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2499. The Treatment of Non-Essential Inputs in a Cobb-Douglas Technology: An Application to Mexican Rural Household-Level Data

Isidro Soloaga
(December 2000)

One problem when estimating a Cobb-Douglas production function with micro data is how to deal with the observations that show positive output but do not use some of the inputs. As the log of zero is not defined, one standard procedure is to arbitrarily replace those zero values with "sufficiently small" numbers. But can we do better than that? An alternative approach is presented and applied to Mexican farm-level data.

The standard approach for fitting a Cobb-Douglas production function to micro data with zero values is to replace those values with "sufficiently small" numbers to facilitate the logarithmic transformation. In general, the estimates obtained are extremely sensitive to the transformation chosen, generating doubts about the use of a specification that assumes that all inputs are essential (as the Cobb-Douglas does) when that is not the case.

Soloaga presents an alternative method that allows one to estimate the degree of essentiality of the production inputs while retaining the Cobb-Douglas specification. By using the properties of translatable homothetic functions, he estimates by how much the origin of the input set should be translated to allow the Cobb-Douglas functional form to capture the fact that the data have a positive output even when some of the inputs are not used.

To highlight the empirical importance of the approach, he applies it to Mexican farm-level production data that he gathered.

Many households did not use family or hired labor in farm production, or had different capital composition (that is, zero value for non-land farm assets).

The estimations provide a clear measurement of the degree of essentiality of potentially nonessential inputs. They also indicate the size of the error introduced by the common "trick" of adding a "small" value to zero input values.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to explore conceptual and practical issues relative to the effects of international trade policy on individual producers. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address litalaba@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at isoloaga@worldbank.org. (18 pages)

2500. Investigating Corruption

Canice Prendergast
(December 2000)

Why incentive contracts and independent investigations may not be the perfect solution to the problem of bureaucratic corruption.

Agency theory has had little to say about the control of bureaucratic corruption, perhaps the greatest agency problem that exists. Prendergast considers the role of incentive contracting in reducing corruption through the use of independent investigations—a common way to monitor corruption.

In simple settings, bureaucratic corruption can be suppressed by rewarding and penalizing bureaucrats, depending on the independent investigators' findings. But Prendergast shows that incentive contracts can change behavior in both undesirable and beneficial ways. He analyzes three possible harmful behavioral responses to investigations.

• Many investigations are (officially) instigated by customer complaints. Bureaucrats could become overinterested in "keeping the customer happy," even when it is not efficient to do so.

• Bureaucrats often have private information on how cases should be handled, information that is hard for investigators to verify. Prendergast shows that investigations can give bureaucrats excessive incentives to "do things by the book," offering decisions that are more likely to be consistent with the opinions of their superiors.

• Bureaucrats sometimes collect bribes to "look the other way"—that is, ignore known transgressions. A solution to this problem might be to offer rewards for bringing cases to light, but a bureaucrat could then waste resources by generating "nuisance cases" simply to receive the bonus.

In each of these cases, harmful responses to investigations and incentives may be costly enough that it would be more efficient simply to pay a flat wage and accept some corruption.

In other words, incentive contracts may not work so well in reducing bureaucratic corruption, because of the variety of dysfunctional responses that investigations may elicit. It may be best to limit investigations to cases where the investigator can find direct evidence of wrongdoing (for example, cash being handed over, or bureaucrats living beyond their means).

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to analyze decentralization and governance in the public sector. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at canice@gsbexp.uchicago.edu. (37 pages)


Jeff Huther and Anwar Shah
(December 2000)

In a largely corruption-free environment, anticorruption agencies, ethics offices, and ombudsmen strengthen the standards of accountability. In countries with endemic corruption, however, the same institutions function in form but not in substance; under a best-case scenario such institutions might be helpful, but the more likely outcome is that they help to preserve social injustice.

The anticorruption strategy the World Bank announced in September 1997 defined corruption as the "use of public office for private gain" and called for the Bank to address corruption along four dimensions:
2002. Implications of the Currency Crisis for Exchange Rate Arrangements in Emerging East Asia

Masahiro Kawai and Shigeru Akiyama (December 2000)

More effort should be made to develop a framework for international monetary coordination, not only to maintain stable exchange rates among the U.S. dollar, the Japanese yen, and the euro, but to minimize the risk of currency and financial crises in emerging economies in East Asia and elsewhere.

Kawai and Akiyama examine the implications of the East Asian currency crisis for exchange rate arrangements in the region's emerging market economies. They focus on the roles of the U.S. dollar, the Japanese yen, and the euro in the emerging East Asian economies' exchange rate policies.

They claim that these economies are particularly susceptible to large exchange rate fluctuations because they have been pursuing financial deregulation, opening markets, and liberalizing capital accounts, and because they face increased risk of sudden capital flow reversals, with attendant instability in their financial system and foreign exchange market.

Kawai and Akiyama find that the dollar's role as the dominant anchor currency in East Asia was reduced during the recent currency crisis but has become prominent again since late 1998. It is too early for conclusions, but the economies seem likely to maintain more flexible exchange rate arrangements, at least officially.

At the same time, these economies presumably will continue to prefer to maintain exchange rate stability without fixed rate commitments. They are better off choosing a balanced currency basket system in which the yen and the euro play a more important role than before.

The ASEAN countries have a special incentive to avoid harmful fluctuations in exchange rates within the region, which could suddenly alter their international price competitiveness and make prospective free trade agreements unsustainable. So they may stabilize their exchange rates against similar currency baskets, to ensure intraregional exchange rate stability.

This paper—a product of the Office of the Chief Economist, East Asia and Pacific Region—is part of a larger effort in the region to study financial market development, capital flows, and exchange rate arrangements in East Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Athena Azarcon, room MC9-142, telephone 202-473-6049, fax 202-477-0169, email address azarcon@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at mkawai@worldbank.org or sakiyama@worldbank.org. (65 pages)

2003. Proposed Strategy for a Regional Exchange Rate Arrangement in Post-Crisis East Asia

Masahiro Kawai and Shinji Takagi (December 2000)

A coordinated action by East Asian countries to stabilize their currencies against a common basket of major currencies (broadly representative of their average structure of trade and foreign direct investment) would help stabilize both intraregional exchange rates and effective exchange rates—in a way consistent with the medium-term objective of promoting trade, investment, and growth in the region.

After discussing major conceptual and empirical issues relevant to the exchange rate policies of East Asian countries, Kawai and Takagi propose a regional exchange rate arrangement designed to promote intraregional exchange rate stability and regional economic growth. They argue that:

- For developing countries, exchange rate volatility tends to significantly hurt trade and investment, making it inadvisable to adopt a system of freely floating exchange rates.
- Given the high share of intraregional trade and the similarity of trade composition in East Asia, exchange rate policy should be directed toward maintaining intraregional exchange rate stability, to promote trade, investment, and economic growth.
- The current policy of maintaining exchange rate stability against the U.S. dollar as an informal, uncoordinated mechanism for ensuring intraregional exchange rate stability is suboptimal. A pragmatic policy option—conducive to a more robust framework for cooperation in monetary and exchange rate policy—would be a coordinated action to shift the
Consistent with these arguments, Putnam (1993) has shown that regional governments in the more trusting, more civic-minded northern and central parts of Italy provide public services more effectively than do those in the less trusting, less civic-minded southern regions. Using cross-country data, La Porta and others (1997) and Knack and Keefer (1997) obtained findings consistent with Putnam's evidence. For samples of about 30 nations (represented in the World Values Surveys), they found that societies with greater trust tended to have governments that performed significantly better. The authors used survey measures of citizen confidence in government as well as subjective indicators of bureaucratic inefficiency.

Knack further analyzes links between social capital and government performance using data for the United States. In states with more social capital (as measured by an index of trust, volunteering, and census response), government performance is rated higher, based on ratings constructed by the Government Performance Project.

This result is highly robust to including a variety of control variables, considering the possibility of influential outlying values, treating the performance ratings as ordinal rather than cardinal, and correcting for possible endogeneity.

This paper—a product of the Office of the Chief Economist, East Asia and Pacific Region—is part of a larger effort in the region to study financial market development, capital flows, and exchange rate arrangements in East Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Athena Azarcon, room MC9-142, telephone 202-473-6049, fax 202-477-0169, email address azarcon@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Masahiro Kawai may be contacted at mkawai@worldbank.org. (46 pages)

2504. Social Capital and the Quality of Government: Evidence from the United States

Stephen Knack
(December 2000)

Governments perform better where there is more general trust and strong civic norms; they perform less well where citizens are less trusting and less civic-minded.

Social capital—in the form of general trust and strong civic norms that call for cooperation when large-scale collective action is needed—can improve government performance in three ways:

• It can broaden government accountability, making government responsive to citizens at large rather than to narrow interests.
• It can facilitate agreement where political preferences are polarized.
• It is associated with greater innovation when policymakers face new challenges.

2505. Family Altruism and Incentives

Roberta Gatti
(December 2000)

In the presence of imperfect information and uncertainty, altruistic parents might use intergenerational transfers strategically to elicit effort from their children. As a result, gifts and bequests are less reactive to the income realizations of the children than the standard altruistic model of the family predicts. Ricardian equivalence holds in this setup whenever the non-negativity constraint on bequests is not binding.

Gatti builds on the altruistic model of the family to explore the strategic interaction between altruistic parents and selfish children when children's efforts are endogenous. If there is uncertainty about the amount of income the children will realize, and if parents have imperfect information, the children have an incentive to exert little effort and to rely on their parents' altruistically motivated transfers. Because of this, parents face a tradeoff between the insurance that bequests implicitly provide their children and the disincentive to work prompted by their altruism.

Gatti shows that if parents can credibly commit to a pattern of transfers, they will choose not to compensate children in bad outcomes as much as predicted by the standard (no uncertainty, no asymmetric information) dynastic model of the family. Alternatively, parents may choose to forgo any insurance and offer a fixed level of bequest, to elicit greater effort from their children.

The optimal transfers structure that Gatti derives reconciles the predictions of the altruistic family model with much of the existing evidence on intergenerational transfers, which suggests that parents compensate only partially, or not at all, for earnings differentials among their children.

Moreover, Gatti shows that Ricardian equivalence holds in this setup, except when non-negativity constraints are binding.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to understand intrahousehold resource allocation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at rgatti@worldbank.org. (38 pages)
2506. Ethnicity and Wage Determination in Ghana

Abigail Barr and Abena Oduro  
(December 2000)

In Ghana's manufacturing sector, workers tend to be employed by members of their own ethnic group, and different ethnic groups run very different types of enterprises. Employers favor their relatives in pay and in job allocation, possibly because they are more productive. There is no evidence of pay discrimination between ethnic groups.

Barr and Oduro look at earnings differentials between members of different ethnic groups and between employers' relatives, unrelated members of the same ethnic group, and other workers in Ghana's manufacturing sector.

They find that a significant proportion of the earnings differentials identified between ethnic groups can be explained with reference to a fairly standard set of observations about workers' characteristics. Labor market segregation along ethnic lines—combined with considerable variation in employers' characteristics (especially educational attainment and family background, possibly because of discrimination in other markets)—accounts for most of the remaining differentials.

Northerners earn considerably less than other groups mainly because they are less educated. The Other Akan earn much more than the relatively low-earning Asante, Fante, and Ewe.

There is no evidence of discrimination between ethnic groups, although there is evidence of discrimination in favor of inexperienced workers from the same ethnic group, who can be assessed and matched with jobs more easily than similar workers from other ethnic groups.

Finally, workers who are related to their employers earn a considerable premium, possibly because they contribute more to productivity than their fellow workers (perhaps through an effect on 

The authors' results draw attention to some startling differences in educational and labor market attainment between groups. A strong case can be made for including such issues in the policy debate.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to understand the role of ethnicity in labor market outcomes and entrepreneurial success in Africa. The study was funded by the Bank's Research Support Budget under the research project "The Economics of Ethnicity and Entrepreneurship in Africa." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Abigail Barr may be contacted at abigail.barr@worldbank.org. (32 pages)

2507. Public Expenditures and Environmental Protection: When Is the Cost of Funds Irrelevant?

Gunnar S. Eskeland  
(December 2000)

Pigou's conjecture was that under costly taxation public expenditures should not reach the point where marginal benefits equal marginal costs. In the treatment here, public expenditures (and environmental protection) may provide public goods for consumption but also collective inputs for production. When the benefits are in production, the cost of funds is irrelevant. Why? Collective inputs benefit goods that are taxed, while for public goods the shadow price of funds reduces provision as if they were.

Assume that a public program—whether in the form of public expenditures or regulation of private activities—provides not only a public good to consumers but also a collective input (say, a less polluted water source for brewers, or better roads for their trucks).

In a context of optimal taxation and constant returns to scale, Eskeland shows that only the direct benefits to consumers in the form of a public good are adjusted by the shadow price of public revenue (typically downward, as Pigou conjectured) before benefits are aggregated to establish optimal provision. When public programs benefit productive sectors through cost savings, the marginal cost of provision is in optimum equal to the marginal cost savings in the benefiting sectors.

The reason that programs that benefit production are not scaled down by the shadow price of public revenue is that the benefits are derived from markets that are otherwise taxable. Government can capture those cost savings at no distortionary cost by increasing the tax rates for each good, to match the cost savings provided.

In practice, do public programs to protect the environment benefit mostly consumers or mostly producers? Eskeland suggests that environmental protection has direct value for consumers and indirect value, as inputs, for producers. In the case of programs to reduce emissions of global greenhouse gases, for instance, most of the benefits appear to be in agriculture, a productive sector. Public programs in general provide a combination of public and private benefits: the share of commercial vehicles on roads is typically high in poor countries.

In related papers, "Externalities and Production Efficiency" (Policy Research Working Paper 2319) and "Environmental Protection and Optimal Taxation" (Policy Research Working Paper 2510), Eskeland shows that under optimal taxation, marginal abatement costs should be the same for polluting government, polluting producers, and polluting consumers, rich and poor.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to provide guiding principles in public finance and environmental protection. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at geskeland@worldbank.org. (32 pages)

2508. Sources of Financial Assistance for Households Suffering an Adult Death in Kagera, Tanzania

Mattias Lundberg, Mead Over, and Phare Mujinja  
(December 2000)

Why do some households manage better than others in overcoming the impact of an adult death? The household's ability to cope is a function of the resources it can command, including its access to private networks for social insurance and credit.
Public intervention can reduce vulnerability ex ante, or target assistance ex post, to the hardest-hit households.

The AIDS crisis in Africa and elsewhere compels us to design appropriate assistance policies for households experiencing a death. Policies should take into account and strengthen existing household coping strategies, rather than duplicate or undermine them.

Lundberg, Over, and Mujinja investigate the nature of coping mechanisms among a sample of households in Kagera, Tanzania in 1991–94. They estimate the magnitude and timing of receipts of private transfers, credit, and public assistance by households with different characteristics. Their empirical strategy addresses three common methodological difficulties in estimating the impact of adult death: selection bias, endogeneity, and unobserved heterogeneity.

Lundberg, Over, and Mujinja find that less-poor households (those with more physical and human capital) benefit from larger receipts of private assistance than poor households. Resource-abundant households are wealthy in social assets as well as physical assets. Poor households, on the other hand, rely relatively more on loans than private transfers, for up to a year after a death. This suggests that credit acts as insurance for households where informal interhousehold assistance contracts are not enforceable. A donor in Kagera can be sure that assistance to a wealthy household will be reciprocated, whereas a poor household may not be able to return the favor. Assistance to the poor is more likely to come with more formal arrangements for repayment. Formal-sector assistance is targeted toward the poor immediately following the death.

The impact of adult deaths on households may be mitigated either ex ante, through programs that minimize poverty and vulnerability, or ex post, by assistance targeted to the poorest and most vulnerable households. In addition, to the extent to which micro-credit programs improve access and lower the total costs of borrowing, they may not only stimulate growth and investment but also help resource-poor households overcome the impact of an adult death in the areas hardest-hit by the AIDS epidemic.

This paper—a product of Infrastructure and Environment, Development Research Group—extends research on the household-level impact of adult death which informed the World Bank Policy Research Report Confronting AIDS: Public Priorities in a Global Epidemic. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Viktor Soukhanov, room MC2-523, telephone 202-473-5271, fax 202-522-3230, email address vsoukhanov@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at mlundberg@worldbank.org, meadover@worldbank.org, or pmujinja@muchs.ac.tz. (30 pages)

2509. How Tax Policy and Incentives Affect Foreign Direct Investment: A Review
Jacques Morisset and Neda Pirnia (December 2000)

Tax incentives neither make up for serious deficiencies in a country's investment environment nor generate the desired externalities. But when other factors—such as infrastructure, transport costs, and political and economic stability—are more or less equal, the taxes in one location may have a significant effect on investors' choices. This effect varies, however, depending on the tax instrument used, the characteristics of the multinational company, and the relationship between the tax systems of the home and recipient countries.

With an increasing number of governments competing to attract multinational companies, fiscal incentives have become a global trend that has grown considerably in the 1990s. Poor African countries rely on tax holidays and import duty exemptions, while industrial Western European countries allow investment allowances or accelerated depreciation. Have governments offered unreasonably large incentives to entice firms to invest in their countries?

Morisset and Pirnia review the literature on tax policy and foreign direct investment and explore possibilities for research. They observe that tax incentives neither make up for serious deficiencies in a country's investment environment nor generate the desired externalities. Long-term strategies to improve human and physical infrastructure—and, where necessary, to streamline government policies and procedures—are more likely than incentives to attract genuine long-term investment.

But more recent evidence has shown that when other factors—such as infrastructure, transport costs, and political and economic stability—are more or less equal, the taxes in one location may have a significant effect on investors' choices. This effect is not straightforward, however. It may depend on the tax instrument used by the authorities, the characteristics of the multinational company, and the relationships between the tax systems in the home and recipient countries. For example, tax rebates are more important for mobile firms, for firms that operate in multiple markets, and for firms whose home country exempts any profit earned abroad (Canada, France) rather than using tax credit systems (Japan, the United Kingdom, the United States).

Even if tax incentives were quite effective in increasing investment flows, the costs might well outweigh the benefits. Tax incentives are not only likely to have a negative direct effect on fiscal revenues but also frequently create significant opportunities for illicit behavior by tax administrators and companies. This issue has become crucial in emerging economies, which face more severe budgetary constraints and corruption than industrial countries do.

Morisset and Pirnia suggest research in five areas:

- The eventual nonlinear impact of tax rates on the investment decisions of multinational companies.
- The effect of tax policy on the composition of foreign direct investment (for example, greenfield, reinvested earnings, and mergers and acquisitions).
- The development of new technologies and global companies that are likely to be more sensitive to, and able to exploit, incentives.
- The need for a global approach to the taxation of multinational companies.
- The question of whether tax incentives should be directed only at (foreign) investors that make the "right things" (such as environmentally safe products) or more broadly at those that bring jobs, technology transfers, and marketing skills.

This paper—a product of the Foreign Investment Advisory Service, International Finance Corporation—is part of a larger effort to understand the behavior of multinational companies. Copies of the paper are available free from the World
Struck by the fact that economists did not have a plausible model for why emissions standards and mandated technologies play a dominant role in pollution control, Eskeland sought answers to two questions:

- Should one stimulate emissions reductions by firms and households, rich and poor in the same way?
- How should one combine instruments that make activities cleaner with instruments that shift the economy toward less-polluting activities?

Using clean air as an example of a pure public good, he shows the role of emissions taxes or such surrogate instruments such as emissions standards and presumptive Pigouvian taxes.

To illustrate the combination of demand management and technical controls, he computes a marginal cost curve for emissions reductions in the form of cleaner cars and fuels. He estimates a demand model for cars and driving.

The result: under the assumption that revenue and redistributive transfers bear no premia, the cost of reducing pollution in Mexico City increases 44 percent if an emissions standards program is used and the presumptive Pigouvian tax on gasoline is not.

The important finding, as costly redistribution and revenue generation are introduced, is that this influences the general scheme of taxation (in well-known ways), and it influences the conditions for optimal environmental quality in accordance with Pigou's conjecture. However, it does not change or invalidate the rankings of technologies and interventions on the control cost curve, nor does it change the role of demand management in environmental protection.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to provide guiding principles in public finance and environmental protection. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at geskeland@worldbank.org. (29 pages)

2510. Environmental Protection and Optimal Taxation

Gunnar S. Eskeland

(December 2000)

Simple unweighted cost-effectiveness analysis remains relevant and correct when one introduces costly redistribution and revenue generation.

Inflation targeting is a flexible policy framework that allows a country's central bank to exercise some degree of discretion without putting in jeopardy its main objective of maintaining stable prices.

In the past few years a number of central banks have adopted inflation targeting for monetary policy. Agenor provides an introduction to inflation targeting, with an emphasis on analytical issues and the recent experience of middle- and high-income developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Maria Gosiengfiao, room J4-282, telephone 202-473-3363, fax 202-676-9810, email address mgosiengfiao@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at pagenor@worldbank.org. (94 pages)

2511. Monetary Policy under Flexible Exchange Rates: An Introduction to Inflation Targeting

Pierre-Richard Agenor

(December 2000)

Inflation targeting is a flexible policy framework that allows a country's central bank to exercise some degree of discretion without putting in jeopardy its main objective of maintaining stable prices.

In the past few years a number of central banks have adopted inflation targeting for monetary policy. Agenor provides an introduction to inflation targeting, with an emphasis on analytical issues and the recent experience of middle- and high-income developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Maria Gosiengfiao, room J4-282, telephone 202-473-3363, fax 202-676-9810, email address mgosiengfiao@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at pagenor@worldbank.org. (94 pages)

2512. Quantifying the Impact of Technical Barriers to Trade: A Framework for Analysis

Keith E. Maskus, John S. Wilson, and Tsunehiro Otsuki

(December 2000)

The application of product regulations and standards is becoming increasingly contentious as an implicit nontariff barrier to trade. This overview of the policy debate and methodological issues surrounding product standards and technical barriers to trade proposes concrete steps to move forward empirical analysis of regulations and trade.

There has been increasing use of technical regulations as instruments of commercial policy in the context of multilateral, regional, and global trade. These nontariff barriers are of special concern to developing countries, which may bear additional costs in meeting mandatory standards.
Many industrial and developing countries express frustration with regulations that vary across their export markets, require duplicative conformity procedures, and are continually revised to exclude imports.

Maskus, Wilson, and Otsuki provide a comprehensive overview of the policy debate and methodological issues surrounding product standards and technical barriers to trade. They begin with a review of the policy context driving demand for empirical analysis of standards in trade, then provide an analytical overview of the role of standards and their relationship to trade. They then review methodological approaches that have been used to analyze standards and their impact on trade.

Their main interest lies in advancing techniques that are practical and may be fruitfully extended to the empirical analysis of regulations and trade. They discuss concrete steps that could be taken to move forward a practical, policy-relevant program of empirical research. Such steps would include:

- Administering firm-level surveys in developing countries.
- Devising methods for assessing how much standards restrict trade.
- Establishing econometric approaches that could be applied to survey and microeconomic data, to improve understanding of the role of standards in exports.

This paper—a product of the Trade, Development Research Group—is part of a larger effort in the group to study new issues in international trade. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address itabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at keith.maskus@colorado.edu, jswilson@worldbank.org, or totsuki@worldbank.org. (51 pages)

2513. Do State Holding Companies Facilitate Private Participation in the Water Sector? Evidence from Côte d'Ivoire, the Gambia, Guinea, and Senegal

Michel Kerf
(December 2000)

Do state holding companies promote the success of private participation in the water sector? Apparently not, judging from experience in four African countries. There are very few functions that state holding companies are better suited for performing than other entities are.

When the Gambia, Guinea, and Senegal decided to involve the private sector in the provision of water services, they also established state holding companies—state-owned entities with exclusive or partial responsibility for:
- Owning infrastructure assets.
- Planning and financing investments (replacing assets and expanding networks).
- Regulating the activities of the private operator.
- Promoting public acceptance of private participation in the sector.

In Côte d'Ivoire, by contrast, when private participation was introduced (in 1960), no state holding company was established.

To determine whether state holding companies help private participation in the water sector succeed, Kerf reviews the four functions these entities are expected to perform in the Gambia, Guinea, and Senegal. In light of experience in all four countries, he examines whether, and under what circumstances, state holding companies might be the entities best suited for carrying out such functions.

He concludes that creating a state holding company is often not the best solution. A state holding company might be better suited than other entities for planning and financing investments when (and only when):
- Investment responsibilities cannot be transferred to the private operator.
- Tariffs are insufficient, at least for a time, to cover investment needs, so it is crucial that a public entity have access to other sources of finance.
- The holding company's financial strength and accountability, or its incentives and ability to promote the gradual adoption of cost-covering tariffs, are superior to those of a ministerial department.

When one or more of these conditions are not met, the main investment responsibilities should be transferred to the private operator or, if that is not possible, left to the government itself.

The other three functions should not, as a general rule, be performed by a state holding company.

This paper—a product of the Private Sector Development and Infrastructure Vice Presidency—is part of a larger effort to analyze the factors that contribute to the success of private participation in infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Marie Leon, room F11K-190, telephone 202-473-6151, fax 202-522-2961, email address mleon@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mkerf@worldbank.org. (33 pages)

2514. Intersectoral Dynamics and Economic Growth in Ecuador

Norbert M. Fiess and Dorte Verner
(January 2001)

The frequent recommendation to exclude the oil sector from economic analysis may be short-sighted, as adverse shocks to the oil industry are likely to affect other sectors through the financial and public sectors, with which the oil sector has many links. There are also significant long-run relationships between the agricultural, industrial, and service sectors.

Fiess and Verner analyze sectoral growth in Ecuador using multivariate cointegration analysis. They find significant long-run relationships between the agricultural, industrial, and service sectors. Moreover, they are able to derive dynamic sector models that combine the short-run links between the three sectors with long-run dynamics.

When they disaggregate the three sectors into their intrasectoral components, they discover many interesting relationships that contribute to a better understanding of inter- and intrasectoral dynamics in the context of Ecuadorian economic growth.

Their findings suggest that more attention should be paid to interdependencies in sectoral growth, since an improved understanding of intersectoral dynamics may facilitate the implementation of policy aimed at increasing economic growth in Ecuador.

There appears to be no direct link between the oil sector and the non-oil industrial sectors. But strong evidence supports cointegration between the oil industry and financial services as well as between the oil industry and public services.
This means, among other things, that the oil sector cannot be excluded from intersectoral growth analysis, because an adverse shock to the oil industry is likely to affect other sectors through the financial sector, the public sector, or both.

This paper—a product of the Economic Policy Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to investigate intersectoral growth dynamics. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anne Pillay, room 18-154, telephone 202-458-8046, fax 202-522-2119, email address apillay@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at nfiess@worldbank.org or dverner@worldbank.org. (29 pages)

2515. Firm-Level Survey Provides Data on Asia’s Corporate Crisis and Recovery

Mary Hallward-Driemeier
(January 2001)

This rich new database on 4,000 Asian firms—operating in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand—focuses on the impact of Asia’s economic crisis and on the longer-run determinants of productivity, employment practices, and financial structure.

Researchers have decried the limited supply of objective, comparable firm-level data from developing countries. Hallward-Driemeier describes a new database that helps fill this information gap.

The database has detailed records on 4,000 firms operating in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand. A comparable survey instrument and sampling methodology was used in each country, and all five studies were carried out simultaneously. The data cover three years (1996–98), allowing for measurements of firm performance before and immediately after the East Asian financial crisis.

The questionnaire focused on measuring the impact of the regional financial crisis at the microeconomic level and understanding the longer-run determinants of productivity, employment practices, and financial structure.

This database—the first step in the important Firm Analysis and Competitiveness Surveys initiative that the World Bank is spearheading—will be joined by additional country databases. The aim is to fill the gap in much-needed microeconomic evidence using comparable instruments.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to collect comparable firm-level information from developing countries. The research was funded by the Bank’s Research Support Budget under the research project “Impact of the East Asian Crisis” (RPO 632-25). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room MC3-341, telephone 202-473-7471, fax 202-522-3518, email address kkhine@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mhallward@worldbank.org. (33 pages)

2516. Does Decentralization Increase Responsiveness to Local Needs? Evidence from Bolivia

Jean-Paul Faguet
(January 2001)

Bolivia’s 1994 decentralization led to changes in the geographic allocation of funds and to the development of innovative institutions of local governance. The changes in the sectoral (and geographic) allocations of public funds show a strong relationship with objective indicators of social need, evidence that local priorities are being reflected.

Significant changes in public investment patterns—in both the sectoral uses of funds and their geographic distribution—emerged after Bolivia devolved substantial resources from central agencies to municipalities in 1994. By far the most important determinant of these changes are objective indicators of social need (for example, education investment rises where illiteracy is higher). Indicators of institutional capacity and social organization are less important.

Empirical tests using a unique database show that investment changed significantly in education, agriculture, urban development, water management, water and sanitation, and possibly health. These results are robust and insensitive to specification.

As the smallest, poorest municipalities invested newly devolved public funds in their highest priority projects, investment showed a strong, positive relationship with need in agriculture and the social sectors. In sectors where decentralization did not bring about changes, the central government had invested little before 1994 and the local government continued to invest little afterward.

These findings are consistent with a model of public investment in which local government’s superior knowledge of local needs dominates the central government’s technical and organizational advantage in the provision of public services.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to analyze fiscal decentralization in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at j.p.faguet@lse.ac.uk. (44 pages)

2517. The Effect of International Monetary Fund and World Bank Programs on Poverty

William Easterly
(January 2001)

There is some evidence that IMF and World Bank adjustment lending smooths consumption for the poor, reducing the rise in poverty for any given contraction of the economy but also reducing the fall in poverty for any given expansion. Adjustment lending plays a similar role as inequality, reducing poverty’s sensitivity to the economy’s aggregate growth rate.

Structural adjustment—as measured by the number of adjustment loans from the IMF and World Bank—reduces the growth elasticity of poverty reduction. Easterly finds no evidence for structural adjustment having a direct effect on growth.
The poor benefit less from output expansion in countries with many adjustment loans than they do in countries with few such loans. By the same token, the poor suffer less from an output contraction in countries with many adjustment loans than in countries with few. Why would this be?

One hypothesis is that adjustment lending is countercyclical in ways that smooth consumption for the poor. There is evidence that some policy variables under adjustment lending are countercyclical, but no evidence that the cyclical component of those policy variables affects poverty.

Easterly speculates that the poor may be ill placed to take advantage of new opportunities created by structural adjustment reforms, just as they may suffer less from the loss of old opportunities in sectors that were artificially protected before reform.

Poverty's lower sensitivity to growth under adjustment lending is bad news when an economy expands and good news when it contracts. These results could be interpreted as giving support to either the critics or the supporters of structural adjustment programs.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to understand the effect of growth on poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-1155, email address klabrie@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at weasterly@worldbank.org. (31 pages)

2518. Can Reforming Global Institutions Help Developing Countries Share More in the Benefits from Globalization?

Andrews Solimano

(January 2001)

Globalization has expanded both opportunities and risks. How should responsibilities be allocated (and coordinated) between the global financial institutions that developed in the 1940s and the regional financial institutions that began developing in the 1960s? Can growth-oriented policies be harmonized at national and global levels to reduce volatility and promote social equity?

Globalization could significantly expand trade, international investment, and technological advances, but the gains from global integration have been unevenly distributed across and within nations. Greater global interdependence has also brought greater macroeconomic volatility, resulting in several serious financial crises in the second half of the 1990s.

The global matrix of Bretton Woods and United Nations institutions that developed starting in the 1940s formed under a different balance of power, in a world of fixed exchange rates and limited capital mobility. Since the 1960s regional financial institutions have emerged because of the greater autonomy of different regions and the greater financial needs of development.

Solimano reviews different proposals for reform of the international financial institutions and changes in the roles of the International Monetary Fund (IMF) and the World Bank. He highlights the implications for developing countries of:

- Policy conditionality.
- The countercyclical role of multilateral lending.
- Greater lending to middle-income than to low-income developing countries.
- Access to liquidity at times of crisis.
- Mechanisms for giving low-income countries a greater voice in IMF and World Bank decisionmaking.

Solimano stresses the overlapping responsibilities of the Bretton Woods and regional financial institutions and the need to reassess the allocation of responsibilities and to develop better coordination mechanisms between these institutions. Those designing institutional reform must consider the corporate capabilities of each type of institution. The corporate cultures of global and regional institutions differ. So does the kind of knowledge they generate and disseminate, and so do patterns of interactions with, and mechanisms for representation of, client countries.

Finally, Solimano calls attention to the need to harmonize national and global growth-oriented policies in a way that reduces volatility and promotes social equity.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort of the group to understand the impact of globalization on developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at asolimano@worldbank.org. (30 pages)

2519. Is Investment in Africa Too Low or Too High? Macro and Micro Evidence

Shantayanan Devarajan, William R. Easterly, and Howard Pack

(January 2001)

Many analysts decry the level of investment in Africa, saying it is too low. But there is no evidence, in cross-country data or in microeconomic data from Tanzania, that private and public capital is productive in Africa. In that sense, investment in Africa may be viewed as too high.

Devarajan, Easterly, and Pack investigate the relationship between weak growth performance and low investment rates in Africa. The cross-country evidence suggests no direct relationship. The positive and significant coefficient on private investment appears to be driven by Botswana's presence in the sample. Allowing for the endogeneity of private investment, controlling for policy, and positing a nonlinear relationship make no difference to the conclusion.

Higher investment in Africa would not by itself produce faster GDP growth. Africa's low investment and growth rates seem to be symptoms of underlying factors.

To investigate those factors and to correct for some of the problems with cross-country analysis, Devarajan, Easterly, and Pack undertook a case study of manufacturing investment in Tanzania. They tried to identify why output per worker declined while capital per worker increased. Some of the usual suspects—such as shifts from high- to low-productivity sectors, the presence of state-owned enterprises, or poor policies—did not play a significant role in this decline. Instead, low capacity utilization (possibly the
byproduct of poor policies) and constraints on absorptive capacity for skill acquisition seem to be critical factors. If Tanzania is not atypical, the low productivity of investment in Africa was the result of a combination of factors that occurred simultaneously, not any single factor.

What does this tell us? First, we should be more careful about calling for an investment boom so that Africa can resume growth. Unless some or all of the underlying problems are addressed, the results may be disappointing. We should also be more circumspect about Africa’s low savings rate; it may be low because returns to investment were so low. The relatively high level of capital flight from Africa may have been a rational response to the lack of investment opportunities at home.

Second, there is probably no single key to unlocking investment and GDP growth in Africa. All of the factors contributing to low productivity should be addressed simultaneously.

This paper—a joint product of Public Economics and Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study growth and development in Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at kbutcher@macfound.org or rouse@princeton.edu. (47 pages)

2520. Wage Effects of Unions and Industrial Councils in South Africa
Kristin F. Butcher and Cecilia Elena Rouse (January 2001)

Do union workers earn higher wages than nonunion workers in South Africa? (Yes, but less so than previous estimates would suggest.) And do industrial council agreements extend these premia to nonunion workers? (On the surface, yes, but the effects are too small to be the primary reason for South Africa’s vast unemployment.)

In South Africa unions, which played a crucial role in the country’s transition from apartheid, are coming under fire. Some argue that a high union wage premium and the industrial council system are important causes of inflexibility in South Africa’s labor market.

Butcher and Rouse analyze unions’ direct effect on workers’ wages (including the time-honored question about whether the union wage gap is real or reflects the fact that workers who are members of unions differ from those who are not) and ask whether there is evidence that industrial council agreements force affected employers to pay union wages for nonunion workers.

They estimate that among Africans, union members earn about 20 percent more than nonmembers, while among whites union workers earn 10 percent more than nonunion workers.

They find that African nonunion workers who are covered by industrial council agreements receive a premium of 6 to 10 percent; the premium is positive but not statistically significant for whites.

In addition, the union gap is smaller inside the industrial council system than outside the system for Africans, implying that the total union premium for union members covered by an industrial council agreement is similar to the union premium outside the industrial council system.

Among Africans, the industrial council and union wage gaps are greatest among low-wage workers.

To increase employment, policies in South Africa should focus on increasing competition among employers within sectors, rather than increasing competition among workers by trying to reduce union power.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to understand the impact of labor market policies and institutions on economic performance. The study was funded by the Bank’s Research Support Budget under the research project “The Impact of Labor Market Policies and Institutions on Economic Performance” (RPO 680-96). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, mail stop MC2-306, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at kbutcher@macfound.org or rouse@princeton.edu. (36 pages)

2521. Labor Market Rigidity and the Success of Economic Reforms across More than 100 Countries
Alvaro Forteza and Martin Rama (January 2001)

Labor market policies and institutions affect the success of economic reform but probably more for political than for economic reasons. Growth appears not to be hurt by minimum wages and mandatory benefits. But the relative size of organized labor (in government and elsewhere) is crucial.

Forteza and Rama show that labor market policies and institutions affect the effectiveness of economic reform programs. They compare annual growth rates across 119 countries, using data from 449 World Bank adjustment credits and loans between 1980 and 1996.

The results indicate that countries with relatively rigid labor markets experienced deeper recessions before adjustment and slower recoveries afterward.

The authors also disentangle the mechanisms through which labor market rigidity operates.

They find that minimum wages and mandatory benefits do not hurt growth. But the relative size of organized labor (in government and elsewhere) appears to matter.

Labor market rigidity seems to be relevant more for political reasons than for economic reasons. The authors’ findings suggest that not enough attention has been paid to vocal groups (urban, middle-class groups) that stand to lose from economic reform. The implications of the findings for policymakers: There should be less focus on deregulating the labor market and more on defusing the opposition of (vocal) losers.

The results are robust to changes in measurement, controls, and sample and do not suffer from self-selection bias.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to understand the impact of labor market policies and institutions on economic performance. The study was funded by the Bank’s Research Support
2522. Trade in International Maritime Services: How Much Does Policy Matter?

Carsten Fink, Aaditya Mattoo, and Ileana Cristina Neagu
(January 2001)

Trade liberalization and the breakup of private carrier agreements could reduce average liner transport prices by a third and cut costs on goods carried to the United States alone by up to $3 billion.

Maritime transport costs significantly impede international trade. Fink, Mattoo, and Neagu examine why these costs are so high in some countries and quantify the importance of two explanations: restrictive trade policies and private anti-competitive practices. Both matter, they find, but private anti-competitive practices have the greater impact.

Trade liberalization and the breakup of private carrier agreements would lead to a reduction in average liner transport prices of a third and cost savings of up to $3 billion on goods carried to the United States alone.

The policy implications are clear: not only should government policy be further liberalized, but there should be stronger international disciplines on restrictive business practices. Fink, Mattoo, and Neagu propose developing such disciplines in the current round of services negotiations at the World Trade Organization.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to assess the implications of liberalizing trade in services. This research is supported in part by the U.K. Department for International Development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at cfink@worldbank.org, amattoo@worldbank.org, or ineagu@worldbank.org. (33 pages)

2523. Can Duty Drawbacks Have a Protectionist Bias? Evidence from Mercosur

Olivier Cadot, Jaime de Melo, and Marcelo Olarreaga
(January 2001)

Evidence from Mercosur suggests that eliminating duty drawbacks for intra-regional exports would lead to increased counterlobbying against protection of intermediate products. Without the duty drawback, the common external tariff would have been an estimated 3.5 percentage points (25 percent) higher on average.

Duty drawback (or rebate) systems reduce or eliminate the duties paid on imported intermediate goods or raw materials used in the production of exports. When a firm imports an intermediate product for use in the production of an export good, tariff payments on the imported intermediate good are either waived (duty drawback) or returned to the producer once the final product is exported (rebate). These incentive systems are often justified on the grounds that they tend to correct the anti-trade bias imposed by high tariff levels.

The problem with this line of reasoning is that it assumes that tariffs are predetermined policy variables; if they were, the easiest way to reduce their anti-trade bias would be to eliminate them. But this is rarely done because existing levels of protection correspond to a political economy equilibrium difficult to modify in the presence of lobbying pressures.

Cadot, de Melo, and Olarreaga show that in a political economy setting where tariffs and duty drawbacks are endogenously chosen through industry lobbying, full duty drawbacks are granted to exporters that use imported intermediate goods in their production. This in turn decreases their incentives to counterlobby against high tariffs on their inputs. Indeed, under a full duty drawback regime, tariffs on intermediate goods are irrelevant to exporters because they are fully rebated. In equilibrium, higher tariffs will be observed on these goods.

Creating a regional trading bloc alters the incentives by eliminating duty drawbacks on intraregional exports, which leads to lower tariffs for goods that intraregional exporters use as inputs.

Evidence from Mercosur suggests that eliminating duty drawbacks for intraregional exports would lead to increased counterlobbying against protection of intermediate products. Cadot, de Melo, and Olarreaga estimate that without this mechanism, the common external tariff would have been 3.5 percentage points (25 percent) higher on average.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to study the political economy of trade policy. The research was funded by the Bank's Research Support Budget under the research project "The Anti-export Bias of Duty Drawbacks." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at olivier.cadot@hec.unil.ch, jdemelo@ibm.unige.ch, or molarreaga@worldbank.org. (33 pages)

2524. Racing to the Bottom? Foreign Investment and Air Pollution in Developing Countries

David Wheeler
(January 2001)

Critics of free trade have raised the specter of a "race to the bottom," in which environmental standards collapse because polluters threaten to relocate to "pollution havens" in the developing world. The flaw in the race-to-the-bottom model is that its basic assumptions misrepresent the political economy of pollution control in developing countries.

Critics of free trade have raised the specter of a "race to the bottom," in which en-
vironmental standards collapse because polluters threaten to relocate to “pollution havens” in the developing world. Proponents of this view advocate high, globally uniform standards enforced by punitive trade measures that neutralize the cost advantage of would-be pollution havens.

To test the race-to-the-bottom model, Wheeler analyzes recent air quality trends in the United States and in Brazil, China, and Mexico, the three largest recipients of foreign investment in the developing world.

The evidence clearly contradicts the model’s central prediction. The most dangerous form of air pollution—suspended particulate matter—has actually declined in major cities in all four countries during the era of globalization.

Citing recent research, Wheeler argues that the race-to-the-bottom model is flawed because its basic assumptions misrepresent the political economy of pollution control in developing countries.

He proposes a more realistic model, in which low-income societies serve their own long-run interests by reducing pollution. He concludes with recommendations for international assistance measures that can improve environmental quality without counterproductive enforcement of uniform standards and trade sanctions.

This paper—a product of Infrastructure and Environment, Development Research Group—is part of a larger effort in the group to study the economics of pollution control in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact David Wheeler, room MC2-529, telephone 202-473-3401, fax 202-522-3230, email address dwheeler1@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. (24 pages)

**2525. Measuring Education Inequality: Gini Coefficients of Education**

Vinod Thomas, Yan Wang, and Xibo Fan
(January 2001)

*Equal access to education is a basic human right. But in many countries gaps in education between various groups are staggering.*

Thomas, Wang, and Fan use a Gini index to measure inequality in educational attainment. They present two methods (direct and indirect) for calculating an education Gini index and generate a quintessential data set on education Gini indexes for the over-15 population in 85 countries (1960–90). Preliminary empirical analysis suggests that:

- Inequality in education in most of the countries declined over the three decades, with a few exceptions.
- Inequality in education as measured by the education Gini index is negatively associated with average years of schooling, implying that countries with higher educational attainment are more likely to achieve equality in education than those with lower attainment.
- A clear pattern of an education Kuznets curve exists if the standard deviation of education is used.
- Gender gaps are clearly related to education inequality, and over time, the association between gender gaps and inequality becomes stronger.
- Increases in per capita GDP (adjusted for purchasing power parity) seem to be negatively associated with education inequality and positively related to the labor force’s average years of schooling, after controlling for initial income levels.

This paper—a joint product of the Office of the Vice President and the Economic Policy and Poverty Reduction Division, World Bank Institute—is an extension of the paper “Measuring Educational Inequality: Education Gini Index from 1960 to 1990” (Vinod Thomas, Yan Wang, and Xibo Fan, World Bank, Washington, DC). This study was funded by the Bank’s Research Support Budget under the research project “The Quality of Growth” (RPO 692-02). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Datoloum, room J4-258, telephone 202-473-6334, fax 202-676-9810, email address adatoloum@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at vthomas@worldbank.org, ywang2@worldbank.org, or xfan@worldbank.org. (37 pages)

**2526. Linking Participatory Poverty Assessments to Policy and Policymaking: Experience from Vietnam**

Carrie Turk
(January 2001)

*Much of the qualitative research about poverty in Vietnam over the past 8 to 10 years was overlooked by policymakers, who tended to view it as “unscientific” and lacking in credibility. So why did the four participatory poverty assessments implemented in 1999 grab their attention?*

The year 1999 was important for poverty-related research and policy development in Vietnam. The General Statistics Office had collected household data in the second Vietnam Living Standards Survey in 1998 and made it available for analysis in 1999. And four participatory poverty assessments (PPAs) were implemented during 1999.

Turk’s case study describes how government agencies, donors, and nongovernmental organizations collaborated in implementing the PPAs. The considerable amount of qualitative information about poverty produced in Vietnam over the past 8 to 10 years has rarely grabbed the attention of policymakers, who tend to view such information as “unscientific” and lacking in credibility. By contrast, the PPAs implemented in 1999 have been widely circulated, used, and quoted.

What was different about those PPAs that led their findings to be brought into local and national policy debates, as previous findings had not been?

Working partnerships among donors and nongovernmental organizations were important and helped build consensus on the research findings, but more crucial was the active engagement of government partners from the very early stages. Establishing a Poverty Working Group provided a structure for implementing the PPAs, for feeding analysis through to the poverty assessment, and for keeping government fully involved. The Poverty Working Group now supports the government in drafting its poverty reduction strategy.

Strong World Bank leadership, financial support from the U.K. Department for International Development, the technical expertise and commitment of the PPA partner agencies, and the availability of recent high-quality household survey data...
played an important part in ensuring the
PPAs' credibility.

This paper—a product of the Hanoi Country Office, East Asia and Pacific Region—is part of a larger effort in the region to encourage greater participation by poor households in policymaking and programming for poverty reduction. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Herawaty Sutrisna, room MC9-242, telephone 202-458-8032, fax 202-522-1556, email address hsutrisna@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at cturk@worldbank.org. (25 pages)

2527. Is Inequality Bad for Business? A Nonlinear Microeconomic Model of Wealth Effects on Self-Employment

Alice Mesnard and Martin Ravallion (January 2001)

Data on occupational choice among return migrants in Tunisia reveal that higher inequality of wealth reduces the level of new business activity. The effect is not large, however. Even dramatic redistributions of wealth would not provide much stimulus to entrepreneurship.

It is widely assumed that pervasive credit market failures mean that a person's current wealth is critical to whether or not that person takes up opportunities to start a new business.

Mesnard and Ravallion show that inequality in wealth can be either good or bad for the level of entrepreneurship in an economy, depending on how diminishing returns to capital interact with borrowing constraints at the microeconomic level.

They use nonparametric regression methods to study wealth effects on business start-ups among migrants returning to their home country, Tunisia. They include controls for heterogeneity, with specification tests for the nonseparable effects with wealth and for selection bias.

There is no evidence of increasing returns at low wealth.

The aggregate number of business start-ups is an increasing function of aggregate wealth but a decreasing function of wealth inequality.

In other words, at any given mean, the higher the initial inequality of wealth, the lower the rate of new business start-ups, through the existence of diminishing returns to capital given liquidity constraints. In this sense, the results suggest that inequality is bad for business—but the size of this effect is small.

The findings do not constitute a case for public redistribution of wealth as a means of stimulating business activity. There should probably be more research on interventions to reduce liquidity constraints.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to understand how the distribution of wealth in an economy influences macroeconomic activity and occupational structure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Martin Ravallion may be contacted at mravallion@worldbank.org. (28 pages)

2528. Poverty and Public Celebrations in Rural India

Vijayendra Rao (January 2001)

Very poor households spend large sums on celebrations. To the extent that these expenditures are central to maintaining the networks essential for social relationships and coping with poverty, these are reasonable expenses. To the extent that they are status competitions, they may merely increase conspicuous consumption.

Rao examines the paradox of very poor households spending large sums on celebrations. Using qualitative and quantitative data from South India, Rao demonstrates that spending on weddings and festivals can be explained by integrating an anthropological understanding of how identity is shaped in Indian society with an economic analysis of decisionmaking under conditions of extreme poverty and risk.

Rao argues that publicly observable celebrations have two functions: they provide a space for maintaining social reputations and webs of obligation, and they serve as arenas for status-making competitions.

The first role is central to maintaining the networks essential for social relationships and coping with poverty. The second is a correlate of mobility that may become more prevalent as incomes rise.

Development policies that favor individual over collective action reduce the incentives for the networking function and increase the incentives for status-enhancing functions—that reducing social cohesion and increasing conspicuous consumption.

Market-driven improvements in urban employment, for example, could reduce a family's dependence on its traditional networks, could reduce incentives to maintain these networks, and could reduce social cohesion within a village and thus its capacity for collective action. In contrast, microfinance programs and social funds try to retain and even build a community's capacity for collective action.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to study the relationship between poverty and collective action. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at vravallion@worldbank.org. (25 pages)

2529. Mutual Fund Investment in Emerging Markets: An Overview

Graciela Kaminsky, Richard Lyons, and Sergio Schmukler (January 2001)

How do mutual funds behave when they invest in emerging economies? For one thing, mutual funds' flows are not stable. Withdrawals from emerging markets during recent crises were large, which squares with existing evidence of financial contagion.

International mutual funds are one of the main channels for capital flows to emerging economies. Although mutual funds
have become important contributors to financial market integration, little is known about their investment allocation and strategies. Kaminsky, Lyons, and Schmukler provide an overview of mutual fund activity in emerging markets.

First, they describe international mutual funds' relative size, asset allocation, and country allocation.

Second, they focus on fund behavior during crises, by analyzing data at the level of both investors and fund managers.

Among their findings: Equity investment in emerging markets has grown rapidly in the 1990s, much of it flowing through mutual funds. Collectively, these funds hold a sizable share of market capitalization in emerging economies. Asian and Latin American funds achieved the fastest growth, but are smaller than domestic U.S. funds and world funds.

When investing abroad, U.S. mutual funds invest more in equity than in bonds. World funds invest mainly in developed nations (Canada, Europe, Japan, and the United States). Ten percent of their investment is in Asia and Latin America. Mutual funds usually invest in a few countries within each region.

Mutual fund investment was very responsive to the crises of the 1990s. Withdrawals from emerging markets during recent crises were large, which squares with existing evidence of financial contagion.

Investments in Asian and Latin American mutual funds are volatile. Because redemptions and injections are large relative to total funds under management, funds' flows are not stable. The cash held by managers during injections and redemptions does not fluctuate significantly, so investors' actions are typically reflected in emerging market inflows and outflows.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to understand the operation of financial markets and the effects of financial globalization. The study was funded by the Bank's Research Support Budget under the research project “Mutual Funds in Emerging Markets.” Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room MC3-347, telephone 202-473-7471, fax 202-522-3518, email address kkshine@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at graciela@gwu.edu, lyons@haas.berkeley.edu, or sschmukler@worldbank.org. (37 pages)

2530. The Role of Nongovernmental Organizations in Primary Education: A Study of Six NGOs in India

Shanti Jagannathan
(January 2001)

Nongovernmental organizations working in education in India are professional resource centers and innovators able to reach children who are educationally disadvantaged. The Indian government could improve the effectiveness of primary education by increasing its collaboration with such organizations.

NGOs extend education to underprivileged children in India and develop innovations that improve the quality of primary education. In this study of six NGOs working with school-age children in India, Jagannathan shows the potential benefits of a government-NGO alliance to achieve universal primary education. The author emphasizes several areas in which collaboration can be particularly fruitful.

Targeting underserved children

- The government could support the efforts of NGOs to bring out-of-school children into schools through timely supply of teachers, classroom space, and other resources. Targeted action is needed to reach different types of out-of-school children—those who work, those who live in slums, those on the street, those who are members of tribes or of migrant families, and those who live in places without schools.
- To encourage young, first-generation learners to stay in school requires a supportive and nurturing environment. To help make learning interesting and worthwhile for such children, teachers in government schools could receive special training in new methods developed by NGOs.

Enhancing quality

- Improving the quality of education requires working closely with key agents of change, such as teachers, school heads, school management committees, and village education committees.
- To develop a cadre of trainers for primary school teachers, teacher training institutes would do well to evaluate and learn from NGO models for teacher training.

- Teachers need a range of knowledge and skills to teach underprivileged children effectively. Here again, NGO models would be a useful tool for teacher training institutes.
- NGOs and the government could collaborate in developing appropriate and flexible learning assessment tools, in line with innovative teaching and learning methods.
- But without safeguards, large-scale replication by the government of such NGO innovations as the "alternative school" and the "voluntary teacher" could lower the quality of education.

Government-NGO links

- The government and NGOs will need to share a common vision on how to achieve universal primary education if India is to reach this goal.
- NGOs can be credible partners with the government in shaping policies for primary education. This entails collaboration rather than parallel initiatives by NGOs.
- To stay at the cutting edge in education, NGOs should continually evaluate and refine their models.
- If NGOs are to play a policy role in education, two areas that have been neglected will need to be addressed—NGO capacity building and organizational development.

This paper—a product of the Robert McNamara Fellowships Program, World Bank Institute—is part of a larger effort in the Bank to contribute toward the development of knowledge and human capital. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Shobha Kumar, room J4-053, telephone 202-455-7021, fax 202-522-4036, email address skumarl@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at shanti.jagannathan@delind.cec.eu.int. (54 pages)

2531. Growth Implosions, Debt Explosions, and My Aunt Marilyn: Do Growth Slowdowns Cause Public Debt Crises?

William Easterly
(January 2001)

The worldwide slowdown in growth after 1975 played an important role in the debt crisis of the middle-income countries in the 1980s, the crisis of the heavily indebted
poor countries in the 1980s and 1990s, and the increased public debt burden of the industrial countries in the 1980s and 1990s.

“Never take a sleeping pill and a laxative on the same night.”
—Saying passed along by author’s Aunt Marilyn

The worldwide slowdown in growth after 1975 was a major negative fiscal shock. Slower growth lowers the present value of tax revenues and primary surpluses and thus makes a given level of debt more burdensome. Most countries failed to adjust to the negative fiscal consequences of the growth implosion, so public-debt-to-GDP ratios exploded.

The growth slowdown therefore played an important role in the debt crisis of the middle-income countries in the 1980s, the crisis of the heavily indebted poor countries (HIPCs) in the 1980s and 1990s, and the increased public debt burden of the industrial countries in the 1980s and 1990s.

Moreover, the HIPC’s debt problems were worse than elsewhere because, as a result of poor policies, these countries grew more slowly after 1975 than other low-income countries.

Econometric tests and fiscal solvency accounting confirm the important role of growth in debt crises.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study economic growth and fiscal sustainability. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-3518, email address klabrie@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at weasterly@worldbank.org. (35 pages)

2532. Market Presence, Contestability, and the Terms-of-Trade Effects of Regional Integration

Maurice Schiff and Won Chang
(January 2001)

How firms react to a given shock may depend on the degree to which rivals are present and on whether potentially viable entrants to that market exist. A preferred supplier market presence and threat of entry lessen a nonmember country’s price reaction to most-favored-nation trade liberalization and increase its price reaction to preferential trade liberalization.

How firms react to a given shock may depend on the degree to which rivals are present and on whether potentially viable entrants to that market exist. Schiff and Chang try to measure these effects internationally by examining the price behavior of the United States in Brazil’s market when MERCOSUR trade liberalization and most-favored-nation (MFN) trade liberalization take place.

Using detailed panel data on trade and tariff rates, they find that both the market presence of a preferred supplier and expected entry lessen the U.S. price reaction to MFN trade liberalization and increase the U.S. price reaction to preferential trade liberalization. Argentina’s presence in Brazil’s market results in a smaller U.S. price response to Brazil’s MFN tariff change and in a larger response to a preferential tariff change.

More surprisingly, the quantitative effects of market presence and expected entry (contestability) are not significantly different from each other. Contestability plays no significant role when Argentina is present in Brazil’s market. When Argentina is absent from Brazil’s market, contestability lessens the U.S. response to changes in the MFN tariff and increases it in response to changes in the preferential tariff.

It follows from these results that presence in, as well as threat of entry into, partners’ markets implies lower optimal external tariffs and suggests that regional agreements can have pro-competitive effects in the presence of contestability.

The authors also examine the hypothesis of “symmetry” between the effect of tariffs and that of exchange rates.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to understand the effects of regional integration. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address itabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Maurice Schiff may be contacted at mschiff@worldbank.org. (26 pages)

2533. How Much War Will We See? Estimating the Incidence of Civil War in 161 Countries

Ibrahim Elbadawi and Nicholas Sambanis
(January 2001)

As important as knowing how wars start and end is knowing how much war we are likely to observe in any given period. In strategies for preventing civil war, political liberalization should be a higher priority than economic development, but the best possible results would combine political reform, economic diversification, and poverty reduction.

Quantitative studies of civil war have focused either on war’s onset or its termination, producing important insights into these end points of the process. Elbadawi and Sambanis complement these studies by studying how much war we are likely to observe in any given period.

To answer this question, they combine recent advances in the theory of civil war initiation and duration and develop the concept of *war incidence*, denoting the probability of observing an event of civil war in any given period. They test theories of war initiation and duration against this new concept using a five-year panel data set for 161 countries. Their analysis of the incidence of war corroborates most of the results of earlier studies, enriching those results by highlighting the significance of sociopolitical variables as determinants of the risk of civil war. Their findings:

- Steps toward advancing political liberalization or economic development reduce the risk of civil war, whatever the degree of ethnolinguistic fractionalization in a society.
- This effect is amplified in polarized societies. The probability of civil war is lower in very homogeneous societies and (less so) in more diverse societies.
- In polarized societies the risk of civil war can be reduced by political rather than economic liberalization. At high levels of political freedom, ethnic diversity—even polarization—has a minimal impact on the risk of civil war.
- Economic diversification that would reduce a country’s reliance on primary exports would also reduce the risk of civil wars, especially in polarized societies.
• In strategies for preventing civil war, political liberalization should be a higher priority than economic development, but the best possible results would combine political reform, economic diversification, and poverty reduction.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to study the economics of violence. The study was funded by the Bank’s Research Support Budget under the research project “The Economics of Political and Criminal Violence” (RPO 682-99). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at ilebadawi@worldbank.org or nsambanis@worldbank.org. (32 pages)

2534. Indigenous Ethnicity and Entrepreneurial Success in Africa: Some Evidence from Ethiopia

Taye Mengistae
(January 2001)

Manufacturing businesses owned by an indigenous ethnic group, the Gurage, typically perform better than those of members of any other (major or minority) groups in Ethiopia. Gurage-owned businesses are normally larger and grow faster. Yet Gurage business owners typically are less educated than their counterparts in other groups and have less formal vocational training.

Researchers have recently been asking why Asian and European minorities in Africa seem to be more successful in business than are people of indigenous ethnicity. Mengistae draws attention to the significant disparity in business ownership and performance that seems to exist among African ethnic groups as well.

After analyzing a random selection of small to medium-size manufacturers in Ethiopia, he finds that establishments owned by an indigenous minority ethnic group, the Gurage, typically perform better than those owned by other (major or minority) groups.

Other things being equal, Gurage-owned businesses are normally larger, partly because they are bigger as start-ups and partly because they grow faster. And yet Gurage business owners are the least educated ethnic group in the sample. Because the size and growth rate of a business also increases with the entrepreneur’s education, the performance of other businesses would have been even worse if their owners hadn’t been better educated than the Gurage. Indeed, dropping education variables from the size determination equation drastically reduces the estimated advantage of Gurage-run businesses.

This suggests that the observed effect of ethnicity could be indicative of intergroup differences in unmeasured ability. More important, it means that whether or not the effect will persist in the long run will depend on the trend in interethnic differences in investment in education.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to investigate the microeconomic foundation of the association between ethnic diversity and the poor growth performance that seems to characterize Sub-Saharan Africa. The study was funded by the Bank’s Research Support Budget under the research project “The Economics of Ethnicity and Entrepreneurship in Africa.” Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at tmengistae@worldbank.org. (26 pages)

2535. Trade Policy Reform in the East Asian Transition Economies

Will Martin
(January 2001)

There has been no single magic formula for the success of the East Asian transition economies (Cambodia, China, Lao People’s Democratic Republic, and Vietnam), whose performance in export and income growth has been strikingly better than that of transition economies in Eastern Europe and the former Soviet Union. Most of the trade policy problems that remain in these East Asian economies appear to be problems more of development than of transition.

The performance of the East Asian transition economies in export and income growth has been strikingly better than that of countries in Eastern Europe and the former Soviet Union. The East Asian economies have achieved remarkably high growth rates in outputs and exports without the often large declines in output and exports observed in Eastern Europe and the former Soviet Union.

East Asian reformers have successfully made many of the parallel changes needed in both domestic and trade policies to secure export and income growth. (It makes no sense, for example, to introduce the trade policy instruments of a market economy when the domestic economy is still based on central planning.) But there has been no single magic formula for their success. Martin discusses what each of the economies (Cambodia, China, Lao People’s Democratic Republic, and Vietnam) has done.

China experienced an extended transition process; the transition was much shorter in other East Asian transition economies—especially Cambodia.

Several of the East Asian transition economies used accession to a regional arrangement as part of their reform strategy. China focused mainly on unilateral reforms and, more recently, reforms associated with its accession to the World Trade Organization.

Most have made extensive use of policies to attract foreign investment and to mitigate the burden of protection on manufacturing exporters.

Most of the remaining trade policy problems, although difficult, appear to be problems more of development than of transition.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to understand the role of trade reform in successful development and poverty alleviation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address itabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at wmartin1@worldbank.org. (37 pages)
Malaysian authorities implemented controls on international capital flows late in the Asian crisis, when most of the portfolio outflows had already occurred. The exchange rate had depreciated sharply and was fixed at an undervalued level, making further capital flight unlikely.

The turnaround in the stock market, the return of positive GDP growth, the building of reserves, and the relaxation of interest rates all coincided with the imposition of controls. But the same changes took place in other crisis countries that did not follow the same control policies.

However, the controls provided insurance against the consequences of possible further disturbances. They created a breathing space for making needed reforms, and the authorities made good use of this time, stabilizing the financial system and pushing ahead with regulatory and supervisory reform for the financial sector and capital markets— a prerequisite for fully liberalizing the capital account.

Malaysia incurred a cost: an additional 300 basis point spread paid on floating rate debt for a period after the controls were instituted. But the exit strategy has so far not resulted in lasting flight of portfolio capital. Foreign direct investment remains below precrisis levels, but it is not possible at this stage to attribute this to the effect of controls.

On balance, it appears that both the benefits from and the costs of the controls have been modest.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region—is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedwig Abbey, room MC8-150, telephone 202-458-0612, fax 202-522-1557, email address habbey@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at rhood@worldbank.org. (17 pages)

Liberalization of the natural gas industry is complex because the sector combines activities with natural monopoly characteristics with activities that are potentially competitive. The challenges are compounded when the State opts to retain vertically integrated monopolies in otherwise contestable segments of the industry. Regulatory issues associated with partial liberalization of natural gas markets are analyzed through a case study of Mexico.

The natural gas industry combines activities with natural monopoly characteristics with those that are potentially competitive. Pipeline transport and distribution, which have natural monopoly characteristics, require regulation of price and nonprice behavior. Production is a contestable activity, but in a few countries (including Mexico) it remains a state monopoly. Gas marketing is also contestable, but the presence of a dominant, upstream, vertically integrated incumbent may pose significant barriers to entry. Market architecture decisions—such as horizontal structure, regional development, and the degree of vertical integration—are also crucial.

Rosellón and Halpern report that Mexico has undertaken structural reform in the energy sector more slowly than many other countries, but it has introduced changes to attract private investment in natural gas transport and distribution. These changes were a response to the rapid growth in demand for natural gas (about 10 percent a year) in Mexico, which was in turn a response to economic development and the enforcement of environmental regulations. The new regulatory framework provides incentives for firms to invest and operate efficiently and to bear much of the risk associated with new projects. It also protects captive consumers and improves general economic welfare.

The continued vertical integration of the state-owned company Pemex and its statutory monopoly in domestic production posed a challenge to regulators. Their response in liberalizing trade, setting first-hand sales prices, and regulating natural gas distribution makes the Mexican case an interesting example of regulatory design.

As the first phase of investment mobilization and competition for the market in Mexican distribution projects concludes, remaining challenges include consistently and transparently enforcing regulations, coordinating tasks among government agencies, and ensuring expansion of gas transport services and domestic production.

A key challenge in the near term will be fostering competition in the market. In strengthening the role of market forces, one issue is Pemex’s discretionary discounts on domestic gas and access to transport services, made possible by its monopoly in domestic production and marketing activities and its overwhelming dominance in transport. The main instrument available to the regulator is prescribing Pemex contract pricing, but more durable and tractable instruments should be considered.

This paper—a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Katia Nemes, room 15-178, telephone 202-458-5440, fax 202-676-1821, email address knemes1@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at jrosellon@dis1.cide.mx or jhalpern@worldbank.org. (37 pages)
exclusive concessions for defined geographic zones. Designing such franchises in a megacity poses a challenge in striking a balance between economies of scale (few distributors) and information disclosure for regulation (more distributors). Approaches to making these and related tradeoffs are analyzed through a case study of Mexico City.

Unlike in other privatizations in Mexico, in the tender for natural gas distribution franchises the government stipulated only the minimum number of consumers to be served at the end of the first five years. Concessions were awarded to the firms that offered the lowest initial average revenue. Where applicable, the government also set the value of preexisting distribution facilities to be acquired by the winning bidder. These features, together with the specifics of price and access regulation and the zone's technical characteristics, determine the allocation of risks and method of financing for distribution activities.

Rosellón and Halpern assess the subdivision of the Mexico City metropolitan area into natural gas distribution franchise zones. In a megacity with extensive, densely populated areas, more distribution franchise zones mean more information for regulating regional monopolies; fewer zones permit greater economies of scale. The optimal number of distribution franchises should reach an equilibrium between adequate information (to permit the regulator to optimize social welfare) and unit cost minimization.

Large distribution franchise zones— with an adequate mix of consumers— reduce the financial risk of operating distribution systems. If the number of distribution franchises in a distribution area declines, financial risks may also decline. As the number of zones increases, so does the financial impact of losing large industrial consumers. If every distributor had only a few anchor consumers, demand in a franchise zone might drop abruptly if one of the anchor consumers went bankrupt or exited the market for other reasons.

The authors analyze the empirical basis for the demarcation of distribution franchise zones in the Mexico City metropolitan area and compare outcomes with initial projections.

This paper—a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Katia Nemes, room 15-178, telephone 202-473-6540, fax 202-676-1821, email address knemes1@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at jrosellon@disi.cide.mx or jhalpern@worldbank.org. (25 pages)

2539. Disorganization or Self-Organization? The Emergence of Business Associations in a Transition Economy
Francesca Recanatini and Randi Ryterman (January 2001)

During the period of widespread disorganization experienced during the former Soviet Union's transition to a market economy, business associations emerged spontaneously to share information about an uncertain environment. Joining a business or trade association helped firms reduce transaction costs by providing them with access to information about the location and reliability of potential trading partners. Disorganization may provide the proper conditions for the development of certain nonmarket institutions, which in turn affect firms' behavior in the face of market failures.

The transition from plan to market provides a rare opportunity for insight into the endogenous development of economic institutions. Economic activities under the Soviet regime were coordinated by a central authority. Soviet coordinating mechanisms were disrupted during the transition period, leading to an increase in firms' transaction costs.

Blanchard and Kremer (1997), among others, emphasize the negative impact of this "disorganization" on output behavior at the beginning of the transition. Although their argument is correct, Recanatini and Ryterman believe that their work and similar analyses stop short of fully characterizing the transition by concentrating only on reform's disruptive effects.

Recanatini and Ryterman start where the earlier work ends, examining the business associations that emerged spontaneously in response to the transition's challenges. They provide empirical evidence that institutions that help coordinate production and trade emerge spontaneously in a widely "disorganized" environment.

Using a largely unexplored set of firm-level data, they document the emergence of business associations at the beginning of the transition and provide evidence that these new coordinating institutions mitigated the initial decline in output. Building on the growing literature on complexity and transaction costs, they interpret the emergence of these informal institutions as the firms' rational attempt to coordinate activities in a decentralized economy.

In other words, the creation of complex organizations such as associations is the spontaneous result of a natural tendency in every system to create order at the edge of chaos. Business associations are more likely to emerge where there is disorder, to provide their members with stability, coordination, and the information needed to improve performance.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to analyze the impact of the transition process on institutional development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Malia Johnson, room 14-208, telephone 202-473-6920, fax 202-522-2751, email address mdjohnson@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at frecanatini@worldbank.org or ryterman@worldbank.org. (36 pages)

2540. Recapitalizing Banking Systems: Implications for Incentives and Fiscal and Monetary Policy
Patrick Honohan (February 2001)

After a banking crisis, when authors have decided to use budgetary funds to help restructure a large failed bank or banking system, apparent conflicts between various goals (involving incentives for the new bank management, for the government's budget, and for monetary
stability) can be resolved by suitably designing financial instruments and appropriately allocating responsibility between different arms of government.

In the aftermath of a banking crisis, most attention is rightly focused on allocating losses, rebuilding properly managed institutions, and achieving debt recovery. But the authorities' decision to use budgetary funds to help restructure a large failed bank or banking system also has consequences for the incentive structure for the new bank management, for the government's budget, and for monetary stability. These issues tend to be lumped together, but each should be dealt with in a distinctive manner.

Honohan points out, among other things, how apparent conflicts between the goals in each of these areas can be resolved by suitably designing financial instruments and appropriately allocating responsibility between different arms of government.

First the government must have a coherent medium-term fiscal strategy that determines broadly how the costs of the crisis will be absorbed. Then the failed bank must be securely reestablished with enough capital and franchise value to move forward as a normal bank. This will typically entail new financial instruments involving the government on both the asset and the liability sides of the bank's balance sheet. The bank should not be left with mismatches of maturity, currency, or repricing. Assets that are injected should be bankable and preferably negotiable. The liability structure should give bank insiders the incentive to manage the bank prudently.

Financial instruments can be complex and sophisticated but only if the government has the credibility to warrant market confidence that it will deliver on the contracts rather than trying to use its lawmaking powers to renege. Innovative use of segregating sinking funds and "Brady"-type bonds can help where government credibility is weak.

Restructuring the bank will alter the size, maturity, and other characteristics of the government's debt. These characteristics should be optimized separately and with the market as a whole, not just the affected banks.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the role of gender in the context of the household, institutions, and society. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address aysaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at phonoohan@worldbank.org. (23 pages plus 20 pages of annexes)

2541. Household Schooling Decisions in Rural Pakistan

Yasuyuki Sawada and Michael Lokshin
(February 2001)

An analysis of a field survey to investigate household decisions about schooling in rural Pakistan suggests that hiring more female teachers and providing more primary schools for girls closer to villages will improve the chances of rural Pakistani girls entering school and staying enrolled.

Human capital investments in Pakistan are performing poorly: school enrollment is low, the high school dropout rate is high, and there is a definite gender gap in education. Sawada and Lokshin conducted field surveys in 25 Pakistani villages and integrated their field observations, economic theory, and econometric analysis to investigate the sequential nature of education decisions—because current outcomes depend not only on current decisions but also on past decisions.

Their full-information maximum likelihood estimate of the sequential schooling decision model reveals important dynamics affecting the gender gap in education, the effects of transitory income and wealth, and intrahousehold resource allocation patterns. They find, among other things, that in rural Pakistan:

- There is a high educational retention rate, conditional on school entry, and that male and female schooling progression rates become comparable at higher levels of education.
- A household's human and physical assets and changes in its income significantly affect children's education patterns. Birth order affects siblings' competition for resources.
- Serious supply-side constraints on village girls' primary education suggest the importance of supply-side policy interventions in Pakistan's rural primary education—for example, providing more girls' primary schools close to villages and employing more female teachers.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to study the role of gender in the context of the household, institutions, and society. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-632, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at sawada@stanfordalumni.org or mlokshin@worldbank.org. (31 pages)

2542. Checks and Balances, Private Information, and the Credibility of Monetary Commitments

Philip Keefer and David Stasavage
(February 2001)

In economically volatile conditions in which it is more difficult for the public to distinguish inflation deliberately generated by government from inflation created by unanticipated economic shocks, the anti-inflationary effect of central bank independence will be unchanged but the effectiveness of exchange rate pegs will be significantly improved.

Keefer and Stasavage develop and test several new hypotheses about the anti-inflationary effect of central bank independence and exchange rate pegs in the context of different institutions and different degrees of citizen information about government policies.

Theory provides strong reason to believe that while central bank independence will prove more effective as a commitment mechanism in countries where multiple players in government have veto power (checks and balances), the number of veto players will have no effect on the credibility of exchange rate pegs. Conversely, Keefer and Stasavage argue that central bank independence does not solve problems of commitment that arise when citizens are imperfectly informed about the contribution of government policy to inflation. Exchange rate pegs, however, mitigate these problems.
The authors present extensive evidence from cross-country tests using newly developed data that provide strong support for their propositions.

This paper—a product of Regulation and Competition Policy, Development Research Group—is part of a larger effort in the group to understand the institutional conditions for policy reform and success. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address psintimasboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at pkeefer@worldbank.org or d.stasavage@lse.ac.uk. (40 pages)

2543. When Do Special Interests Run Rampant? Disentangling the Role in Banking Crises of Elections, Incomplete Information, and Checks and Balances

Philip Keefer
(February 2001)

Government responses to banking crises are less likely to favor special interest groups when elections are near, voters are better informed about the costs of inefficient government decisions, and governments have multiple veto players.

Keefer investigates the political determinants of government decisions that benefit special interest groups—especially government decisions to deal with banking crises. He finds that the better informed the voters, the more proximate elections, and the larger the number of political veto players (conditional on the costs to voters of relevant policy decisions), the smaller the government's fiscal transfers are to the financial sector and the less likely the government is to exercise forbearance in dealing with insolvent financial institutions.

The results suggest that policies that might be appropriate for mitigating banking crises in the United States might be less effective in settings where voters are less informed, where elections are less competitive, and where there are fewer veto players, because in these settings checks and balances are missing. These policies include:

- Disseminating information about the costs of inefficient government decisions.
- Improving the structure of legislative oversight.
- Intervening early in insolvent banks.

Keefer concludes that the more veto players there are, the less likely policies are to favor special interest groups (contrary to previous views). Moreover, the closer the elections, the less likely policies are to favor special interest groups.

This paper—a product of Regulation and Competition Policy, Development Research Group—is part of a larger effort in the group to explore the policy consequences of political and social institutions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address psintimasboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at pkeefer@worldbank.org. (47 pages)

2544. The Uniqueness of Short-Term Collateralization

Leora Kapper
(February 2001)

A secured letter-of-credit loan allows a lender to make larger loans than would be permissible on an unsecured basis, maximizing a risky borrower's investment capital. Empirical evidence shows that secured letters of credit are used by borrowers who are informationally opaque and have higher observable risk. Such borrowers also have fewer growth opportunities and are less likely to pay dividends.

Kapper finds evidence that lines of credit secured by accounts receivable are associated with business borrowers with a high risk of default. While an unsecured short-term loan is repaid from the borrower's future cash flow, a loan secured by accounts receivable (a unique form of "inside" collateral) is repaid from previously generated and observed sales (the borrower's trade credit terms to its customers). Consequently, lenders that secure accounts receivable are most concerned with the credit risk of the borrower's customers and the borrower's ability to continue to generate new sales.

A stylized theoretical model demonstrates that the value of a secured line-of-credit loan in minimizing contracting costs is associated with the borrower's business risk and the quality of the borrower's customers. Empirical tests on a sample of publicly traded U.S. manufacturing firms find that firms with secured line of credit loans are observably riskier and have fewer expected growth opportunities.

Kapper's findings suggest that observably riskier borrowers can borrow more on a secured than on an unsecured basis. The results highlight the important role of secured letters of credit in providing liquidity to risky, credit-constrained firms that might not have access to external financing through other channels.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study financing for small and medium-size enterprises. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address aayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at lkkapper@worldbank.org. (37 pages)

2545. Financing the Future: Infrastructure Needs in Latin America, 2000-05

Marianne Fay
(February 2001)

A model developed to predict demand for infrastructure in Latin America performs reasonably well for power and telecommunications—and less well for water and sanitation (for which data are scarce) and transport infrastructure (which is less closely related to per capita income). The model projects a doubling of telephone mainlines per capita, a steady increase in power infrastructure, steady growth in road infrastructure, and small increases in water and sanitation coverage.
To assess five-year demand for infrastructure investment in Latin America and the Caribbean, and the private sector's role in meeting this demand, Fay developed a model to predict future demand for infrastructure—defined as what consumers and producers would ask for, given their income and level of economic activity.

Overall projections over the next five years:

- A doubling of telephone mainlines per capita.
- A steady increase in electricity generating capacity.
- Small increases in water and sanitation coverage.
- Steady expansion of road infrastructure, with rail transport becoming less important.

Investments of $57 billion annually for 2000–05 (roughly 2.6 percent of Latin America's GDP) are expected to be absorbed largely by electricity ($22 billion), roads ($18 billion), and telecommunications ($6 billion).

A surge in private financing of infrastructure in recent years (roughly $35 billion in 1998, excluding divestiture payments) has disproportionately favored telecommunications ($14 billion) and transport ($12 billion). Private investment exceeds predicted need for telecommunications (although the model did not include costs associated with the emergence of cellular phones), covers about half the demand for roads, and meets just a fraction of needs in power and water and sanitation—where there will be a shortfall in investments. Projections are likely to be on the low side because they cover the extension of networks rather than upgrading and covering new investments, not rehabilitation or maintenance.

This paper—a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to develop its knowledge of future client needs. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Adeline François, room I5-004, telephone 202-473-7841, fax 202-676-9594, email address afrancois@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mfay@worldbank.org. (25 pages)

2546. Gender Dimensions of Pension Reform in the Former Soviet Union

Paulette Castel and Louise Fox
(February 2001)

Under pension reforms in the former Soviet Union, unisex annuities benefit women more than men because of a major redistribution toward women. But they also penalize women more for shifting toward unpaid household work and may cause increased poverty among lone elderly women—especially in Kazakhstan, which has a high service requirement for the minimum pension and provides no compensation for time out to have children.

Castel and Fox analyze the gender implications of pension reform in Kazakhstan, the Kyrgyz Republic, Latvia, and Moldova. The new systems deliberately penalize early retirement and reward longer careers, so that with no change in behavior or policy, women’s pensions will be lower than men’s on average.

Still, the implicit financial returns for women remain higher on average than returns for men, because of women’s longer life expectancy and because of redistributory minimum pensions.

Overall, however, the net change in wealth resulting from the reforms will be larger on average for men than for women, because they will work longer and get a larger pension.

Women’s longer life expectancy means that women can expect to spend the last years of their lives alone. If their pensions are too low because of their work histories, poverty among elderly women may increase.

This paper—a joint product of the Gender Board; the Social Protection Team, Human Development Network; and the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the Bank to understand how the reforms and new institutions being put in place in Eastern European and Central Asian countries affect women’s lives and opportunities. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer E. Smith, room H4-353, telephone 202-458-7215, fax 202-522-2751, email address jsmith3@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at pcastel@worldbank.org or ifox@worldbank.org. (32 pages)

2547. The Design of Incentives for Health Care Providers in Developing Countries: Contracts, Competition, and Cost Control

Jeffrey S. Hammer and William G. Jack
(February 2001)

Whatever the theoretical attractiveness of certain policy options, the fact that public employees are people who make independent decisions about their careers and lifestyles can set bounds on how well government agencies can deliver promised services, such as universal health care, including in rural areas.

Hammer and Jack examine the design and limitations of incentives for health care providers to serve in rural areas in developing countries. Governments face two problems: it is costly to compensate well-trained urban physicians enough to relocate to rural areas, and it is difficult to ensure quality care when monitoring performance is costly or impossible.

The goal of providing universal primary health care has been hard to meet, in part because of the difficulty of staffing rural medical posts with conscientious caregivers. The problem is providing physicians with incentives at a reasonable cost. Governments are often unable to purchase medical services of adequate quality even from civil servants.

Using simple microeconomic models of contracts and competition, Hammer and Jack examine questions about:

- The design of rural service requirements and options for newly trained physicians.
- The impact of local competition on the desirable level of training for new doctors.
- The incentive power that can be reasonably expected from explicit contracts.

One problem a government faces is choosing how much training to give physicians it wants to send to rural areas. Training is costly, and a physician relocated to the countryside is outside the government's direct control. Should rural doctors face a ceiling on the prices they charge patients? Can it be enforced?

Hammer and Jack discuss factors to consider in determining how to pay rural medical workers but conclude that we
might have to set realistic bounds on our expectations about delivering certain kinds of services. If we can identify reasons why the best that can be expected is not particularly good, it might lead us to explore entirely different policy systems. Maybe it is too hard to run certain decentralized systems. Maybe we should focus on less ambitious but more readily achievable goals, such as providing basic infrastructure.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to analyze service delivery in the social sectors. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at jhammer@worldbank.org or wgg@georgetown.edu. (15 pages)

2548. International Provision of Trade Services, Trade, and Fragmentation

Alan V. Deardorff  
(February 2001)

By reducing the costs of such trade services as transport, insurance, and finance, liberalizing trade in services can generate benefits in the markets for every kind of trade they facilitate. It can also stimulate the fragmentation of production of both goods and services, thus increasing international trade and the gains from trade even further.

Deardorff examines the special role that trade liberalization in services industries can play in stimulating trade in both services and goods. International trade in goods requires inputs from such trade services as transportation, insurance, and finance, for example.

Restrictions on services across borders and within foreign countries add costs and barriers to international trade. Liberalizing trade in services could also facilitate trade in goods, providing more benefits than one might expect from analysis merely of the services trade.

To emphasize the point, Deardorff notes that the benefits for trade are arguably enhanced by the phenomenon of fragmentation. The more that production processes become split across locations, with the fragments tied together and coordinated by various trade services, the greater the gains from reductions in the costs of services.

The incentives for such fragmentation can be greater across countries than within countries because of the greater differences in factor prices and technologies. But the service costs of international fragmentation can also be larger, especially if regulations and restrictions impede the international provision of services. As a result, trade liberalization in services can stimulate the fragmentation of production of both goods and services, thus increasing international trade and the gains from trade even further.

Since fragmentation seems to characterize an increasing portion of world specialization, the importance of service liberalization is growing apace.

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Since fragmentation seems to characterize an increasing portion of world specialization, the importance of service liberalization is growing apace.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to improve trade policy in goods and services. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1154, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at alandear@umich.edu. (33 pages)

2549. Measuring Poverty Dynamics and Inequality in Transition Economies: Disentangling Real Events from Noisy Data

Erzo F. P. Luttmer  
(February 2001)

Estimates of income inequality and the dynamics of poverty are highly sensitive to measurement error and transitory shocks in micro-level data. The apparent high levels of economic mobility in Poland and Russia are driven largely by transitory shocks and noisy data. There is a real risk of an entrenched underclass emerging in these transition economies.

Luttmer uses instrumental variable methods and the decomposition of income into transitory and persistent components to distinguish underlying income inequality and changes in poverty from the effects attributable to measurement error or transitory shocks. He applies this methodology to household-level panel data for Russia and Poland in the mid-1990s. Luttmer finds that:

* Accounting for noise in the data reduces inequality (as measured by the Gini coefficient) by 10–45 percent.
* Individuals in both countries face much economic insecurity. The median absolute annual change in income or spending is about 50 percent in Russia and about 20 percent in Poland. But roughly half of these fluctuations reflect measurement error or transitory shocks, so underlying levels of income and spending are much more stable than the data suggest.

The apparent high levels of economic mobility are driven largely by transitory events and noisy data. After transitory shocks are accounted for, about 80 percent of the poor in both Russia and Poland remain in poverty for at least one year. So there is a real risk of an entrenched underclass emerging in these transition economies.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to analyze poverty and inequality in Europe and Central Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cecile Wodon, room J7-268, telephone 202-473-2542, fax 202-473-8466, email address cwo@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at luttmer@uchicago.edu. (38 pages)

2550. Measuring Equity in Health Care Financing: Reflections on (and Alternatives to) the World Health Organization’s Fairness of Financing Index

Adam Wagstaff  
(February 2001)

The World Health Organization’s latest World Health Report proposes an index of fairness in health care financing. The index’s chief weakness is that it cannot discriminate among progressive, regressive, and horizontally inequitable health
financing systems. An alternative approach proposed in the early 1990s is shown to do a better job.

In its latest World Health Report, the World Health Organization (WHO) argues that a key dimension of a health system's performance is the fairness of its financing system. The report discusses how policymakers can improve this aspect of performance, proposes an index of fairness, discusses how it should be put into operation, and presents a league table of countries ranked by the fairness with which their health services are financed.

Wagstaff shows that the WHO index cannot discriminate between health financing systems that are regressive and those that are progressive—and cannot discriminate between horizontal inequity and progressiveness or regressiveness.

The index cannot tell policymakers whether it deviates from 1 (complete fairness) because households with similar incomes spend different amounts on health care (horizontal inequity) or because households with different incomes spend different proportions of their income on health care (vertical inequity, given the WHO's interpretation of the ability-to-pay principle)—although the two have different policy implications.

With the WHO's index, progressiveness and regressiveness are both treated as unfair. This makes no sense, because policymakers who may be strongly averse to regressive payments (which worsen income distribution) may in the name of fairness be quite receptive to progressive payments (requiring that the better-off, who may be willing to spend proportionately more on health care, are required to pay proportionately more).

Wagstaff compares the WHO index with an alternative and more illuminating approach developed in the income redistribution literature in the early 1990s and used in the late 1990s to study the fairness of various OECD health care financing systems.

He illustrates the differences between the approaches with an empirical comparison, using data on out-of-pocket payments for health services in Vietnam for 1993 and 1998. This analysis is of some interest in its own right, given the large share of health spending from out-of-pocket payments in Vietnam and the changes in fees and drug prices over the 1990s.


2551. Infrastructure Coverage and the Poor: A Global Perspective
Kristin Komives, Dale Whittington, and Xun Wu (February 2001)

The poor in most parts of the world may have electricity (especially in urban areas), but they rarely have water, sewer, and telephone services. When they gain access to local services, however, many do decide to connect.

Komives, Whittington, and Wu use the World Bank's Living Standards Measurement Study (LSMS) surveys from 15 countries (covering more than 55,500 households) to examine the relationship between infrastructure coverage and household income. The results show that throughout the world all income groups have much higher levels of coverage for electricity than for other formal infrastructure services (in-house piped water service, sewerage service, and private telephone service).

In many countries most households in urban areas now have electricity service. As monthly household incomes increase from $100 to $250, coverage of all these infrastructure services increases, but at different rates.

The findings confirm that the very poor rarely have these infrastructure services—with exceptions. The very poor often do have electricity if they live in urban areas. The very poor in Eastern Europe and Central Asia have much higher levels of coverage than those elsewhere in the world; they often have electricity, water, sewer, and telephone services.

The results also suggest that if the poor gain access to services in their communities, many will decide to connect.

This paper—a product of the Private Provision of Public Services Group, Private Sector Advisory Services Department—is part of a larger effort in the department to identify ways of improving services to the poor through private participation in infrastructure. Preparation of the paper was supported by the Public-Private Infrastructure Advisory Facility, a multidonor technical assistance facility aimed at helping developing countries improve the quality of their infrastructure through private sector involvement. For more information on the facility see the Web site www.ppiaf.org. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Shokran Minovi, room 19-320, telephone 202-473-0012, fax 202-522-3481, email address sminovi@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at komives@email.unc.edu, dwhittin@email.unc.edu, or xun@email.unc.edu. (46 pages)

2552. Inventories in Developing Countries: Levels and Determinants—a Red Flag for Competitiveness and Growth
J. Luis Guasch and Joseph Kogan (February 2001)

High inventory levels in developing countries increase the cost of doing business and limit productivity and competitiveness. Improvements in infrastructure (roads, ports, and telecommunications) and in market development can help to significantly reduce inventory levels (and thus the cost of doing business), especially when accompanied by effective regulation and the development and deregulation of associated markets.

Raw materials inventories in the manufacturing sector in the 1970s, 1980s, and 1990s were two to five times as high in developing countries as in the United States, despite the fact that in most developing countries real interest rates are at least twice as high. Given the high cost of capital in most developing countries, these high inventory levels have an enormous impact on the cost of doing business
and on productivity and competitiveness. Poor infrastructure and ineffective regulation as well as deficiencies in market development—rather than the traditional factors used in inventory models, such as interest rates and uncertainty—are the main determinants of these differences.

Cross-country estimates show that a one-standard-deviation improvement in infrastructure reduces raw materials inventories by 27–47 percent. Poorly functioning markets, as measured by the ratio of transfers and subsidies to GDP, are also an important factor, with a one-standard-deviation improvement leading to a 19–30 percent reduction in raw materials inventories.

Guasch and Kogan show that these reductions in raw materials inventories are not offset by a reduction in finished goods inventories upstream.

The policy implications are clear and strong. Improvements in infrastructure (roads, ports, and telecommunications) can help to significantly reduce inventory levels (and thus the cost of doing business), especially when accompanied by effective regulation and the development and deregulation of associated markets.

This paper—a joint product of the Office of the Senior Vice President and Chief Economist, Development Economics, and the Finance, Private Sector, and Infrastructure Sector Management Unit, Latin America and the Caribbean Region—is part of a larger effort in the Bank to assess and improve the competitiveness and productivity of developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joy Troncoso, room 15-062, telephone 202-473-7826, fax 202-522-2106, email address jtroncoso@worldbank.org. Policy Research Working Papers are also posted on the Web at http://wps.worldbank.org. The authors may be contacted at jguasch@worldbank.org or jkogan@fas.harvard.edu. (25 pages)

2553. The Value of Relationship Banking during Financial Crises: Evidence from the Republic of Korea

Giovanni Ferri, Tae Soo Kang, and In-June Kim (February 2001)

Relationship banking— with surviving banks—has a positive value during a systemic financial crisis. For many viable small and medium-size businesses in the Republic of Korea, relationship banking reduced liquidity constraints and thus diminished the probability of unwarranted bankruptcy during the country’s financial crisis of 1997–98.

A systemic financial crisis with monetary restriction is probably the most promising occasion for assessing whether and to what extent relationship banking is valuable to borrowers. Ferri, Kang, and Kim take this question to a unique database of credit bureau microeconomic information covering the pervasive financial crisis the Republic of Korea experienced in 1997–98.

The database includes all corporate borrowers surveyed by the Korean Credit Bureau, providing details on the structure of their borrowings and on their relationship with lending banks. The authors did not have access to the identity of the corporate borrower and their only nonfinancial control variable was the borrower’s Standard Industrial Classification (SIC). This restriction limited their analysis to smaller borrowers, keeping their sample focused on small and medium-size enterprises, which were likely to rely on banks for external financing. Their findings:

- Outstanding loans plunge more for firms with weaker pre-crisis relationship banking.
- The drop in credit lines—arguably a proxy identifying shifts in the loan supply—is larger for firms relying less on strong relationship banking.
- More intense pre-crisis relationship banking reduces the probability that a previously non-delinquent firm would build (increase) its loans in arrears in 1998, the year of the sharpest liquidity constraints.
- All things equal, this probability depends on whether firms were borrowing from one (or more) of the five banks foreclosed in June 1998, showing that it might be particularly difficult for borrowers to replace distressed lending banks during a financial crisis.

The authors’ findings support the hypothesis that relationship banking—with surviving banks—has a positive value during a systemic financial crisis. They argue that for many viable small and medium-size businesses in Korea, relationship banking reduced liquidity constraints and thus diminished the probability of unwarranted bankruptcy.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the role of relationship banking. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-445, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at http://wps.worldbank.org. The authors may be contacted at gioferri@tiscalinet.it, tkang@worldbank.org, or kimij@snu.ac.kr. (43 pages)

2554. Administrative Costs and the Organization of Individual Retirement Account Systems: A Comparative Perspective

Estelle James, James Smalhout, and Dimitri Vittas (February 2001)

Organizing individual retirement accounts through the institutional market and with constrained choice could substantially lower administrative costs. The tradeoff: rebidding problems, weaker performance incentives, inflexibility in the face of unforeseen contingencies, and an increased probability of corruption, collusion, and regulatory capture.

What is the most cost-effective way to organize individual accounts that are part of a mandatory social security system? Defined-contribution individual-account components of social security systems are criticized for being too expensive. James, Smalhout, and Vittas investigate the cost-effectiveness of two methods for constructing mandatory individual accounts:

- Investing through the retail market with relatively open choice among investment companies (the method first used by Chile and adopted by most Latin American countries).
- Investing through the institutional market with constrained choice.

For the retail market, they use data from mandatory pension funds in Chile and other Latin American countries and from voluntary mutual funds in the United States. For the institutional market, they use data from systems in Bolivia and Sweden and from larger pension plans and the federal Thrift Saving Plan in the United States.

The institutional approaches aggregate numerous small accounts into large blocks
of money and negotiate fees on a centralized basis, often through competitive bidding. They retain workers' choice on some funds. Fees and costs are kept low by reducing incentives for marketing, avoiding excess capacity at system start-up, and constraining choice to investment portfolios that are inexpensive to manage.

In developed financial markets, the biggest potential cost saving stems from constrained portfolio choice, especially from a concentration on passive investment. The biggest cost saving for a given portfolio and for countries with weak financial markets comes from reduced marketing activities.

In the retail market, where annualized fees and costs range from 0.8 percent to 1.5 percent of assets, use of the institutional market in individual retirement account systems has reduced those fees and costs to less than 0.2 percent to 0.6 percent of assets. This reduction can increase pensions by 10–20 percent relative to the retail market. Countries that can surmount rebidding problems, weaker performance incentives, inflexibility in the face of unforeseen contingencies, and an increased probability of corruption, collusion, and regulatory capture should seriously consider the institutional approach, especially at the start-up of a new multipillar system or for systems with small asset bases.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study pension systems. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at ejames3@worldbank.org or dvittas@worldbank.org. (76 pages)

2555. Implicit Pension Debt, Transition Cost, Options, and Impact of China’s Pension Reform: A Computable General Equilibrium Analysis

Yan Wang, Dianqing Xu, Zhi Wang, and Fan Zhai
(February 2001)

China's population is aging rapidly: the old-age dependency ratio will rise from 11 percent in 1999 to 25 percent in 2030 and 36 percent in 2050. Currently, three workers support one retiree; without reform, the system dependency ratio will climb to 69 percent in 2030 and 79 percent in 2050. The pension system has been in deficit, with an implicit pension debt in 2000 as high as 71 percent of GDP. The lack of an effective, sustainable pension system is a serious obstacle to Chinese economic reform.

The main problems with China's pension system—the heavy pension burdens of state enterprises and the aging of the population—have deepened in recent years.

Using a new computable general equilibrium model that differentiates between three types of enterprise ownership and 22 groups in the labor force, Wang, Xu, Wang, and Zhai estimate the effects of pension reform in China, comparing various options for financing the transition cost. They examine the impact that various reform options would have on the system's sustainability, on overall economic growth, and on income distribution. The results are promising.

The current pay-as-you-go system, with a notional individual account, remains unchanged in the first scenario examined. Simulations show this system to be unsustainable. Expanding coverage under this system would improve financial viability in the short run but weaken it in the long run.

Other scenarios assume that the transition cost will be financed by various taxes and that a new, fully funded individual account will be established in 2001. The authors compare the impact of a corporate tax, a value-added tax, a personal income tax, and a consumption tax. They estimate the annual transition cost to be about 0.6 percent of GDP between 2000 and 2010, declining to 0.3 percent by 2050. Using a personal income tax to finance the transition cost would best promote economic growth and reduce income inequality.

Levying a social security tax and injecting fiscal resources to finance the transition costs would help make the reformed public pillar sustainable. To finance a benefit of 20 percent of the average wage, a contribution rate of only 10 percent–12.5 percent would be enough to balance the basic pension pillar. Gradually increasing the retirement age would further reduce the contribution rate.

This paper—a product of the Economic Policy and Poverty Reduction Division, World Bank Institute—was presented at the conference Developing through Globalization: China’s Opportunities and Challenges in the New Century (Shanghai, China, July 5–7, 2000). The study was funded by the Bank's Research Support Budget under the research project "Efficiency and Distribution Effects of China's Social Security Reform" (RPO 683-52). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Datoloum, room J4-259, telephone 202-473-6334, fax 202-676-9810, email address adatoloum@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at ywang2@worldbank.org or zwang@ers.usda.gov. (47 pages)

2556. Household Strategies for Coping with Poverty and Social Exclusion in Post-Crisis Russia

Michael M. Lokshin and Ruslan Yemtsov
(February 2001)

For Russian households coping with economic hardship in the wake of the recent financial crisis, the choice of survival strategy has strongly depended on their human capital. The higher a household's level of human capital, the more likely it is to choose an active strategy.

What strategies have Russian households used to cope with economic hardship in the wake of the recent financial crisis? Which coping strategies have been most effective in reducing poverty for different groups of households? And how have people been able to adapt to the dramatic drop in formal cash incomes?

Lokshin and Yemtsov look at these questions using subjective evaluations of coping strategies used by household survey respondents to mitigate the effects of the Russian financial crisis on their welfare. The data come from two rounds (1996 and 1998) of the Russian Longitudinal Monitoring Survey.

The results of their analysis show that a household's choice of survival strategy strongly depends on its human capital: the higher its level of human capital, the more likely it is to choose an active strategy (such as finding a
supplementary job or increasing home production).

Households with low levels of human capital, those headed by pensioners, and those whose members have low levels of education are more likely to suffer social exclusion. To prevent poverty from becoming entrenched, the trend toward marginalization and impoverishment of these groups of households needs to be monitored and targeted policy interventions need to be undertaken to reverse the trend.

This paper—a joint product of Poverty and Human Resources, Development Research Group, and Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the Bank to understand household-level vulnerability to shocks and the ability of households to cope with crisis. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Research Working Papers are also posted on the Web at http://econ.worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mlokshin@worldbank.org or mrowntsov@worldbank.org. (27 pages)

2557. Decentralization and Accountability: Are Voters More Vigilant in Local than in National Elections?

Stuti Khemani

(Very recently)

Voters in India are more vigilant in monitoring government at the local than at the national level. In state assembly elections voters reward incumbents for local income growth, and punish them for a rise in inequality, over their entire term in office. But in national elections voters behave myopically, rewarding growth in national income and a fall in inflation and inequality only in the year preceding the election.

The evidence is compelling that the poor in developing countries do typically share in the gains from rising aggregate affluence and in the losses from aggregate contraction. But how much do poor people share in growth? Do they gain more in some settings than others? Do some gain while others lose? Does pro-poor growth mean more or less aggregate growth?

Defining vigilance as retrospective voting—where voters evaluate incumbents on their performance during their entire term in office—Khemani compares voter behavior in local and national elections to make inferences about whether voters are more vigilant in monitoring government at the local level. Using data from 14 major states in India over the period 1960-92, she contrasts voters’ behavior in state legislative assembly elections with their behavior in national legislative elections.

In state assembly elections voters reward incumbents for local income growth, and punish them for a rise in inequality, over their entire term in office. But in national elections voters behave myopically, rewarding growth in national income and a fall in inflation and inequality only in the year preceding the election.

The evidence is consistent with greater voter vigilance and government accountability in local than in national elections. This paper—a product of Public Economics, Development Research Group, is part of a larger effort in the group to understand the role of decentralization in improving public service delivery. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at skhemani@worldbank.org. (23 pages)

2558. Growth, Inequality, and Poverty: Looking beyond Averages

Martin Ravallion

(February 2001)

One side in the current debate about who benefits from growth has focused solely on average impacts on poverty and inequality, while the other side has focused on the diverse welfare impacts found beneath the averages. Both sides have a point.

The evidence is compelling that the poor in developing countries do typically share in the gains from rising aggregate affluence and in the losses from aggregate contraction. But how much do poor people share in growth? Do they gain more in some settings than others? Do some gain while others lose? Does pro-poor growth mean more or less aggregate growth?

Recent theories and evidence suggest some answers, but deeper microeconomic empirical work is needed on growth and distributional change. Only then will we have a firm basis for identifying the specific policies and programs needed to complement and possibly modify growth-oriented policies.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to better inform development policy debates. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mrovallion@worldbank.org. (27 pages)

2559. Deposit Insurance as Private Club: Is Germany a Model?

Thorsten Beck

(February 2001)

Germany's private deposit insurance scheme set up by private commercial banks in Germany in 1975. The scheme's funding and management are completely private, with no public supervision. Where other schemes rely on monitoring by depositors to decrease moral hazard problems, the German scheme relies on peer monitoring by its member banks. The system has weathered several small bank crises but has not yet been exposed to a major bank failure or a systemic crisis.

To what extent can it serve as a model for other countries?

The success of the German scheme has to be judged against an institutional environment that fosters contract enforcement and the rule of law and discourages corruption. In a country with weaker institutions, the voluntary membership might quickly lead to adverse selection, with strong banks leaving the scheme. The high coverage limit might induce bank managers and owners to abuse the scheme. Banks might intentionally underfund the scheme, counting on additional government resources in times of crisis. And the secrecy of funds might decrease fund managers' accountability in
societies with little transparency and much corruption.

In Germany's highly concentrated commercial banking sector, the small number of banks facilitates a club atmosphere and quick resolution of banking crises. But it could also prevent the entry of new, innovative market participants, so that the club becomes a cartel. Germany's anti-bankruptcy bias might help prevent moral hazard but can also stifle entrepreneurship. There is a tradeoff between the efficiency gain of a privately run deposit insurance scheme and its potentially negative impact on competition and entrepreneurship.

Although the scheme cannot easily be transplanted to developing countries, it offers lessons for other economies. Schemes with a clublike character reinforce peer monitoring and minimize the risk of free riding. Risk-based premiums based on auditing by the deposit insurance scheme create a healthy link between the protection an insurance offers and the moral hazard it aims to prevent. One compromise might be a combination of ex ante funding that guarantees credibility with depositors and ex post bank funding that gives banks an incentive to monitor one another to minimize costs.

This paper—a product of the Financial Sector Strategy and Development Department—is part of a larger effort in the department to understand the link between financial development and economic growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-8526, fax 202-522-1155, email address psintimaboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at tbeck@worldbank.org. (28 pages)


John D. Pollner
(February 2001)

In providing support for disaster-prone areas such as the Caribbean, the development community has begun to progress from disaster reconstruction assistance to funding for investment in mitigation as an explicit tool for sustainable development. Now it must enter a new phase: applying risk transfer mechanisms to address the financial risk of exposure to catastrophic events that require funding beyond what can be controlled solely through mitigation and physical measures.

Residual stochastic risks from catastrophic natural events can be addressed through insurance pooling and risk transfer mechanisms that provide the basis for financial protection and instill strong incentives for reducing vulnerability.

To reduce the economic stress after disasters, Pollner shows, World Bank instruments could be used to support initiatives to help correct market imperfections in catastrophe insurance. He takes a step-by-step approach to showing how both risk pooling structures and alternative catastrophe coverage mechanisms (long-maturity risk financing facilities, weather-indexed contracts, and capital market instruments) can achieve better risk protection and financing terms—enough to allow the expansion of insurance coverage of public assets and private property.

Pollner examines the insurable assets (private and public) in eight countries in the easternmost part of the Caribbean and, by quantifying the portion of the premium and risk used to fund catastrophe losses, shows that through pooling and the use of credit-type instruments for catastrophe coverage, governments and uninsured property owners or enterprisers (with insurable assets) could expect to improve their terms of coverage. Neither local insurers nor reinsurers would suffer in profitability.

The risk management options Pollner examines could lead to real benefits for all participants (buyers and sellers) in insurance markets. But four factors are essential for ensuring the integrity of any participatory insurance scheme for providing risk management in disaster-prone areas such as the Caribbean:

- Stronger regulatory requirements and supervision in the insurance sector.
- Broad-based, pooled catastrophe funding structures with efficient risk transfer tools.
- Public insurance policies linked to programs for loss reduction in uninsured sectors.
- Stronger risk assessment and enforcement of such structural measures as zoning and compliance with building codes.

This paper—a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region, and developed under the Caribbean Country Program—is part of a larger effort in the region to modernize client country strategies and financial instruments for risk management, particularly against natural disaster shocks. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact John Pollner, room 15-099, telephone 202-473-0079, fax 202-522-2106, email address jpollner@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. (126 pages)

2561. Democracy and Income Inequality: An Empirical Analysis

Mark Gradstein, Branko Milanovic, and Yvonne Ying
(March 2001)

Ideology, as proxied by a country's dominant religion, seems to be related to inequality. In Judeo-Christian societies increased democratization appears to lead to lower inequality; in Muslim and Confucian societies it has an insignificant effect. One reason for this difference may be that Muslim and Confucian societies rely on informal transfers to reach the desired level of inequality, while Judeo-Christian societies, where family ties are weaker, use political action.

Standard political economy theories suggest that democratization has a moderating effect on income inequality. But the empirical literature has failed to uncover any such robust relationship. Gradstein, Milanovic, and Ying take another look at the issue.

The authors argue that prevailing ideology may be an important determinant of inequality and that the democratization effect "works through" ideology. In societies that value equality highly there is less distributional conflict among income groups, so democratization may have only a negligible effect on inequality. But in societies that value equality less, democratization reduces inequality through redistribution as the poor outvote the rich.

The authors' cross-country empirical analysis, covering 120 countries in 1960-98, confirms the hypothesis: ideology, as
proxied by a country's dominant religion, seems to be related to inequality. In addition, while in Judeo-Christian societies increased democratization appears to lead to lower inequality, in Muslim and Confucian societies it has an insignificant effect. The authors hypothesize that Muslim and Confucian societies rely on informal transfers to reach the desired level of inequality, while Judeo-Christian societies, where family ties are weaker, use political action.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to study inequality and income redistribution. The study was funded by the Bank's Research Support Budget under the research projects "Democracy, Redistribution, and Inequality" (RPO 683-01) and "Deriving World Income Distribution in 1988 and 1993" (RPO 683-68).

Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at bgumail.bgu.ac.il, bmilanovic@worldbank.org, or yvonne_ying@hotmail.com. (44 pages)

2562. Decomposing World Income Distribution: Does the World Have a Middle Class?

Branko Milanovic and Shlomo Yitzhaki
(March 2001)

In Asia inequality in income between countries is more important than inequality within countries. In Africa, Latin America, and Western Europe and North America, by contrast, there are only small differences between countries; inequality within countries is more important. And when countries are divided into three groups by income level, there is little overlap—very few people in developing countries have incomes in the range of those in the rich countries.

Using national income and expenditure distribution data from 119 countries, Milanovic and Yitzhaki decompose total income inequality between the individuals in the world, by continent and by "region" (countries grouped by income level).

They use a Gini decomposition that allows for an exact breakdown (without a residual term) of the overall Gini by recipients.

Looking first at income inequality in income between countries is more important than inequality within countries. Africa, Latin America, and Western Europe and North America are quite homogeneous continents, with small differences between countries (so that most of the inequality on these continents is explained by inequality within countries).

Next the authors divide the world into three groups: the rich G7 countries (and those with similar income levels), the less developed countries (those with per capita income less than or equal to Brazil's), and the middle-income countries (those with per capita income between Brazil's and Italy's). They find little overlap between such groups—very few people in developing countries have incomes in the range of those in the rich countries.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to study inequality and income redistribution. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Branko Milanovic may be contacted at bmilanovic@worldbank.org. (41 pages)

2563. A Race to the Top? A Case Study of Food Safety Standards and African Exports

Tsunehiro Otsuki, John S. Wilson, and Mirvat Sewadeh
(March 2001)

Implementation of the European Union's new aflatoxin standards will reduce African exports to Europe of nuts, cereals, and dried fruits, products highly sensitive to the aflatoxin standards. The EU standards would reduce health risks by only about 1.4 deaths per billion a year but would cut African exports by 64 percent, or $670 million, compared with their level under international standards.

Growing concern over health risks associated with food products is at the forefront of trade policy debate. At the heart of this debate is the "precautionary principle," which holds that precautions should be taken against health, safety, and environmental risks even when science has not established direct cause-and-effect relationships—as with, for example, the European ban on hormone-treated beef.

Otsuki, Wilson, and Sewadeh quantify the impact on food exports from African countries of new EU standards for aflatoxins, structurally related toxic compounds that contaminate certain foods and lead to the production of acute liver carcinogens in the human body.

The authors estimate the impact of changes in differing levels of such protection based on the EU standards (and suggested by international standards) for 15 European countries and 9 African countries between 1989 and 1998.

The results suggest that implementation of the EU's new aflatoxin standards will significantly hurt African exports to Europe of nuts, cereals, and dried fruits, which are highly sensitive to the aflatoxin standards.

The EU standards would reduce health risks by only about 1.4 deaths per billion a year but would cut African exports by 64 percent, or $670 million, compared with their level under international standards.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to study the trade impact of regulation and standards from a development perspective. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-8896, fax 202-522-1159, email address itabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Tsunehiro Otsuki may be contacted at totsuki@worldbank.org. (32 pages)

2564. Economic Analysis of World Bank Education Projects and Project Outcomes

Ayesha Yaqub Vawda, Peter Moock, J. Price Gittinger, and Harry Anthony Patrinos
(March 2001)

Outcomes on World Bank education projects are better when the quality of project appraisal is good.
Research reported in this paper tests the hypothesis that Bank education projects for which the project appraisal documents are judged “good” have a higher probability of leading to successful outcomes than projects for which the appraisals are judged “poor.”

The research draws on project document evaluations carried out between 1993 and 1998.

Analysis shows a strong relationship between the quality of cost-benefit and cost-effectiveness analysis and the quality of project outcomes. Economic analysis of projects is a tool for weeding out potentially poor investments and select potentially worthwhile ones. The economic analysis can be used to select among alternative projects or to redesign project components so that they yield more and produce better outcomes.

Good practice education projects require good economic analysis—analysis of demand, of the counterfactual private sector supply, of the project’s fiscal impact, of lending’s fungibility—and strong sector work before project design.

This paper—a joint product of the Education Team, Human Development Network, and the Human Development Sector Unit, East Asia and Pacific Region—is part of a larger effort in the Bank to improve the quality of education projects. The study was funded by the Bank’s Research Support Budget under the research project “Economic Analysis in Education Projects” (RPO 682-95). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Energy Jones, room 45-107, telephone 202-522-1766, fax 202-522-0333, email address ejames2@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at avawda@worldbank.org, pmoock@worldbank.org, or hpatinos@worldbank.org. (34 pages)

Greater fiscal decentralization is consistently associated with lower mortality rates. And its positive effects on infant mortality are greater in institutional environments that promote political rights.

Decentralization of fiscal responsibilities has emerged as a primary objective on the agendas of national governments and international organizations alike. Yet there is little empirical evidence on the potential benefits of this intervention. Robalino, Picazo, and Voetberg fill in some quantitative evidence.

Using panel data on infant mortality rates, GDP per capita, and the share of public expenditures managed by local governments, they find that greater fiscal decentralization is consistently associated with lower mortality rates. The results suggest that the benefits of fiscal decentralization are particularly important for poor countries. They suggest also that the positive effects of fiscal decentralization on infant mortality are greater in institutional environments that promote political rights.

Fiscal decentralization also appears to be a mechanism for improving health outcomes in environments with a high level of corruption. In environments with a high level of ethnolinguistic fractionalization, however, the benefits from fiscal decentralization tend to be smaller.

This paper—a product of Human Development 1, Africa Technical Families—is part of a larger effort in the region to conduct rigorous analysis of the implications of fiscal decentralization on the financing and delivery of social services. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Oscar Picazo, room J10-062, telephone 202-458-7954, fax 202-473-8239, email address opicazo@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The other authors may be contacted at drobalino@worldbank.org or avoetberg@worldbank.org. (14 pages)

2565. Does Fiscal Decentralization Improve Health Outcomes? Evidence from a Cross-Country Analysis

David A. Robalino, Oscar F. Picazo, and Albertus Voetberg
(March 2001)

Greater fiscal decentralization is consistently associated with lower mortality rates. And its positive effects on infant mortality are greater in institutional environments that promote political rights.

Much attention has been paid to the issue of possible nonlinearities in the relationship between log wages and schooling in the literature on both the United States and developing countries. Schady uses data from a recent household survey for the Philippines, the 1998 Annual Poverty Indicator Survey, to test the fit of the log-linear specification for Filipino men. He presents results based on various estimation strategies, including spline regressions and semiparametric regressions with a large number of dummy variables for years of schooling and experience. He concludes that:

- There appear to be large differences between rates of return to education across different levels in the Philippines. The wage premia for both primary and secondary education are significantly smaller than those for tertiary education.
- Within each level—primary, secondary, and university—the last year of schooling is disproportionately rewarded in higher wages. That is, there appear to be clear sheepskin effects associated with graduation.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region—is part of a larger effort in the region to understand the links between education, earnings, and welfare. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tania Gomez, room I8-102, telephone 202-473-2127, fax 202-522-0054, email address tgomez@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at nschady@worldbank.org. (38 pages)

2566. Convexity and Sheepskin Effects in the Human Capital Earnings Function: Recent Evidence for Filipino Men

Norbert R. Schady
(March 2001)

Data on education in the Philippines show that there are large differences in the pri-

Susmita Dasgupta, Somik Lall, and David Wheeler
(March 2001)

The digital divide reflects a gap in telecom access, not lower propensity to use the Internet in poor countries. Promoting access for poor households will help, but pro-competitive policy holds the key to rapid progress in narrowing the divide.

Rapid growth of Internet use in high-income economies has raised the specter of a “digital divide” that will marginalize developing countries because they can neither afford Internet access nor use it effectively when it is available.

Using a new cross-country data set, Dasgupta, Lall, and Wheeler investigate two proximate determinants of the digital divide: Internet intensity (Internet subscriptions per telephone mainline) and access to telecom services. Surprisingly, they find no gap in Internet intensity. When differences in urbanization and competition policy are controlled for, low-income countries have intensities as high as those of industrial countries. While income does not seem to matter in this context, competition policy matters a great deal. Low-income countries with high World Bank ratings for competition policy have significantly higher Internet intensities.

The authors' finding on Internet intensity implies that the digital divide is not really new, but reflects a persistent gap in the availability of mainline telephone services. After identifying mobile telephones as a promising new platform for Internet access, they use panel data to study the determinants of mobile telephone diffusion during the past decade. Their results show that income explains part of the diffusion lag for poor countries, but they also highlight the critical role of policy. Developing countries whose policies promote economic growth and private sector competition have experienced much more rapid diffusion of mobile telephone services.

Simulations based on the econometric results suggest that feasible reforms could sharply narrow the digital divide during the next decade for many countries in Africa, Asia, and Latin America. The authors' review of the literature also suggests that direct access promotion would yield substantial benefits for poor households and that cost-effective intervention strategies are now available.

This paper—a product of Infrastructure and Environment, Development Research Group—is part of a larger effort in the group to identify effective policies for narrowing the digital divide. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Yasmin d'Souza, room MC2-635, telephone 202-473-1449, fax 202-522-3230, email address ydsouza@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at sdasgupta@worldbank.org, slall@worldbank.org, or dwheeler1@worldbank.org. (18 pages)