For more than a decade stock markets have boomed in just about every country. From 1984 to 1994 the capitalization of world stock exchanges grew fivefold to a combined $18 trillion. Most of this money is still invested in industrial nations, but the dramatic growth has been in the emerging countries. Foreign investors have increased their annual net investment in emerging markets from $13 billion in 1990 to $61 billion in 1993.

“Push” and “pull” are behind the sharp increase in the interest of private equity investors in the developing world. The push is for better profits and more diversification. Even with adjustments for risk, returns are generally higher in the developing markets. At the same time the investment community has increasingly recognized that developing country exchanges have a low, even negative correlation with the stock markets in industrial nations. Negatively correlated stock markets move in opposite directions: when one is heading up, the other is going down. Investing in the developing world is a means to reduce overall portfolio risk. Recent Bank research confirms that cross-country portfolio diversification is more important than diversifying across sectors.

The “pull” for international private equity is the beneficial impact of wide-ranging structural reforms, legislative as well as...
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The World Bank Policy Research Bulletin is published five times a year by the Research Advisory Staff. Subscriptions to the Bulletin are complimentary and may be ordered by contacting Evelyn Alfaro at the Bank’s main address, room N9-017 (or by fax at 202-477-0955). The Bulletin’s purpose is to inform the development community of the Bank’s policy and research output. It includes descriptions of Bank publications, research summaries, and updates of events in and outside the Bank. The views and interpretations in articles published are those of the authors and do not necessarily represent the views and policies of the World Bank or of its Executive Directors or the countries they represent. The Bulletin is not copyrighted, and it may be reproduced with the appropriate source attribution. For more information, contact Evelyn Alfaro, the production manager. Alison Strong is the editor.
economic, in many developing countries. As governments have liberalized or eliminated capital restrictions, improved the flow of financial information, and strengthened investor protection, they have earned the attention of the investment community. Put simply, investors have seen a chance to make more money and been given assurances that they will be able to take their profits home.

Last year the rush to invest in the developing world slowed considerably. Private capital flows to some Latin American countries dropped, culminating in the year-end Mexican crisis—a crisis brought about in part by an overdependence on foreign capital. The Mexican difficulties and a reviving U.S. equity market are causing an even greater slowing of private investment abroad in 1995. Portfolio flows almost certainly will stagnate for a time. But the “push” factors remain. Despite increased integration, the international market will remain imperfect for many years. Economic turbulence, investor conservatism, and variances in national growth rates will all contribute to differences in returns and market conditions. Bigger profits and better diversification cannot fail to entice investors.

One measure of the amount of funds that could be shifted to developing country stock markets is the still minuscule investment in such markets by institutional investors in the industrial countries. U.S. pension funds generally are more adventurous than their counterparts elsewhere in the industrial world. Yet the typical U.S. fund holds no more than 1 to 2 percent of its portfolio in equity securities from emerging countries. Studies indicate that a fund could raise its expected annualized return by 2 percentage points with no increase in risk if it increased its holdings of emerging market stocks to 20 percent of its portfolio. An increase of that size won’t come quickly. But fund managers will gradually increase their market position in developing countries, trickling vast sums of capital into the developing world.

The money will not be divvied up equally. Investors will discrimi-
The way to better markets: Information and liberalization

What brings international investors to a developing country stock exchange? Obviously, the chance for profits. But the first issue is whether those profits can be brought home. What restrictions are there on capital movements? The next issue is reliable information and fair treatment. Do companies publish comprehensive financial information, such as price-earnings ratios? Are accounting standards poor, adequate, or good? What about investor protection laws? And is there a securities and exchange commission?

To assist the international financial community, the International Finance Corporation (IFC) looks at these issues every year in the stock markets of 20 developing countries. The IFC measures restrictions, if any, on entry into the stock market and on repatriation of capital and dividends. It also looks beyond capital controls to financial reporting, accounting standards, and other investor concerns. It gives each market a score for each category, ranging from a low of 0 to a high of 2. For 1986–93 Mexico and the Republic of Korea have the best scores for investor information and protection. But Malaysia’s free capital market gets a perfect rating in capital controls, which brings that country’s market to the top of the overall ranking (see table).

Not surprisingly, stock market development differs significantly from country to country, depending on the regulatory regime. Markets in which good corporate financial information is readily available are large and more liquid and appear to have more efficient pricing of risk. The effects of accounting standards and investor protection laws are more ambiguous, but poor standards and protection are clearly associated with low stock market development. And a recent study confirmed that there is no ambiguity about the positive relation between stock market development and reduced restrictions on capital flows.

To test the effect of liberalization on stock markets, researchers looked at 18 developing countries and, for control and contrast, 10 industrial countries. They measured each market for capitalization, liquidity, and turnover. Not surprisingly, they found wide variations among countries. Argentina has the most volatile market, and the United States the least. During the study period, Malaysia, Korea, Taiwan (China), and the United States had highly developed markets. Markets in Nigeria, Pakistan, Portugal, and Venezuela were comparatively underdeveloped. Variations were noted even within countries: Malaysia ranked high for market capitalization but below average in turnover.

The economic policies of each country were examined to find a date on which there had been a major change in policy related to the flow of capital into or out of the country. In the 15 developing countries for which complete data were available, a significant, positive change followed liberalization: market capitalization increased, and in 10 of the 15 the turnover ratio rose significantly. And the total value traded ratio—total shares traded divided by GDP—increased markedly in all but Malaysia. Nearly identical results were obtained for nine OECD countries that relaxed or eliminated restrictions on portfolio investment flows. Stock market size and liquidity rose sharply following policy reform. Moreover, almost any measure of stock market health and vitality seemed to respond favorably to international capital liberalization.

The lessons are simple. A broad, liquid stock market and well-functioning financial institutions promote growth through faster capital accumulation and better resource allocation. The way to get there is to remove legal, regulatory, and policy impediments, liberalize capital controls, and encourage a free flow of corporate financial information.

### Ranking the markets

<table>
<thead>
<tr>
<th>Country</th>
<th>Capital policy average rating</th>
<th>Investor policy average rating</th>
<th>Combined average rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>2.00</td>
<td>1.35</td>
<td>1.63</td>
</tr>
<tr>
<td>Jordan</td>
<td>1.96</td>
<td>0.56</td>
<td>1.16</td>
</tr>
<tr>
<td>Portugal</td>
<td>1.90</td>
<td>0.96</td>
<td>1.37</td>
</tr>
<tr>
<td>Thailand</td>
<td>1.83</td>
<td>1.00</td>
<td>1.36</td>
</tr>
<tr>
<td>Mexico</td>
<td>1.75</td>
<td>1.50</td>
<td>1.61</td>
</tr>
<tr>
<td>Brazil</td>
<td>1.67</td>
<td>1.44</td>
<td>1.54</td>
</tr>
<tr>
<td>Colombia</td>
<td>1.63</td>
<td>0.81</td>
<td>1.16</td>
</tr>
<tr>
<td>Turkey</td>
<td>1.63</td>
<td>0.64</td>
<td>1.06</td>
</tr>
<tr>
<td>Argentina</td>
<td>1.63</td>
<td>0.81</td>
<td>1.16</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>1.63</td>
<td>1.50</td>
<td>1.55</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>1.59</td>
<td>0.53</td>
<td>0.98</td>
</tr>
<tr>
<td>Chile</td>
<td>1.58</td>
<td>1.47</td>
<td>1.52</td>
</tr>
<tr>
<td>Philippines</td>
<td>1.54</td>
<td>1.16</td>
<td>1.32</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1.50</td>
<td>0.78</td>
<td>1.09</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.43</td>
<td>0.75</td>
<td>1.04</td>
</tr>
<tr>
<td>Greece</td>
<td>1.34</td>
<td>0.35</td>
<td>0.77</td>
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<tr>
<td>India</td>
<td>1.29</td>
<td>1.38</td>
<td>1.34</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1.25</td>
<td>0.81</td>
<td>1.00</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>0.50</td>
<td>0.78</td>
<td>0.66</td>
</tr>
<tr>
<td>Nigeria</td>
<td>0.50</td>
<td>0.75</td>
<td>0.64</td>
</tr>
</tbody>
</table>


nate carefully between markets. So far, Asian and Latin American countries have absorbed most of the equity flow. Africa, the Middle East, and other areas remain largely ignored. The emerging markets of Asia have attracted almost all the private equity investment from Japan and half the equity dollars invested in developing countries by the United States in 1993. Within regions there also are big differences. Hong Kong attracted more U.S. equity investment than other Asian emerging countries combined. In Latin America most of the funds have gone to Argentina, Brazil, and Mexico. As the events in Mexico show, investors do not always make the best choice, but they do choose countries that have a sound institutional and regulatory framework for the capital market. And they avoid the rest.

No emerging countries can afford to be overlooked. Almost by definition, all require outside capital to sustain economic growth. But many are at their borrowing limit—liabilities can grow only as fast as export earnings. And all are in danger of being the indirect victims of the increasing political pressure on the aid budgets of industrial nations. Encouraging international private equity investors is a sound alternative to more debt and increasingly uncertain help.

Most important, encouraging and sustaining a vital stock exchange...
does more for a national economy than simply bring in new capital. A developed stock market is as important to national economic growth as banks. While the importance of the financial sector has long been recognized, the contribution of the stock exchange has been less obvious. Each provides a different bundle of crucial services, but both stimulate the accumulation of capital and contribute to improvements in productivity.

Credit markets are not, as is sometimes contended, a close substitute for equity markets. Banks and stock markets have complementary and shifting roles in a developing economy. Both sectors help fund the development of private enterprise, exchanging roles back and forth as the economy and its enterprises mature. Simple debt financing with instruments that are rarely traded comes first. Equity financing of larger firms comes next as the economy attains a critical level of real development. As growth continues, both large and small firms start to swap short- and long-term debt for equity investments. Finally, as the financial markets begin functioning with increased efficiency, equity funding becomes available for a range of ventures. At that point the larger firms begin to take on more debt, in part because they now have acceptable debt-equity ratios and in part because the stock market aggregates the information needed by lenders and investors alike.

The importance of a healthy and vibrant national stock market is underlined by a recent study showing that a developed banking system and a robust stock exchange not only promote economic growth, but predict it. A country's stock market can be measured by capitalization, liquidity, or turnover. Each measure appears to reveal something about where a national economy is headed. Researchers have found a robust correlation between stock market indicators in

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**Vouchers and governance: The Czech and Slovak experiment**

Skeptics had reservations when Czechoslovakia launched its massive program in 1992 to privatize state-owned enterprises. The state's voucher scheme gave almost every citizen a chance to own shares in one or more companies. But critics complained that having so many owners would mean that nobody would be in control. There would be no effective way for shareholders to manage the managers. However, hundreds of new investment funds emerged that traded their own equity for vouchers. That gave the funds the heft to bid for large blocks of stock in newly private companies and led to a greater concentration of ownership than expected. Whether it also leads to improved corporate governance is another matter.

The government gave all citizens over 18 a chance to buy a package of vouchers for about $35, then equal to about the average weekly wage. Vouchers represented points that the owner could use to bid for shares in any of 1,491 enterprises. Most people turned their points over to one or more of the 430 investment funds formed by banks and other sponsors. The funds ended up owning 70 percent of the bidding points. But the concentration of ownership was even greater than that suggests. The 10 largest bank-sponsored funds, including several managed by the same institution, picked up 43 percent of the points.

Despite the strength of the funds, they did not obtain dominating equity positions. Although some funds, notably in Slovakia, have exceeded the limit, all are technically prohibited from holding more than 20 percent of the shares of an individual firm. Moreover, the funds tended to bid for the shares of larger firms and then, because of the bidding, paid more points per share. As a result, only two funds have a position in a firm exceeding 30 percent of the stock. With dispersed ownership, of course, an investor can have effective control with only a small fraction of shares. And in many cases, two or three funds could have combined control of an enterprise. There is no company in which two funds have a combined majority stake, but in almost half the companies in the program, the two funds with the largest number of shares jointly have a controlling position. (Individual domestic or foreign direct investors have effective control of about 100 companies.)

There has been too little time and too many shocks—including the country's split—to judge the effect of new ownership arrangements on the performance of the privatized firms. But share prices in the final round of bidding and in the secondary market theoretically should anticipate the benefits of concentrated ownership. Other things being equal, the shares of a company with a controlling ownership and, presumably, better corporate governance should trade at higher prices than the stock of a firm with more diffuse ownership. But that has been so only when ownership is highly concentrated, with a single owner or group holding an absolute majority. Relative control, especially when it is held by one or two funds, has had a negative effect on share prices.

One explanation for the way share prices have reflected the concentration of ownership could be the potential conflict of interest for investment funds controlled by banks. In many cases, these banks are major creditors of the firm in which the funds have a large equity interest. Other investors might be less willing to bid up share prices without more separation between fund management and commercial lending. A possibly stronger factor is that the investment regulations of both republics require absolute majorities for important decisions such as removing directors and supermajorities for fundamental corporate changes. As a result, only a very large shareholder is legally able to restructure a firm and carry out the radical changes needed to ensure profitable growth.

One lesson to be taken from the program is the importance of small shareholders. In some markets a well-developed proxy system allows a stakeholder with less than majority ownership—for example, a bank in Germany—to solicit the support of small shareholders and thus exercise control even in the presence of high majority requirements. So far, small Czech and Slovak shareholders have not taken an active interest and their votes are essentially lost. The result is weaker shareholder control and—in the ultimate penalty for the investor—lower share prices.
Measuring markets

How can one stock market be compared with another halfway around the world? Private investors, economists, development experts, government officials—all are becoming more interested in national securities markets. Yet there have been no common measures of stock market development, no basis for valid comparisons of one national market with another. What is needed is a battery of measures that capture all the aspects of stock market development and growth. World Bank researchers have assembled just such an array of stock market indicators, using data from 41 countries for 1986–93. Here are their primary measuring tools:

Stock market size can be measured by the number of listed companies. The market capitalization ratio is determined by dividing the value of all shares listed on a national exchange by the host country’s gross domestic product. Some countries, such as Hong Kong, Malaysia, and South Africa, have capitalization ratios greater than 1—that is, the value of listed shares is larger than GDP. For Argentina, Indonesia, and Nigeria the ratio is less than 0.06.

Liquidity—or the ability to buy and sell securities easily—also is indicated by two measures. One is the total value of shares traded on the stock exchange divided by GDP. For example, in Hong Kong, Japan, the United Kingdom, and the United States, the ratio is 0.1 or less. The second measure of liquidity is the turnover ratio, the value of total shares traded divided by market capitalization. Thus, turnover, by capturing trading relative to the size of the stock market, complements the total value ratio, which compares trading to the size of the economy. Brazil, for example, with a small but active stock market, has a high turnover ratio and a low traded ratio.

Volatility is indicated by a 12-month rolling standard deviation estimate based on market returns: Although volatility is not necessarily a sign of more or less stock market development, lower volatility generally reflects a more developed stock market. As with other indicators, there are huge differences between countries. During the measurement period, volatility was eight times greater in Argentina and Brazil than in the Netherlands, Pakistan, and the United States.

Concentration is determined by computing the share of market capitalization for the 10 largest stocks on the exchange. This share is less than 20 percent in Japan and the United States, but some 60 percent in Argentina, Colombia, and Venezuela.

Asset pricing or mispricing measures are a way of determining whether a stock market prices risk efficiently. Although mispricing in a market can occur during periods of economic turbulence, these indicators usually are measures of the integration of the national market with the international capital market. Greater mispricing usually reflects poor information about the firms issuing securities, high transaction costs, and, most important, official barriers to the movement of capital. Developed, open markets, such as Japan and the United States, have low mispricing values. Markets that are closed to international capital, such as Nigeria and Zimbabwe, have high ones. The Bank uses three measures to determine asset pricing efficiency. But the two most useful tools for judging a market’s integration are a measure based on international arbitrage pricing model and another based on an international capital asset pricing model.

Indexes created by combining all or most of the measures of markets determine which stock markets are most developed and which are growing most rapidly. Economists have developed indexes that combine the standard measures in various ways. These are highly correlated with one another, so that country rankings by one are very similar to those by another. Japan, the United Kingdom, and the United States are highly developed markets by any measure. The markets of Colombia, Nigeria, and Venezuela are laggards. Usually, the poorer the country, the weaker the stock market. But many markets in developing countries, such as Malaysia, the Republic of Korea, Singapore, and Thailand, are more “developed” than the markets in some European countries, including France, the Netherlands, and Sweden.

1976 and economic growth averaged over 1976–93. This correlation does not appear to be simply the result of stock market traders’ and investors’ anticipating growth. Indicators of liquidity, for example, are closely associated with growth prediction, but these liquidity indicators are a measure of trading volume, not simply prices. The conclusion: stock market development does not merely follow economic development, but provides the means to predict future rates of growth in capital, productivity, and per capita GDP.

If nothing else, the potentially large economic benefits of a vital stock market highlight the cost of government efforts to impede market development by policy or law. Conversely, a national program that encourages both markets and banks to thrive can have dramatic effects. One hypothetical example tests the effect of a one standard deviation increase in a measure of banking development combined with the same deviation in a measure of stock market development. The result is an increase in real per capita growth of 1.6 percent a year over the following 18 years—a 33 percent accumulated increase in GDP over the period.

A large inflow of private equity money is not without drawbacks. As Mexico and other Latin American nations recently observed, private capital flows can be volatile. If the international investment community spots weak exports, an overvalued currency, a rise in consumption relative to savings, or an overreliance on short-term capital inflows, money will go out faster than it came in. A government that seeks to attract international equity capital is, knowingly or not, committing itself to sounder, more agile economic management. Equity dollars and export earnings end up on the same side of the account, but neither is a substitute for the other. The mix of policies needed to sustain inflows of private capital varies from country to country. But there is no substitute for fiscal restraint, an emphasis on exports over consumption, and sound regulation of the banking system and the capital markets.
The articles on stock markets are based on a series of papers presented at Stock Markets, Corporate Finance, and Economic Growth, a World Bank conference held February 16–17, 1995, and organized by Asli Demirguc-Kunt and Ross Levine. To obtain copies of the papers listed below, please contact Paulina Sintim-Aboagye at 202-473-7644.

Valerie Bencivenga, Bruce D. Smith, and Ross Starr, “Equity Markets, Transaction Costs, and Capital Accumulation: An Illustration.” What is the connection between financial market activity and productive activity? Between efficiency in financial transactions and in physical production? Why is the connection not perfect?

John H. Boyd and Bruce D. Smith, “The Co-Evolution of the Real and Financial Sectors in the Growth Process.” As countries develop, self-financing gives way to debt and then equity financing.

Stijn Claessens, “Corporate Governance and Equity Prices: Evidence from the Czech and Slovak Republics.” Critics said the privatization scheme would lead to diffuse ownership and no effective corporate governance. It didn’t work quite that way.


In developing markets, small firms are unaffected by improvements in the stock market, but large ones increase their leverage, which suggests that the market plays an information role.

Mohamed A. El-Erian and Manmohan S. Kumar, “Emerging Equity Markets in Middle Eastern Countries.” Efforts by Middle Eastern countries to broaden their financial markets depend on key internal factors, including reducing perceptions of country risk.

Jack Glen, “International Comparison of Stock Trading Practices.” The nature of a local market affects liquidity and trading costs and thus encourages or discourages investors.

Robert A. Krajczyk, “A Measure of Stock Market Integration.” If markets are financially integrated, risk should be the same in all of them. It isn’t.

Ross Levine and Sara Zervos, “Policy, Stock Market Development, and Long-Run Growth: Parts I and II.” A developed banking system and robust market promote and predict economic growth. Events in a group of countries show that liberalizing capital flows leads to larger, more liquid markets.

Claudia Morgenstern and Jonathan Hay, “The Regulatory Framework for Russia’s Securities Markets.” When rules for Russia’s securities market were promulgated, the market response was slow to emerge.


The research projects described here are directed by World Bank staff and funded by the Bank’s central Research Support Budget (RSB). Research proposals being prepared are listed on page 11.

For information about the research projects described here, contact the researchers at the Bank’s main address (see back page).

New Research

Water pollution caused by untreated domestic sewage is a significant environmental and health problem in Asia. Addressing this problem in areas with high groundwater or tidal flooding poses special challenges. Conventional sewage collection systems, such as septic tanks and subsurface disposal facilities, do not work in these environmental conditions. And communities in such areas typically are poor, raising issues of affordability and technical abilities.

This study aims to identify appropriate sanitation programs for communities affected by high groundwater or flooding. It will evaluate the effectiveness and affordability of two low- to intermediate-technology systems for wastewater treatment: a composting septic system and a constructed wetland system. This evaluation will be performed on systems installed, on a pilot scale, in Banjarmasin, Indonesia. A constructed wetland is already in
placethere, and the project will construct a composting septic system. Each system is designed to serve six to eight households.

The study will monitor the effectiveness of the systems as measured by quality of effluents. It will estimate the land and material requirements for constructing the systems and the likely benefits of the systems for the environment and for the communities. In addition, it will assess the possibility in these communities for developing income-generating activities in agriculture or aquaculture using wastewater effluents from the systems.

Based on the results of its analysis of the technologies, the study will identify the conditions needed to successfully implement and operate the systems. And it will attempt to determine their relevance for other low-income Indonesian communities and for communities worldwide with similar environmental and land conditions.

RSB support: $39,800

**Global Interactions, Skills, and the International Division of Labor**

Ishac Djian and Hafiz Ghanem

World Development Report

Office and East Asia and Pacific, Country Department III, Country Operations Division

Ref. no. 679-56

As world markets become increasingly integrated and countries at different income levels interact more with one another, concerns grow about the consequences of those interactions for the global distribution of labor and for relative wages within and among countries. Rich countries fear that they may be in a race to the bottom, as goods and people from low-wage nations flow in and capital flows out seeking lower labor costs. Newly industrializing countries fear the results of China’s increasing market power and of South Asia’s potential power. And African countries, losing market share in primary commodities to Asian and Latin American competitors, fear that greater opening of markets will bring only more pain.

These fears probably are unfounded: international transactions rarely are zero-sum. Yet the shifts now taking place are far larger than those of the past. The fast growth in working age populations in developing countries and the even faster spread of education have expanded these countries’ share in world labor markets and narrowed the education gap between rich and poor, especially at lower skill levels. The production of tradables has begun shifting from rich to poor countries. And the developing countries’ share in international transactions, although still small, is expanding; and this growth will only accelerate as trade regimes around the world continue to open.

This study will analyze the links between international interactions and domestic labor markets—skilled and unskilled—for aggregated regions. At the core of the study will be the development of a multiregion general equilibrium model for exploring different medium- and long-run scenarios. In constructing the model, the study will build on earlier work, adding labor demand disaggregated by skill category. That, along with exogenous projections of labor supply by skill category, will determine wage differentials.

The model will be used to examine the effects of increasing integration (particularly of China, India, and the countries of Eastern Europe and the former Soviet Union) and tradability of services, the change in the international skill structure as education in the developing world increases, different assumptions about productivity convergence across regions and sectors, and international migration and capital flows. The project will also revisit, both conceptually and empirically, the links between wage convergence (or lack of it), human capital accumulation, and labor markets.

RSB support: $35,200

**The Impact of Child Health and Nutrition on Education Outcomes in Cebu, Philippines**

Paul Glewwe and Elizabeth King

Policy Research Department, Poverty and Human Resources Division

Ref. no. 679-57

Conventional wisdom has it that malnutrition and poor health hamper children’s school performance and that, in turn, poor education diminishes their employability and productivity as adults, destining their own children to live in poverty. Although plausible, this conventional wisdom is supported by little solid research. Studies exploring the link between child health and school performance have produced unconvincing results, in part because of the scarcity of data measuring, for the same children, indicators both of health and nutrition and of school performance.

This project will assemble a data set that provides both types of indicators for one group of children by adding school performance indicators to a rich set of child health and nutrition data. The Cebu Longitudinal Health and Nutrition Study in the metropolitan area of Cebu, Philippines, has tracked more than 2,000 children, now about 12 years old, since the seventh month of their mothers’ pregnancy. To assemble school performance indicators, the project

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8
will administer tests to the children to measure their IQ, reading comprehension, and mathematics performance. It will also test their vision and hearing and collect detailed information on the schools they attend and the teachers in those schools.

Using the combined data set, the project will then investigate the relation between child health and school performance. The analysis will be based on a simple economic model of household investments in children that takes into account the interaction between child health and learning. The model will highlight the structural impacts of health on education outcomes—both the indirect effect, operating through the demand for education inputs (such as time in school and choice of school), and the direct effect.

The analysis will emphasize policy issues. It will look at the optimal timing for nutrition and health programs for children, and take into account how such policies as food price subsidies affect parents' decisions about investments in education. The analysis also will contribute to the debate about the allocation of resources between health and education. For example, it will ask whether investing marginal funds in child health programs is more effective in raising school achievement than investing in better-quality schools.

When looking at factors that lead to economic growth, one that cannot be ignored is export growth: nearly all countries that have achieved rapid growth in the past three decades have also had rapid growth in exports. But how can countries ensure success in exports? This study seeks to contribute to the discussion of that issue, focusing on the demand side. Using Bangladesh as an example, it will investigate the link between the real exchange rate and export performance.

In assessing export competitiveness, the conventional price variable used has been the real exchange rate measured by the exporter’s price index relative to a weighted sum of the price indexes of its major trading partners. For Bangladesh, which exports primarily to the OECD countries, that would mean defining the real exchange rate relative to prices in those countries. But Bangladesh rarely competes directly against goods produced in OECD countries. Instead, it typically competes against other developing countries exporting to the same markets. Unlike most other analyses, this study will therefore assess demand on the basis of comparative prices among competing exporters.

The study will identify the major markets for each of Bangladesh’s top 10 exports (which together account for more than 75 percent of the country’s exports) using direction-of-trade statistics, and then identify the likely competitors for each product in each market. It can then identify the measure—or measures—of real exchange rate that best explain export performance for these commodities. Knowing the appropriate measure is important to the ability to manage the real exchange rate to maintain export competitiveness. The study will then estimate the demand function—and, when possible, the supply function—for Bangladesh’s main exports.

One critical question concerns the appropriate measures of prices. This study will experiment, where possible, with wholesale price indexes, which will allow the introduction of the nominal exchange rate into the export demand equation. That will make it possible to separate the effects of the exchange rate from other determinants of costs—and thus enable policymakers to assess the likely effect of exchange rate policy on export earnings.

RSB support: $39,000
Staff weeks: 2

This project supports a larger exercise, funded primarily by the department, that seeks to document the benefits of trade and investment deregulation for Indonesia and make the case for an acceleration of the reform effort. Remaking that case is considered necessary because of the slackening of the pace of reform after the burst of deregulation in the late 1980s.

The exercise will cover both macroeconomic and microeconomic aspects of deregulation. An attempt will be made to document macroeconomic and structural consequences through empirical analysis of Indonesian manufacturing sector and tariff data. A microeconomic perspective also will be considered, through case studies of selected sectors (for example, sugar, cement, and electronics).

Successful deregulation requires good performance by the institutions charged with implementing policy reforms. The exercise will
review the performance of institutions responsible for promoting exports (Indonesia), ensuring domestic fair trade (the Republic of Korea), and facilitating investment (Singapore). These reviews will consider Indonesian approaches in the comparative perspective of regional “best practice.”

Labor and financing costs often figure large in investment and production decisions. Developments in labor and capital markets can thus have serious consequences for investment and production patterns, and inappropriate policies in these markets can sometimes offset the effects of trade deregulation. The importance of such considerations will be explored through analysis of both labor and financial market developments and their effects on Indonesian manufacturing. A comparative perspective will be provided, for example, through a case study of labor market policies and industrial competitiveness in Singapore.

The papers produced for the overall exercise, including those supported directly by funding through the RSB, will be presented at a conference in Jakarta cosponsored by the World Bank, the Indonesian Economists Association, and the University of Indonesia. RSB support: $20,000

**Improving LSMS Policy Relevance**

*Margaret Grosh and Paul Glewwe*

Policy Research Department, Poverty and Human Resources Division

Ref. no. 679-61

The World Bank's Living Standards Measurement Study (LSMS) has been an important innovation in data collection for policy analysis. It has developed multitopic household surveys that enable researchers to study the causes and consequences of poverty and the effects of policy on poor households. The data generated by LSMS surveys have been widely used in analyses and in World Bank policy dialogues with member countries.

Yet there is a need to improve the LSMS. The accuracy of LSMS data, though greatly increased, still needs improvement. Much of the data collected are rarely used, suggesting that the survey should be made more relevant for policy analysis. And a critical synthesis of the lessons of experience with LSMS surveys would make it easier to meet the demand for new ones by expanding the set of practitioners familiar with the LSMS survey.

Several factors make an assessment of the LSMS survey timely. The increasing number of multitopic household surveys conducted in the past decade has generated a body of experience useful in assessing the effectiveness of the LSMS survey. At the same time, the growth in such surveys increases the importance of improving survey design. And as the demand for LSMS surveys has evolved from a research orientation to an almost entirely operational demand, an evaluation of how well they meet that demand has become necessary.

This study will assess the LSMS survey with the goal of increasing its policy relevance. It seeks to revise the survey so that the data it collects are of higher quality and support the analysis of a wider range of policy issues. And it will try to make implementing the survey easier by simplifying the design and providing better instruction materials.

In addressing these objectives, the study will consider whether new types of information need to be collected. It also will consider whether specific questions or even entire sections of the standard LSMS questionnaire that are marginally useful should be removed, both to allow for the collection of new data and to simplify the survey.

The study will base its assessment of the LSMS survey on reviews of the policy and analytical literature, to keep the focus of the exercise on policy; reviews of experience with LSMS surveys and with other household surveys; data collection experiments to assess the strengths and weaknesses of different aspects of the survey design; and case studies documenting survey experience.

**RSB support:** $499,000

**Staff weeks:** 144

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**Term Finance: Theory and Evidence**

*Cerry Caprio, Herbert Baer, Asli Demirguc-Kunt, and Dimitri Vittas*

Policy Research Department, Finance and Private Sector Development Division, and Financial Sector Development Department

Ref. no. 679-62

Much of the World Bank's industrial lending policy through the 1980s was premised on two points of conventional wisdom. First, access to long-term credit can significantly boost the performance of firms and thus the growth and efficiency of the economy. And second, firms in developing countries have more difficulty obtaining long-term credit than do similar firms in industrial countries, in part because of market imperfections.

Along with other development institutions, the World Bank sought to overcome the perceived credit shortage through support to development finance intermediaries. Problems with this strategy have led to a reevaluation. But it is still generally accepted that long-term finance is scarce in developing
countries, that its lack hurts firms' performance, and that countries would gain from subsidizing long-term credit. This study will test those assumptions, drawing on firm-level data for both industrial and developing countries.

The study's investigation of the links between long-term debt and firms' performance will have three parts. It will determine whether the market for refinancing short-term debt is uncompetitive, a circumstance in which, it has been hypothesized, access to long-term debt is important. It will explore whether a firm's choice of debt maturity affects its sensitivity to investment signals and its efficiency. And it will explore the efficiency effects of debt maturity choice using two measures: total factor productivity and speed of adjustment to adverse shocks.

In examining access to long-term debt, the study will try to determine whether firms in developing countries receive less long-term finance than do similar firms in industrial countries even after controlling for differences in firm and country characteristics.

The study also will investigate the effect of policy and institutional features—regulations, macroeconomic policies, the structure of the financial system—on the provision of long-term credit.

The study's results should provide a clearer picture of the role of long-term finance in firms' performance, better benchmarks for deciding whether such finance is undersupplied, a better sense of the institutional and firm characteristics associated with the undersupply of credit, and a better understanding of what is needed to alleviate the shortage.

The need for better ways to assess the effects of policies and programs on development has been widely acknowledged. But attention to this problem has focused mostly on analyzing the effects of macroeconomic policies on economic aggregates—and very little on analyzing the effect of sector policies and programs on sector performance or on broader development goals.

The ability to analyze the effects of sector policy depends on meaningful measures of sector performance. But these measures are not always easy to define. One of the most difficult sectors for which to devise credible indicators has been transport, because of the heterogeneity of the product and the complexity of its interaction with land use and with economic structure and organization. This study is intended to contribute to the development of appropriate indicators for urban transport.

Earlier research suggested that defining appropriate land use indicators and their relation with indicators of the use of transport resources would provide a basis for understanding the performance of urban transport. A foundation for such work already exists—an extensive database on urban form. For the World Bank, however, this database has two main drawbacks. The cities it contains are mostly in the industrial world, and information on resource use is limited primarily to fuel consumption, omitting such important indicators as public finance of urban public transport and individuals' time spent traveling.

This study will both broaden and deepen the database, to increase its usefulness for analyzing the relation between transport and urban form in developing countries. The study will add seven major cities in Asian developing countries (Bangkok, Beijing, Jakarta, Kuala Lumpur, Manila, Seoul, and Surabaya), with a range of economic development levels and spatial forms and with much less developed transit systems. And it will include new variables on the quality and resource cost of public transport.

RSB support: $39,900

Research Proposal under Preparation

The Determination of Country-Specific Options for Private Sector Participation in Water Supply

Penelope Brook Cowen

Transport, Water, and Urban Development Department, Water and Sanitation Division

Ref. no. 679-65

RSB support: $12,500
and infrastructure are substitutes, in the case of electricity and communications infrastructure, capital and infrastructure are complements. In the case of transport infrastructure these conclusions are reversed.

An Eclectic Approach to Estimating the Determinants of Achievement in Jamaican Primary Education
Paul Glewwe, Margaret Grosh, Hanan Jacoby, and Marlaine Lockheed
This article estimates the determinants of cognitive skills in Jamaican primary education. It takes an eclectic approach, integrating the production function framework favored by economists with the concerns of educators about pedagogical processes and those of sociologists regarding school organization and management. At the same time, it corrects for selectivity biases induced by school choice. An unusually rich data set is used, the 1990 Jamaican Survey of Living Conditions, which includes not only scores on cognitive achievement tests but also detailed information on each child’s household and the primary school he or she attends. The analysis finds that all three components—physical and pedagogical inputs, pedagogical practices, and school organization and climate—influence student achievement. Policy simulations suggest that a focus on inputs alone may be misplaced in school systems with input levels as high as those found in Jamaica. School reforms that concentrate on just a few pedagogical practices could lead to substantial improvements in student achievement.

The Current Account in Developing Countries: A Perspective from the Consumption-Smoothing Approach
Atish R. Ghosh and Jonathan D. Ostry
According to the consumption-smoothing view, a high degree of capital mobility implies that agents are able to fully smooth their consumption in the face of shocks. This article develops a framework to test whether, indeed, the current account in developing countries acts as a buffer to smooth consumption in the face of shocks to national cash flow, which is defined as output less investment less government expenditure. Using vector autoregression analysis, it estimates the optimal consumption-smoothing current account with data from a sample of 45 developing countries. It finds that for a majority of the countries, the hypothesis of full consumption smoothing cannot be rejected, suggesting that capital mobility may after all be quite high in this group of countries.

Does Participation Improve Performance? Establishing Causality with Subjective Data
Jonathan Isham, Deepa Narayan, and Lant Pritchett
Data from 121 diverse rural water projects provide strong statistical findings that increasing beneficiary participation directly causes better project outcomes. Three possible economic objections to these findings are addressed and answered. The subjective nature of the data does not preclude valid, cardinal measures of participation appropriate for statistical analysis. "Halo effects"—changes in the measurement of one variable because of the observed state of another variable—do not seem to induce a strong upward bias in the measurement of participation or project performance. Reverse causation is unlikely: estimation using instrumental variables, data on project timing, and documentation of case studies support the cause-effect relation between participation and better project performance.
Winners and Losers in Transition: Returns to Education, Experience, and Gender in Slovenia
Peter F. Orazem and Milan Vodopivec
This article, using an unusually rich data set on Slovenian workers over 1987–91, explores changes in the structure of wages and employment produced by transition to a market economy. Employment and real wages fell dramatically over the period, but the losses were borne disproportionately by the least skilled. Across all sectors of the economy, relative wages and employment rose for the most educated workers. Women gained in comparison with men, primarily because women occupied sectors less adversely affected by the transition. Pension policies, which encouraged retirement, are shown to have drastically reduced the employment of experienced workers and to have contributed to rising returns to skill. Increases in returns to education and experience contributed to rising wage inequality, but the variance of wages increased for workers with identical skills as well.

AnniKA Persson and Molan Munasinghe
A computable general equilibrium model is used to trace the effects of government policies on Costa Rican forests in the presence of incomplete markets. The results indicate that correcting the market failure would, as expected, reduce deforestation. More interestingly, in the presence of the market failure, lowering the tax on unskilled labor reduces deforestation because people gain employment in other parts of the economy. Taxation of other produced goods changes the incentives for deforestation. For example, a tax on agricultural products elevates the relative price of capital and shifts resources away from the capital-intensive industrial sector toward the agricultural and forest sectors. As a result, such a tax increases deforestation.

Discussion, Technical, and Related Papers
Restructuring Banks and Enterprises: Recent Lessons from Transition Countries
Discussion Paper 279
Michael Borisk, Millard F. Long, and Michel Noel
The collapse of central planning in the countries of Eastern Europe and the former Soviet Union has had broad implications for state enterprises and banks. Suddenly faced with having to operate in a market economy, state enterprises turned to banks for credits to help them avoid hard budget constraints and postpone restructuring. That led to rapid deterioration of the loan portfolios of state-owned commercial banks—and thus to increasing liability for the state, whose implicit insurance of deposits precluded closing the banks.

This paper reviews the early bank restructuring experience and the role of banks in enterprise restructuring in 23 transition economies. It looks at court-led bankruptcy and liquidation proceedings and out-of-court conciliation procedures for enterprise restructuring and at government interventions in recognizing past losses by state enterprises. And it discusses the timing and sequencing of enterprise and financial sector reforms in relation to the pace of privatization and systemic transformation in the economy.

Management and Financing of Roads: An Agenda for Reform
Technical Paper 275
Ian Graeme Heggie
This paper summarizes the experience gained in nine countries participating in the African Road Maintenance Initiative—Cameroon, Kenya, Madagascar, Nigeria, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe. Launched by the United Nations Economic Commission for Africa and the World Bank, the program has been an effort to identify the underlying causes of poor road maintenance policies and to develop a reform agenda to achieve sustainable, long-term management and financing of roads. This paper concludes that the key to road maintenance reform is commercialization: bring roads into the marketplace, put them on a fee-for-service basis, and manage them like a business rather than a bureaucracy.

Corporate Governance in Transitional Economies: Insider Control and the Role of Banks
EDI Development Study
Hyung-Ki Kim and Mashiko Aoki
This volume comprises a collection of papers that look at insider control of enterprises in transition economies and explore the use of banks as monitoring mechanisms. Insider control describes a situation in which the controlling rights in an enterprise are seized by management, whose interests are then strongly represented in strategic decisionmaking. A simple solution to this problem would be to ensure that stockholders have a controlling position on the corporate board, but there are no external agencies with the power to monitor corporate governance.

The volume reviews issues of corporate governance in transition economies from the perspective of comparative institutional analysis. Case studies then look at the transition in China, Russia, and the former East Germany. Finally, the volume examines experiences in postwar Germany and Japan, where banks occupied a unique position in corporate governance.
Informal Regulation of Industrial Pollution in Developing Countries: Evidence from Indonesia
Sheoli Pargal and David Wheeler
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Uncertainty and Global Warming: An Option-Pricing Approach to Policy
Andrea Baranzini, Marc Chesney, and Jacques Morisset
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Martin C. Stewart-Smith
WPS 1419 • Contact Nicola James, room MC6-448, tel. 202-458-2758.

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Millard Long and Izabela Rutkowska
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Hemamala Hettige, Paul Martin, Manjula Singh, and David Wheeler
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1-2—Seventh World Bank Conference on Development Economics, Washington, DC, sponsored by Michael Bruno, Vice President, Development Economics, and Chief Economist, and inaugurated by Gautam S. Kaji. Conference has sessions on Revisiting Redistribution with Growth—Inequality, Poverty, and Growth: Where Do We Stand? (Albert Fishlow, Montek Ahluwalia, Francois Bourguignon, and Gustav Ranis), and Research on Poverty and Development Twenty Years after Redistribution with Growth (Pranab Bardhan, Ravi Kanbur, and Michael Lipton); Demographic Change and Development—Economic Support in Old Age (Peter Diamond, Nicolas Barr, Estelle James, and Salvador Valdés-Prieto), and Engendering Economics: New Perspectives on Women, Work, and Demographic Change (Nancy Folbre, Elza Berquó, and Lawrence Haddad); Aid and Development—Why Is There Multilateral Lending? (Dani Rodrik, Guillermo Calvo, and Stijn Claessens), Incentives, Rules of the Game, and Development (Elinor Ostrom, Robert Klitgaard, and Margaret Levi), and Is Growth in Developing Countries Beneficial to Developed Countries? (Richard Cooper, Willem Buiter, and Matthew Slaughter); Fiscal Decentralization—Fiscal Federalism and Decentralization: A Review of Some Efficiency and Macroeconomic Aspects (Vito Tanzi, Charles McLure, and David Wildasin), Conflicts and Dilemmas of Decentralization (Rudolf Hommes, Wallace Oates, and Remy Prud’homme); and a roundtable discussion on Second Generation Issues of Transition (Michael Bruno, moderator, and Stanley Fischer, Jana Matesová, and Susan Rose-Ackerman, participants).

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