/pdf/Hertz_et_al_Wage_Inequality.pdf.

The Changing Gender Division of Labor in China

The setting for this research project is rural China. The focus is on non-migrant women and how their work, time allocation, and health are affected by living in a migrant household.

Household welfare (measured by income and production investment) may improve with migrant income, but women’s well-being may not. The equity arguments are often related to women’s empowerment and miss other aspects of welfare, such as the type of work and leisure activities. Left-behind women may be more empowered but at the expense of being overworked, with direct implications for their well-being, including their leisure and health.

In trying to evaluate women’s welfare changes resulting from current migration patterns in rural China, the research focuses on the effects on women’s total working hours or, implicitly, their leisure. Leisure reflects the individual’s labor supply to market and domestic production, and is an important determinant of welfare. The analysis also explores impacts on labor time allocation across productive activities, including on and off the farm, both in terms of participation and hours. As

China transitions out of agriculture, a key question is whether some groups are being held back in farm work.

Another important dimension of welfare where the impacts of being left behind may be reflected is health. Being left behind as well as possibly bearing a larger work burden may increase women's stress and fatigue, and lead to potential health problems.

Finally, the analysis looks at whether there is any evidence of female empowerment through increased managerial responsibilities for household productive activities. This too could affect well-being and balance out other negative effects of being left-behind.

The main data used are from the China Health and Nutrition Survey (CHNS), conducted by the University of North Carolina at Chapel Hill. This is a longitudinal survey that interviewed the same households over close to 20 years in eight provinces. The project uses the complete rural CHNS sample of about 3,800 households covering approximately 16,000 individuals of all ages for 1997, 2000, 2004, and 2006. The CHNS collects detailed information on household demographics, education, health and nutrition, occupations, labor force participation, housing and asset ownership, time use, incomes, and expenditures. One major advantage of the CHNS is that it contains detailed information on individual working hours on various activities.

The analysis is using an array of descriptive statistics and graphs, as well as the panel nature of the data to apply a first-differences specification of various women's outcomes as a function of lagged changes in household migrant status and individual and household characteristics, province, and time dummies.

The transformation of China's economy is creating new non-farm work opportunities for some women in rural China, notably those who migrate. But this is not an unambiguous process whereby all rural women transit out of farming. Indeed, the project has found that the non-migrant women left behind in rural areas while other household members migrate are doing more farm work than would have otherwise been the case. The aggregate transformation of work during China's rapid economic development is associated with a substantial re-allocation of traditional farm labor among women—the young doing much less and older women much more. Moreover, the results suggest that the re-allocation of left-behind women's time resulting from the migration of household members is more hours in farm work at the cost of fewer hours in local off-farm work. For some types of women (notably older women), the labor re-allocation response comes out of their leisure. There is evidence that this is a persistent effect, and not just temporary re-allocation.

The project received a faculty research grant from the Scowcroft Institute, Texas A&M University, USA.

Responsibility: Poverty Reduction and Economic Management Network, Gender and Development—Dominique van de Walle (Dvandewalle@worldbank.org). With Ren Mu, Texas A&M University.

Project Code: P111837.

Completion Date: June 2010.

Countries: China.

Publication:

Mu, Ren, and Dominique van de Walle. 2009. "Left Behind to Farm the Land? Women's Labor Re-Allocation in Rural China." PRMGE, World Bank, Washington, D.C. Mimeo.

The Gender Dimension of Cotton Productivity in Uganda

This research project is measuring the productivity gap between male and female cotton growers in Uganda, identifying its key causes, and ultimately recommending potential investment and policy actions.

The project focuses on policies (such as training) that specifically take into account differences in gender performance. Unlike earlier research, the project addresses the gender performance gap issue from a sector-specific perspective.

The key part of this project is a 2-year survey of 500 cotton growers. Results are not available at this stage because the first round of the survey has just been completed.

A workshop is planned for December 2009 or January 2010 to launch the repeated survey. GAP provided funding for three fiscal years (FY08–10). The University of Maryland is also providing support.

Responsibility: Development Prospects Group—John Baffes (jbaffes@worldbank.org) and Africa Region, Agricultural and Rural—Madhur Gautam. With Dick Sserunkuma, Makerere University, Uganda; and Laoura Maratou, University of Maryland.

Project Code: P114887.

Completion Date: June 2010.

Countries: Uganda.

GIAEA-Gender Law Library

This research project is supporting the Doing Business Gender Law Library, which is an online catalogue of laws and regulations that impact women's ability to participate in business. The online library tracks hundreds of laws and regulations that differentiate between women and men, affecting women entrepreneurs and female employees in 181 countries.

Topics covered in the Doing Business Gender Law Library include national legal statutes on equal pay, employment, property and inheritance rights, business registration, and other gender specific regulations. The Library also identifies countries that are signatories of gender-related international conventions. Users can query the database by topic, country, and group of countries. The library allows users to track and map regulations and how they relate to each other within a single jurisdiction, and in cross-country comparisons.

The Doing Business Gender Law Library is gathering legislation from a wealth of online legal databases, academic libraries, government sources, and through World Bank networks, including lawyers, public officials, and NGOs across the world. The Doing Business contributors have also contributed generously to the effort of data collection, as has the law firm of DLA Piper.

The findings so far indicate that the majority of African countries embody the principle of equality between the sexes through their Constitutions or through their accession to International Treaties. However, Marriage, Family, or Civil Codes in several African countries explicitly set out the husband as the head of the family unit. This distinction can potentially lead to differential treatment for married women in areas such as taxation, employment, and property rights.

The project received funding from the Gender Action Plan Trust Fund.

Responsibility: Financial and Private Sector Development, Enterprise Analysis-WB—Rita Ramalho (RRamalho@ifc.org), Jennifer Yip, and Sarah Iqbal.

Project Code: P116006.

Completion Date: Ongoing.

Countries: Global.

Social Protection and Risk Management

The Economics and Politics of Post-Conflict Transitions—Follow-up

After civil conflict, fragile states often find themselves at great risk of civil war recurrence, extreme criminal violence, and rampant political corruption. However, post-conflict periods also provide excellent opportunities for political reform and effective aid through post-conflict reconstruction. This research project focused on the most vulnerable states—those emerging from a civil war—and considered how the structure of risk in those states differs from the risk of civil war in states that have not experienced a civil war. The project focused specifically on the relationship between political institutions—democratic institutions in particular—and the risk of new violence.

The project produced three papers. The research on partitioning used a panel of post-conflict countries, including both those that had been partitioned and those that were not partitioned, and treated partitioning as a treatment effect in hazard analysis to determine whether partitioning contributed to lasting peace. The findings showed that partitions are not likely to contribute to more lasting peace.

The research on post-conflict democratization used a large sample and a panel of data on countries across time with a multinomial logit model to identify the likelihood of political change (toward democracy/away from democracy/no change) in post-conflict countries. The analysis found little relationship between conflict and democratic progress.

Because data on crime and violence are difficult to come by, the research on post-conflict violence used data collected from three countries—El Salvador, Guatemala, and Lebanon—and compared crime data following civil war in the three countries. The research argued that post-conflict criminal violence in Guatemala and El Salvador was attributed to economic policies that weakened the state's coercive and distributive capacities, which in turn diminished the opportunity costs of crime. Lebanon's economic policies and contingencies differed sharply from the other two cases, which may explain its low crime rates. This research also demonstrated that criminal violence constitutes a serious threat to development. In El Salvador and Guatemala, the costs of criminal violence have already exceeded those of their respective civil wars.

All three papers were presented at a conference in Khartoum in 2007, hosted by the Ministry of Finance and the National Economy of Sudan (MFNE), the University of Khartoum Economics and Political Science Department, the

World Bank Institute, and the DEC Research Support Budget on Management of Post-Conflict Transition: The Challenges of Institutional Reform in Sudan.

Responsibility: Development Research Group, Investment and Growth Team—Ibrahim Elbadawi and Gary Milante (gmilante@worldbank.org). With Havard Hegre, International Peace Research Institute of Oslo (PRIO); Nicholas Sambanis, Yale University; and Nazih Richani, Kean University.

Project Code: P093994.

Completion date: June 2007.

Countries : Post-conflict countries. Case studies on El Salvador, Guatemala, Lebanon.

Publications

Elbadawi, Ibrahim, Havard Hegre, and Gary Milante. "Post-Transition Democratization and Democratic Stability." World Bank, Washington, D.C.

Richani, Nazih. "Systems of Violence in Post-Conflict Societies." World Bank, Washington, D.C.

Sambanis, Nicholas. "Partition and Civil War Recurrence." World Bank, Washington, D.C.

Post-Conflict Transitions

An overwhelming 40 percent of post-conflict states slide back into conflict within ten years. This research project suggests that to help countries escape this conflict trap, the development community needs to adjust assistance policies based on the latest research, as well as country-specific analysis. The goal of the project was to inform the international community and developing countries recovering from conflict on effective policies for avoiding conflict relapse and escaping the conflict trap.

The research followed on the successful research of the Economics of Civil War, Crime, and Violence project. As such it was related to the previous project; however, it extended the research by specifically focusing on the aftermath of conflict and effective policy to help countries out of the conflict trap. This project benefited from new data sources and methodologies, and a widely expanded literature due in no small part to the success of the previous research project.

The project used cross-country panel data to identify common features and trends in post-conflict development. In addition, many of the project studies employed hazard models and other innovative time/risk econometric approaches for predicting the likelihood of conflict relapse.

The project findings showed that the risk of civil war is sensitive to the opportunity cost of peace, the means of potential rebels to strike at the resources of their government, and the coordination of groups with grievances. The findings also showed that regional factors and past experience contribute significantly to the likelihood of future civil conflict. That is, vulnerability to civil wars is persistent and often dependent on neighbor fragility. Furthermore, outside interventions can mitigate the risk of civil war. Ongoing research confirms the initial findings that countries benefit from external intervention and suggests how that intervention should be structured.

The project produced 27 papers, and presentations at two workshops and a dissemination conference. Details on the conferences can be found at the permanent URL for the project: <http://go.worldbank.org/84GRAQ0KY0>. Many of the papers can be accessed at: <http://go.worldbank.org/6BBEXXAF80> and <http://econ.worldbank.org/programs/conflict>.

Responsibility: Development Research Group, Investment Climate Team—Ibrahim Elbadawi (Ielbadawi@worldbank.org), Philip Keefer, and Norman Loayza. With Paul Collier and Anke Hoeffler, Center for the Study of African Economies; Havard Hegre, Nils Peter Gleditsch, Scott Gates, Indra de Soysa, and Gudrun Ostby, International Peace Research Institute of Oslo; Gary Milante, World Bank; Marta Reynal-Querol, Universitat Pompeu Fabra (Spain); Nicholas Sambanis, Yale University; and Ana Maria Cristina Bodea, World Bank.

Project Code: P094690.

Closing date: June 2009.

Countries: Post-conflict economies.

Publications

- Adam, Christopher, Paul Collier, and Victor Davies. "Post-Conflict Monetary Reconstruction." World Bank Economic Review.
- Akresh, Richard, and Philip Verwimp. "Civil Wars, Crop Failure and the Health Status of Young Children." Policy Research Working Paper 4208. World Bank, Washington, D.C.
- Binningsbø, Gates, and Lie. 2007. "Post-Conflict Justice and Sustainable Peace." Policy Research Working Paper 4191. World Bank, Washington, D.C.
- Cederman, Lars-Erik, and Luc Girardin. "Beyond Fractionalization: Mapping Ethnicity onto Nationalist Insurgencies." World Bank, Washington, D.C.
- Chen, Siyan, Norman Loayza, and Marta Reynal-Querol. 2007. "The Aftermath of Civil Wars: An Event-Study Approach to Post-Conflict Transitions." Policy Research Working Paper 4190. World Bank, Washington, D.C.
- Cliffe, Sarah, and Gary Milante. "Financing Post-Crisis Recovery." World Bank, Washington, D.C.
- Collier, Paul, and Anke Hoeffler. "Grand Extortion: Coup Risk and the Military as a Protection Racket." World Bank, Washington, D.C.
- Collier, Paul, and Anke Hoeffler. "Military Expenditure in Post-Conflict Societies." World Bank, Washington, D.C.
- Collier, Paul, Anke Hoeffler, and Mans Soderbom. "Post-Conflict Risks." JPR.
- Davies, Victor A.B. "Capital Flight and War." Policy Research Working Paper 4210. World Bank, Washington, D.C.
- de Soysa, Indra, and Eric Neumayer. 2007. "Disarming Fears of Diversity: Ethnic Heterogeneity and State Militarization, 1988–2002." Policy Research Working Paper 4221. World Bank, Washington, D.C.
- Deng, Luka Biang. "Are Non-poor Households Always Less Vulnerable? The Case of Households Exposed to Protracted Civil War in Southern Sudan." World Bank, Washington, D.C.
- Elbadawi, Ibrahim, and Cristina Bodea. 2007. "Riots, Coups and Civil Wars: Revisiting the Greed and Grievance Debate." Policy Research Working Paper 4397. World Bank, Washington, D.C.
- Elbadawi, Ibrahim, Linda Kaltani, and Klaus Schmidt-Hebbel. 2007. "Post-Conflict Aid, Real Exchange Rate Adjustment and Catch-up Growth." Policy Research Working Paper 4187. World Bank, Washington, D.C.
- Elbadawi, Ibrahim, and Klaus Schmidt-Hebbel. "The Demand for Money around the End of Civil Wars." World Bank, Washington, D.C.
- Glasmyer, Katherine, and Nicholas Sambanis. "Rebel-Military Integration and Civil War Termination." World Bank, Washington, D.C.
- Gleditsch, Nils Petter, Lene Siljeholm Christiansen, and Håvard Hegre. "Democratic Jihad? Military Intervention and Democracy." Policy Research Working Paper 4397. World Bank, Washington, D.C.
- Hegre, Håvard, and Clionadh Raleigh. 2007. "Population Size, Concentration and Civil War. A Geographically Disaggregated Analysis." Policy Research Working Paper 4243. World Bank, Washington, D.C.
- Keefer, Phil. 2007. "Insurgencies and Credible Commitments in Autocracies and Democracies." Policy Research Working Paper 4185. World Bank, Washington, D.C.
- Jennings, Colin. 2007. "Political Leadership, Conflict and the Prospects for Constitutional Peace." Policy Research Working Paper 4196. World Bank, Washington, D.C.
- Killicoat, Phillip. 2007. "Weaponomics: The Global Market for Assault Rifles." Policy Research Working Paper 4202. World Bank, Washington, D.C.
- Milante, Gary. "Kleptocrat's Survival Guide: Extending the Franchise in the Presence of Political Competition." Policy Research Working Paper 4186. World Bank, Washington, D.C.
- Montalvo, Jose G., and Marta Reynal-Querol. 2007. "Ethnic

- Polarization and the Duration of Civil Wars.” Policy Research Working Paper 4192. World Bank, Washington, D.C.
- Nilsson, Desirée. “In the Shadow of Settlement: Multiple Rebel Groups and Precarious Peace.” JPR.
- Oyefusi, Aderoju. 2007. “Oil and the Propensity to Armed Struggle in the Niger Delta Region of Nigeria.” Policy Research Working Paper 4194. World Bank, Washington, D.C.
- Østby, Gudrun. 2007. “Political Institutions, Horizontal Inequalities and Civil Conflict.” Policy Research Working Paper 4193. World Bank, Washington, D.C.
- Raleigh, Clionadh. 2007. “Civil War Risk in Democratic and Non-Democratic Neighborhoods.” Policy Research Working Paper 4260. World Bank, Washington, D.C.
- Richani, Nazih. “Systems of Violence in Post-Conflict Societies.” World Bank, Washington, D.C.
- Sambanis, Nicholas. 2007. “Short-Term and Long-Term Effects of United Nations Peacekeeping Operations.” Policy Research Working Paper 4207. World Bank, Washington, D.C.
- Stanley, Rich. “Why Are Civil Wars in Africa So Difficult for Governments to Win? A Quantitative Study of Civil War Outcomes.” World Bank, Washington, D.C.
- Svensson, Isak. “Stand by Me: Biased Third Party Countries and Peace Settlements in Intrastate Armed Conflict, 1989–2002.” World Bank, Washington, D.C.

Long-term Consequences of Conflict

Most of the evidence on mortality and its consequences during conflicts relies on historical or journalistic accounts and estimates. This research project is using nationally representative surveys to analyze the long-term impact of conflicts on the population’s composition, health, and education in Cambodia and Rwanda.

The work on Cambodia is studying the long-term impact of genocide during the period of the Khmer Rouge (1975–79). Using mortality data for siblings from the Cambodia Demographic and Health Survey in 2000, it shows that excess mortality was extremely high and heavily concentrated during 1974–80. Adult males and individuals with an urban or educated background were more likely to die. Infant mortality was also at very high levels during the period. And disability rates from landmines or other weapons were high for males who, given their birth cohort, were exposed to this risk.

The very high and selective mortality had a major impact on the population structure of the country. Fertility and marriage rates were very low under the Khmer Rouge but rebounded immediately after the regime’s collapse. Because of the shortage of eligible males, the age and education differences between partners tended to decline. The period had a lasting

impact on the educational attainment of the population. The education system collapsed during the period, so individuals—especially males—who were of school age during this interval had lower educational attainment than the preceding and subsequent birth cohorts.

The project is also studying the demographic consequences of the Rwandan genocide and how the excess mortality due to the conflict was distributed in the population. Data collected by the 2000 Demographic and Health Survey indicate that although there were more deaths across the entire population, adult males were the most likely to die. Using the characteristics of the survey respondent as a proxy for the socio-economic status of the family’s deceased members, the results also show that individuals with an urban or more educated background were more likely to die. Over and above the human tragedy, a long-term cost of the genocide is the country’s loss of productive skills.

To examine the impact of Rwanda’s 1994 genocide on children’s schooling, the project has combined two cross-sectional household surveys collected before and after the genocide. The identification strategy uses pre-war data to control for an age group’s baseline schooling and exploits variation across provinces in the intensity of killings and which children’s cohorts were school-aged when exposed to the war. The findings show a strong negative impact of the genocide on schooling, with exposed children completing one-half year less education, representing an 18.3 percent decline. The effect is robust to including control variables, alternative sources for genocide intensity, and an instrumental variables strategy.

The project findings have been presented at the Northeast Universities Development Consortium, Montreal (2004); the first workshop of the Households in Conflict Network, Berlin (2006); the second workshop of the Households in Conflict Network, Antwerp (2007); Northeast Universities Development Consortium, Boston University (2008); Center for the Study of African Economies (CSAE) Conference, Oxford (2009); and IZA Workshop on Child Labor, Bonn (2009).

Responsibility: Development Research Group, Human Development and Public Services Team—Damien de Walque (ddewalque@worldbank.org).

Project Code: P096792.

Completion date: December 2010.

Countries: Cambodia, Rwanda.

Publications

- Akresh, Richard, and Damien de Walque. 2008. “Armed Conflict and Schooling: Evidence from the 1994 Rwandan Genocide.” Policy Research Working Paper 4606. World Bank, Washington, D.C.

de Walque, Damien, and Philip Verwimp. 2009. "The Demographic and Socio-Economic Distribution of Excess Mortality during the 1994 Genocide in Rwanda." Policy Research Working Paper 4850. World Bank, Washington, D.C.

STAR: Study of Tsunami Aftermath and Reconstruction

This research project is assessing the socio-economic, physical, and psychological well-being of more than 30,000 adult and child survivors of the December 2004 Sumatran tsunami using survey data representative of the pre-tsunami population. With funding from the World Bank, the National Science Foundation, the National Institutes of Health, and the MacArthur Foundation, the Study of Tsunami Aftermath and Reconstruction (STAR) researchers and field workers have been collecting information from communities and households in Aceh and North Sumatra since 2005.

To better understand the dynamic of reconstruction and the process through which households and communities rebuild their lives, STAR aims to provide insights into the extent of damage, needs of the affected areas, and nature of programs that will be effective in helping these areas to recover from the disaster. By using longitudinal household data, STAR is documenting the immediate and medium-term consequences of the tsunami on mortality, family disruption and immigration, and physical and mental health. STAR also focuses on the characteristics of individuals, households, and communities most resilient to the impact of the tsunami and in effective reconstruction.

The project is examining the impact of the tsunami on the socio-economic behavior and physical and mental health of the Indonesian population living along the coast of Aceh and North Sumatra. It is also recording the effects of the reconstruction experience at the household level and identifying the relative effectiveness of differing reconstruction policies. STAR uses a household sample based on the 2004 Indonesian National Socioeconomic Survey (SUSENAS) in Nangroe Aceh Darusalam (NAD) and North Sumatra (Sumut). SUSENAS is a large-scale, nationally representative, cross-sectional, socio-economic survey conducted by Indonesia's Central Bureau of Statistics. The STAR sample is made up of household respondents from the 2004 SUSENAS cross-section in affected districts in NAD and Sumut. STAR questionnaires follow up previous SUSENAS household survey questions and are supplemented with additional questions regarding the affect of the tsunami.

STAR is also conducting several community-level modules in STAR enumeration areas, gathering information on village characteristics, health facilities, and households. STAR

has collected four rounds of data since the tsunami and earthquake in December, 2004. The first round, which interviewed approximately 10,000 households in over 500 communities, began in May 2005 and was completed in May 2006. The second and third rounds followed up on the same households. The fourth survey round began in July 2008.

The project findings are numerous. For example, the tsunami-caused mortality of children was much higher for children living separately from their mother (although in households with other adults). Post-traumatic stress disorder was widespread immediately following the tsunami but subsided quickly. Public services of neighboring communities unaffected by the tsunami were significantly strained by the shift of local resources to affected areas.

Knowledge sharing from this project has occurred in a variety of settings such as the regional and national governments in Indonesia; numerous seminars at the World Bank; academic venues in the United States, Europe, and Indonesia; and high profile international meetings, such as the Annual American Economic Association meetings and the annual International Demography meetings. Individual research pieces have been presented at the Population Association of America Annual Meetings (2006, 2007, 2008, 2009); World Bank Public Service Conference (2006) and Disaster Reconstruction Conferences (2009); World Bank Health, Nutrition, and Population Seminar (2006); and American Economic Association Annual Meetings (2007, 2008, 2009).

Responsibility: Development Research Group, Poverty Team—Jed Friedman (jfriedman@worldbank.org). With SurveyMETER, Yogyakarta, Indonesia.

Project Code: P098855.

Completion date: December 2010.

Countries: Indonesia.

Publications

Blanco-Armas, Enrique, Jed Friedman, and Ellen Tan. "Aceh Poverty Assessment: The Impact of the Conflict, the Tsunami, and Reconstruction on Poverty in Aceh." 2008. World Bank, Washington D.C.

Frankenberg, Elizabeth, Jed Friedman, Peter Katz, Bondan Sikoki, and Duncan Thomas. 2009. "Economic Consequences of the 2004 Tsunami for Households and Individuals in Indonesia." Policy Research Working Paper. World Bank, Washington, D.C.

Frankenberg, Elizabeth, Jed Friedman, and Duncan Thomas. 2009. "The Medium Run Consequences of Disaster Induced Disability." Policy Research Working Paper. World Bank, Washington, D.C.

Frankenberg, Elizabeth, Jed Friedman, Fadia Saadah, Bondan Sikoki, Wayan Suriastini, Cecep Sumantri, and Duncan

Thomas. 2008. "Assessing Health and Education Services in the Aftermath of a Disaster." Chapter 8 in Samia Amin, Jishnu Das, and Markus Goldstein (eds.), *Are You Being Served? New Tools for Measuring Service Delivery*. Washington, D.C.: World Bank.

Frankenberg, Elizabeth, Jed Friedman, Thomas Gillespie, Nicholas Ingwersen, Robert Pynoos, Iip Rifai, Bondan Sikoki, Cecep Sumantri, Wayan Suriastini, and Duncan Thomas. 2008. "Mental Health in Sumatra after the Tsunami." *American Journal of Public Health* 98(9): 1671–77.

Gillespie, Thomas, Jasmine Chu, Elizabeth Frankenberg, and Duncan Thomas. 2007. "Assessment and Prediction of Natural Hazards from Satellite Imagery." *Progress in Physical Geography* 31(5): 459–70.

Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention

This research project explored the rationale for public intervention in catastrophe insurance markets. It identified and discussed the demand-driven and supply-driven market imperfections that can hamper the emergence of competitive catastrophe insurance solutions.

The project provided a detailed analysis of the imperfections and inefficiencies that impede the emergence of competitive catastrophe risk markets in developing countries. The project demonstrated how donors and international financial institutions can assist governments in middle and low-income countries in promoting effective and affordable catastrophe risk financing solutions. It summarized and published the findings in a book.

The book sets out guiding principles on how and when governments, with assistance from donors and international financial institutions, should intervene in catastrophe insurance markets. It also identifies key activities to be undertaken by donors and international financial institutions for the emergence of sustainable and competitive catastrophe insurance and reinsurance markets in developing countries that would allow middle and low-income countries to develop affordable and cost-effective catastrophe risk financing strategies, both at the macro (government) and micro (household) levels.

Responsibility: Finance, Economics and Urban Department, GF Disaster Reduction and Recovery—Saroj Kumar Jha (sjha1@worldbank.org) and Office of Director, Global CM Development—WB, Non-Banking Financial Institution—Olivier Mahul. With David Cummins, Wharton School and Temple University.

Project Code: P106674.

Completion date: November 2008.

Countries: Global.

Publications

Mahul, Olivier, and J. David Cummins. 2008. "Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention." World Bank, Washington, D.C.

Regulation and Legal Origin

This research project looked at differences in the level of regulation, government helpfulness to businesses, and quality of governance across various legal traditions. It analyzed how the legal tradition of a country affects its business environment. Understanding this is important for appropriate remedial measures for improving the business climate.

To see how perceptions vary across legal traditions, the project used micro data or firm perceptions on the helpfulness of the government for businesses. It also looked at the ease with which information on rules and regulations is available to businesses across different legal traditions. This information dimension of the business environment is highly under-researched. The use of firm-level micro data is particularly appealing because it helps address the problem of heterogeneity across data points that plagues country-level studies. The main data source for the study was the World Bank's World Business Environment Survey from 1999.

The findings showed that in some legal traditions, businesses do not view heavier regulation as an efficient and desirable response to disorder. Common law countries perform better than others in terms of government helpfulness (to businesses) and the availability of information to firms on rules and regulations.

Responsibility: Financial and Private Sector Development, Enterprise Analysis—Rita Ramalho (RRamalho@ifc.org) and Mohammad Amin.

Project Code: P112057.

Completion date: September 16, 2008.

Countries: India.

Armed Conflict Location and Event Database (ACLED)

This research project is working to provide detailed information on conflict activities with precision at the village level, geographically referenced for ease of use with other geo-referenced data. The Armed Conflict Location and Event Database (ACLED) coding distinguishes between six types of violent and non-violent events within larger conflicts. Violent events include: 1) battles in which no territory is lost (including guerrilla attacks on military infrastructure); 2) battles in which territory is won by rebels; 3) battles in which the government regains lost territory; and 4) violence against civilians, by either

government or rebel groups. Nonviolent events include 5) the establishment of a rebel base or headquarters and 6) rebel presence.

ACLED is an improvement on other conflict event data in four main ways. First, it is disaggregated by local level battles, and does not resort to aggregation across space or time (see UCDA/PRIO data or KEDS). Second, the types of conflict events, such as contested territory, rebel bases, one-sided violence, and pitched battles, are clearly distinguished. Third, the radii of conflicts expand and contract over time, regions, and borders clearly in ACLED data. And fourth, the intensity of conflict events throughout a state can be readily determined and the dynamics of conflict onset, strategy, escalation, and cessation are evident.

ACLED is designed to be compatible with a number of existing conflict and independent variable databases and collections.

This research is ongoing. Earlier conclusions from quantitative and qualitative studies of civil war point to the importance of “geographically uneven patterns of state building” where governance policies differ over areas of the state with respect to the type of authority (devolved or centralized) and the spatial configuration of the state apparatus. The project results emphasize how conflict dynamics and patterns diverge based on changing contexts, external relationships, and internal politics. A global extension of disaggregated local level conflict data is necessary to ascertain the variation in civil war and violence patterns within and across countries and regions over time.

The project database will be publicly launched in fall 2009. The dataset is being used as an input for the 2011 World Development Report on Conflict and Development.

Responsibility: Development Research Group, WDR Team—Gary Milante (gmilante@worldbank.org). With Clionadh Raleigh, Trinity College; and Håvard Hegre, International Peace Research Institute of Oslo (PRIO).

Project Code: P113557.

Completion date: June 2010.

Countries: 45 Fragile and conflict-affected low income countries—eventually to be extended to all conflict-affected countries.

Landmine Contamination, Casualties, and Clearance Database (LC3D)

Preliminary findings from this research project suggest that in many post-conflict environments, landmines and explosive remnants of war can be viewed as a “negative investment” or “investment in reverse” because they permanently detract from the physical and even human and social capital that

post-conflict countries need for economic progress. This research project is aimed at better informing landmine action by collecting the available data on contamination, casualties, and clearance into a single, publicly available database.

The initial research demonstrated that this dataset can be used for cross-country panel regression to identify within and between-country effects relevant for comparing the effectiveness of landmine clearance or education programs and other landmine actions.

This in-depth analysis will provide practitioners with a more detailed account of the clearance techniques, costs, and economic benefits for the cases considered. The final dataset and research results based on analysis will be delivered in early December 2009. The objective is to demonstrate that high-quality data can better inform development policy on mine action.

Two versions of the project database have been constructed. The simplified version of the database (LC3D_V1) contains data from Landmine Monitor Annual Reports between 1998 and 2007. This version covers aspects of landmine problems (contamination), de-mining operations (mine clearance, battle area clearance, reduction/cancellation, and area release), and data on casualties. This version has been completed and will be put up as a static page in the DECRG conflict program website.

The latest version of the database (LC3D_V2) is an expansion of the original version. New data sources were introduced, including United Nations Mine Action Service (UNMAS) and United Nations Development Programme (UNDP). This new version has been populated with data from Landmine Monitor annual reports for 1998–2008. The United Nations Mine Action Service (UNMAS) has provided data for four countries, and the UNDP has provided data for six countries for the period under consideration (1998–2008). The design of the interactive database is presently underway.

The pilot version of this database was presented at the National Directors and UN Advisors Meeting in Geneva. The database illustrated that even the poorest quality data can be useful in econometric analysis, in this case identifying a significant, negative effect of landmine contamination on economic growth. In addition, feedback from practitioners at the meeting has been used to inform the present process of developing and refining the database.

The proposed launch for the database is November 2009.

Responsibility: Development Research Group, WDR Team—Gary Milante (gmilante@worldbank.org). With Kenneth Anye.
Project Code: P116389.

Completion date: Ongoing.

Countries: Post-conflict countries.

List of Publications

List of Publications

A. Books

- Ainsworth, Martha, ed. 2009. *Improving Effectiveness and Outcomes for the Poor in Health, Nutrition, and Population: An Evaluation of World Bank Group Support since 1997*. Washington, D.C.: World Bank.
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