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THE WORLD BANK

# Research Observer

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# Research Observer

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# Research Observer

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# Globalization, Poverty, and Inequality since 1980

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David Dollar

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*One of the most contentious issues of globalization is the effect of global economic integration on inequality and poverty. This article documents five trends in the modern era of globalization, starting around 1980. The first trend is that growth rates in poor economies have accelerated and are higher than growth rates in rich countries for the first time in modern history. Developing countries' per capita incomes grew more than 3.5 percent a year in the 1990s. Second, the number of extremely poor people in the world has declined significantly—by 375 million people since 1981—for the time in history. The share of people in developing economies living on less than \$1 a day has been cut in half since 1981, though the decline in the share living on less than \$2 per day was much less dramatic. Third, global inequality has declined modestly, reversing a 200-year trend toward higher inequality. Fourth, within-country inequality in general is not growing, though it has risen in several populous countries (China, India, the United States). Fifth, wage inequality is rising worldwide. This may seem to contradict the fourth trend, but it does not because there is no simple link between wage inequality and household income inequality. Furthermore, the trends toward faster growth and poverty reduction are strongest in developing economies that have integrated with the global economy most rapidly, which supports the view that integration has been a positive force for improving the lives of people in developing areas.*

Globalization has dramatically increased inequality between and within nations.

—Jay Mazur (2000)

Inequality is soaring through the globalization period, within countries and across countries. And that's expected to continue.

—Noam Chomsky

All the main parties support nonstop expansion in world trade and services although we all know it... makes rich people richer and poor people poorer.

—Walter Schwarz, *The Guardian*

We are convinced that globalization is good and it's good when you do your homework... keep your fundamentals in line on the economy, build up high levels of education, respect rule of law... when you do your part, we are convinced that you get the benefit.

—President Vicente Fox of Mexico

There is no way you can sustain economic growth without accessing a big and sustained market.

—President Yoweri Museveni of Uganda

We take the challenge of international competition in a level playing field as an incentive to deepen the reform process for the overall sustained development of the economy. WTO membership works like a wrecking ball, smashing whatever is left in the old edifice of the former planned economy.

—Jin Liqun, Vice Minister of Finance of China

There is an odd disconnect between debates about globalization in developed economies and developing economies. Among intellectuals in developed areas one often hears the claim that global economic integration is leading to rising global inequality—that is, that integration benefits rich people proportionally more than poor people. In the extreme claims poor people are actually made out to be worse off absolutely (as in the epigraph from Schwarz). In developing economies, though, intellectuals and policymakers often view globalization as providing good opportunities for their countries and people. To be sure, they are not happy with the current state of globalization. The epigraph from President Yoweri Museveni, for example, comes from a speech that blasts rich countries for their protectionism against poor countries and lobbies for better market access. But the point of these critiques is that integration—through foreign trade, foreign investment, and immigration—is basically a good thing for poor countries and that rich countries could do a lot more to facilitate integration—that is, make it freer. The claims from antiglobalization intellectuals in rich countries, however, lead inescapably to the conclusion that integration is bad for poor countries and that therefore trade and other flows should be more restricted.

The first goal of this article is to document what is known about trends in global inequality and poverty over the long term and during the recent wave of globalization that began around 1980. Global inequality is used to mean different things in

different discussions — distribution among all the citizens of the world, distribution within countries, distribution among countries, distribution among wage earners—all of which are used in this article. A second goal of the article is to relate these trends to globalization.

The first section briefly discusses the growing integration of developing economies with industrialized countries and with each other, starting around 1980. The opening of large developing countries, such as China and India, is arguably the most distinctive feature of this wave of globalization. The second section, the heart of the article, presents evidence in support of five trends in inequality and poverty since 1980:

Growth rates in poor countries have accelerated and are higher than growth rates in rich countries for the first time in modern history.

The number of extremely poor people (those living on less than \$1 a day) in the world has declined significantly—by 375 million people—for the first time in history, though the number living on less than \$2 a day has increased.

- Global inequality has declined modestly, reversing a 200-year trend toward higher inequality.
- Within-country inequality is generally not growing.
- Wage inequality is rising worldwide. This may seem to contradict the fourth trend, but it does not because there is no simple link between wage inequality and household income inequality.

The third section then tries to draw a link between the increased integration and accelerated growth and poverty reduction. Individual cases, cross-country statistical analysis, and micro-evidence from firms all suggest that opening to trade and direct investment has been a good strategy for such countries as the China, India, Mexico, Uganda, and Vietnam. The conclusions for policy in the fourth section are very much in the spirit of the comments from Presidents Fox and Museveni. Developing economies have a lot to do to develop in general and to make effective use of integration as part of their development strategy. Rich countries could do a lot more with foreign aid to help with that work. As Museveni indicates, access to markets in rich countries is important. A lot of protections remain in Organisation for Economic Co-operation and Development (OECD) markets from the goods and people of developing economies, and globalization would work much better for poor people if developing areas had more access to those markets.

## Growing Integration between Developed and Developing Economies

Global economic integration has been going on for a long time. In that sense, globalization is nothing new. What is new in this most recent wave of globalization is the

way developing countries are integrating with rich countries. As in previous waves of integration, this change is driven partly by technological advances in transport and communications and partly by deliberate policy choices.

### *Earlier Waves of Globalization*

From 1820 to 1870 the world had already seen a fivefold increase in the ratio of trade to gross domestic product (GDP) (table 1). Integration increased further in 1870–1914, spurred by the development of steam shipping and by an Anglo-French trade agreement. In this period the world reached levels of economic integration comparable in many ways to those of today. The volume of trade relative to world income nearly doubled from 10 percent in 1870 to 18 percent on the eve of World War I. There were also large capital flows to rapidly developing parts of the Americas, and the ownership of foreign assets (mostly Europeans owning assets in other countries) more than doubled in this period, from 7 percent of world income to 18 percent. Probably the most distinctive feature of this era of globalization was mass migration. Nearly 10 percent of the world's population permanently relocated in this period (Williamson 2004). Much of this migration was from poor parts of

**Table 1.** Measures of Global Integration

Year	Capital Flows	Trade Flows	Transport and Communications Costs (constant US\$)		
	Foreign Assets/ World GDP (%)	Trade/GDP (%)	Sea Freight (average ocean freight and port charges per ton)	Air Transport (average revenue per passenger mile)	Telephone Call (average price for a 3-minute call between New York and London)
1820	—	2	—	—	—
1870	6.9	10	—	—	—
1890	—	12	—	—	—
1900	18.6	—	—	—	—
1914	17.5	18	—	—	—
1920	—	—	95	—	—
1930	8.4	18	60	0.68	245
1940	—	—	63	0.46	189
1945	4.9	—	—	—	—
1950	—	14	34	0.30	53
1960	6.4	16	27	0.24	46
1970	—	22.4–20	27	0.16	32
1980	17.7	—	24	0.10	5
1990	—	26	29	0.11	3
1995	56.8	—	—	—	—

Source: Crafts (2000) for capital flows; Maddison (1995) and Crafts (2000) for trade flows; World Bank (2002) for transport and communications costs.

— not available.

Europe to the Americas. But there was also considerable migration from China and India (much of it forced migration in India). While global indicators showed considerable integration in 1870–1914, this was also the heyday of colonialism, and most of the world's people were greatly restricted in their opportunities to benefit from the expanding commerce.

Global integration took a big step backward during the two world wars and the Great Depression. Some discussions of globalization today assume it was inevitable, but this dark period is a powerful reminder that policies can halt and reverse integration. By the end of this dark era both trade and foreign asset ownership were back close to their levels of 1870—the protectionist period undid 50 years of integration. The era of free migration was also at an end, as virtually all countries imposed restrictions on immigration.

From the end of World War II to about 1980, industrialized countries restored much of the integration that had existed among them. They negotiated a series of mutual trade liberalizations under the auspice of the General Agreement on Tariffs and Trade. But liberalization of capital flows proceeded more slowly, and not until 1980 did the level of ownership of foreign assets returned to its 1914 level. Over this period there was also modest liberalization of immigration in many industrialized countries, especially the United States. In this postwar period of globalization, many developing economies chose to sit on the sidelines. Most developing areas in Asia, Africa, and Latin America followed import-substituting industrialization strategies, keeping their levels of import protection far higher than in industrialized countries to encourage domestic production of manufactures and usually restricting foreign investment by multinational firms to encourage the growth of domestic firms. While limiting direct investment, several developing economies turned to the expanding international bank borrowing sector in the 1970s and took on significant amounts of foreign debt.

### *Recent Wave of Globalization*

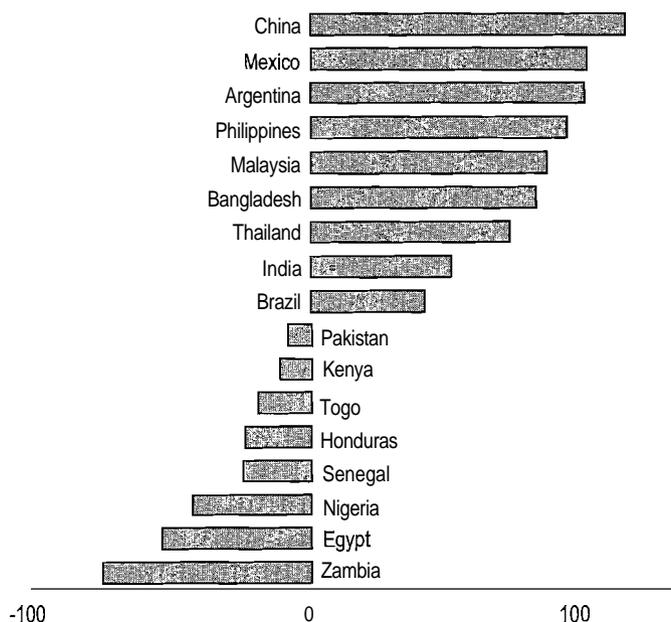
The most recent wave of globalization started in 1978 with the initiation of China's economic reform and opening to the outside world, which roughly coincides with the second oil shock, which contributed to external debt crises throughout Latin America and in other developing economies. In a growing number of countries in Latin America, South Asia, and Sub-Saharan Africa political and intellectual leaders began to fundamentally rethink development strategies. The distinctive part of this latest wave of globalization is that the majority of developing economies (in terms of population) shifted from an inward-focused strategy to a more outward-oriented one.

This altered strategy can be seen in the huge increases in trade integration of developing areas over the past two decades. China's ratio of trade to national income

has more than doubled, and countries such as Mexico, Bangladesh, Thailand, and India have seen large increases as well (figure 1). But several developing economies trade less of their income than two decades ago, a fact that will be discussed later. The change has not been only in the amount, but also in the nature of what is traded. Twenty years ago, nearly 80 percent of developing country merchandise exports were primary products: the stereotype of poor countries exporting tin or bananas had a large element of truth. The big increase in merchandise exports in the past two decades, however, has been of manufactured products, so that 80 percent of today's merchandise exports from developing countries are manufactures (figure 2). Garments from Bangladesh, CD players from China, refrigerators from Mexico, and computer peripherals from Thailand—these are the modern face of developing economy exports. Service exports from developing areas have also increased enormously—both traditional services, such as tourism, and modern ones, such as software from Bangalore, India.

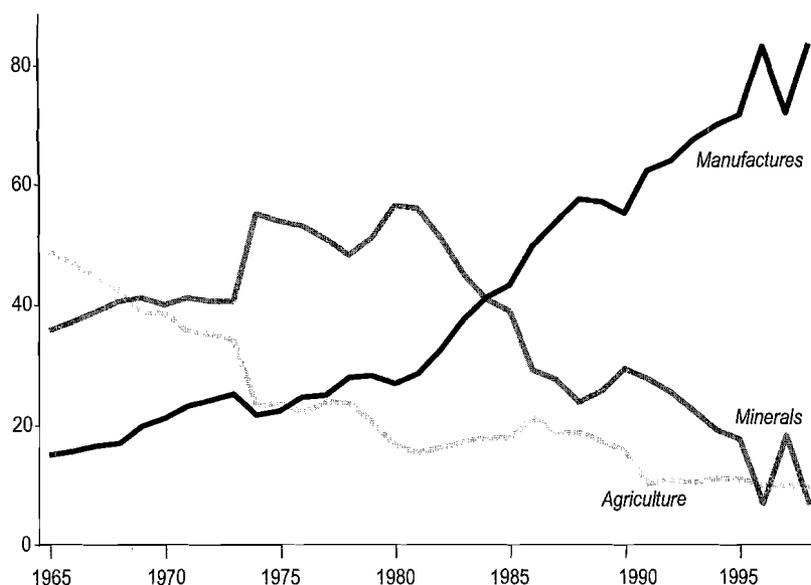
Manufactured exports from developing economies are often part of multinational production networks. Nike contracts with firms in Vietnam to make shoes; the "world car" is a reality, with parts produced in different locations. So part of the answer to why integration has taken off must lie with technological advances that

**Figure 1.** Change in Trade as a Share of GDP, Selected Countries, 1977–97 (%)



Source: World Bank (2002).

**Figure 2.** Developing Country Exports by Sector, 1965–99 (% of total)



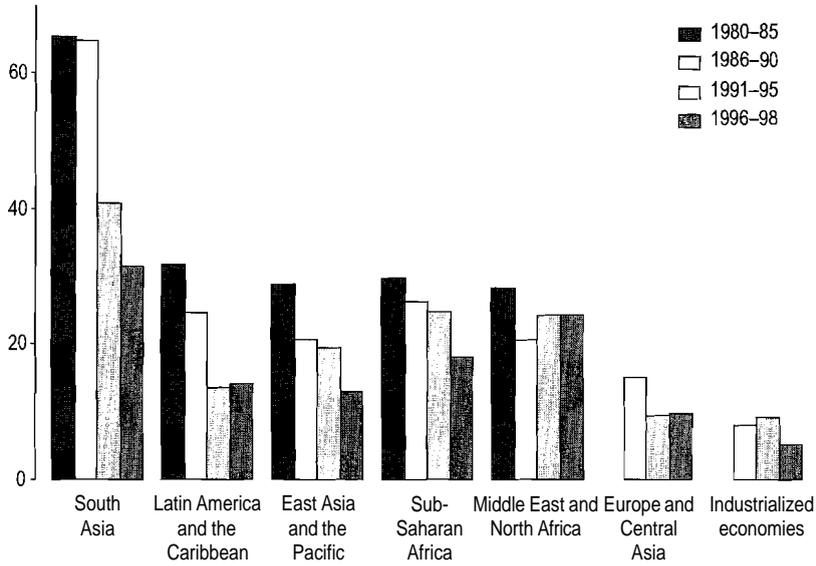
Source: World Bank (2002).

make integrated production feasible (see table 1 for evidence of the dramatic declines in the cost of air transport and international communications). But part of the answer also lies in policy choices of developing economies. China and India had almost totally closed economies, so their increased integration would not have been possible without steps to gradually liberalize trade and direct foreign investment.

Some measure of this policy trend can be seen in average import tariff rates for developing economies. Since 1980 average tariffs have declined sharply in South Asia, Latin America and the Caribbean, and East Asia and Pacific, whereas in Africa and the Middle East there has been much less tariff-cutting (figure 3). These reported average tariffs, however, capture only a small amount of what is happening with trade policy. Often the most pernicious impediments are nontariff barriers: quotas, licensing schemes, restrictions on purchasing foreign exchange for imports, and the like. China started to reduce these nontariff impediments in 1979, which led to a dramatic surge in trade (figure 4). In 1978 external trade was monopolized by a single government ministry.' Specific measures adopted in China included allowing a growing number of firms, including private ones, to trade directly and opening a foreign exchange market to facilitate this trade.

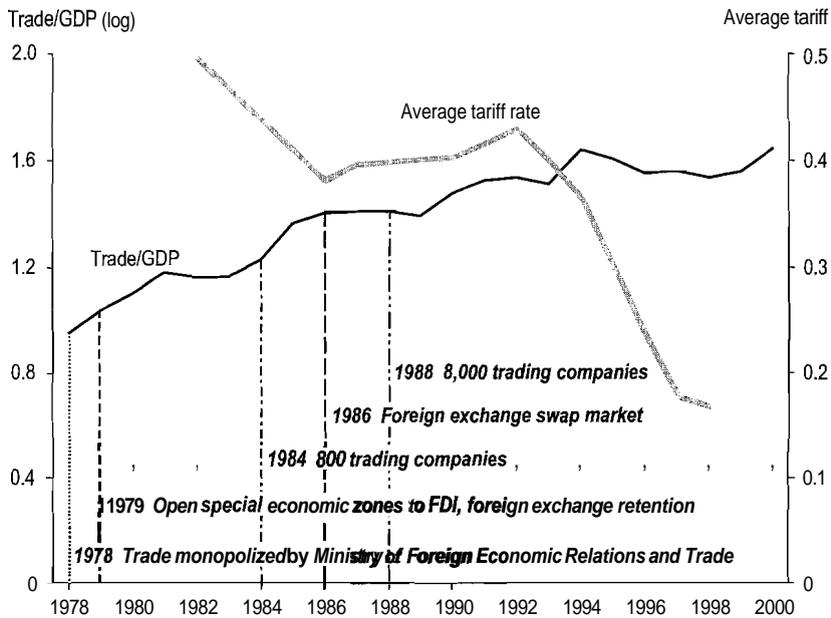
Another major impediment to trade in many developing areas is inefficient ports and customs administration. For example, it is much more expensive to ship a container of textiles from a Mombasa, Kenya, port to the East Coast of the United States

**Figure 3.** Average Unweighted Tariff Rates, by Region, 1980–98 (%)



Source: World Bank (2002).

**Figure 4.** Trade Reforms and Volumes in China, 1978–2000



Source: Dollar and Kraay (2003).

than from Asian ports such as Mumbai, Shanghai, Bangkok, or Kaohsiung, Taiwan (China), even though Mombasa is closer (Clark and others 2004). The extra cost, equivalent to an 8 percent export tax, is due to inefficiencies and corruption in the port. Long customs delays often act as import and export taxes. Developing economies that have become more integrated with the world economy have reasonably well-functioning ports and customs, and their improvement has often been a deliberate policy target. Several countries, including Kenya, trade less of their income today than 20 years ago; surely this is partly the result of restrictive trade policies, defined broadly to include inefficient ports and customs.

Thus, one key development in this current wave of globalization is a dramatic change in the way many developing countries relate to the global economy. Developing economies as a whole are a major exporter of manufactures and services—many of which compete directly with products made in industrialized countries. The nature of trade and competition between rich and poor countries has fundamentally changed.

## Accelerated Growth and Poverty Reduction in Developing Economies

Some of the debate about globalization concerns its effects on poor countries and poor people. The introduction quotes several sweeping statements that assert that global economic integration is increasing poverty and inequality in the world. But the reality is far more complex—and to some extent runs exactly counter to what is being claimed by antiglobalists. Thus, this section focuses on the trends in global poverty and inequality, and the following section links them to global integration. The trends of the last 20 years highlighted here are:

Growth rates of developing economies have accelerated and are higher than those of industrialized countries.

The number of extremely poor people (those living on less than \$1 a day) has declined for the time in history, though the number of people living on less than \$2 a day has increased.

Measures of global inequality (such as the global Gini coefficient) have declined modestly, reversing a long historical trend toward greater inequality.

Within-country inequality in general is not growing, though it has risen in several populous countries (China, India, the United States).

- Wage inequality in general has been rising (meaning larger wage increases for skilled workers than for unskilled workers).

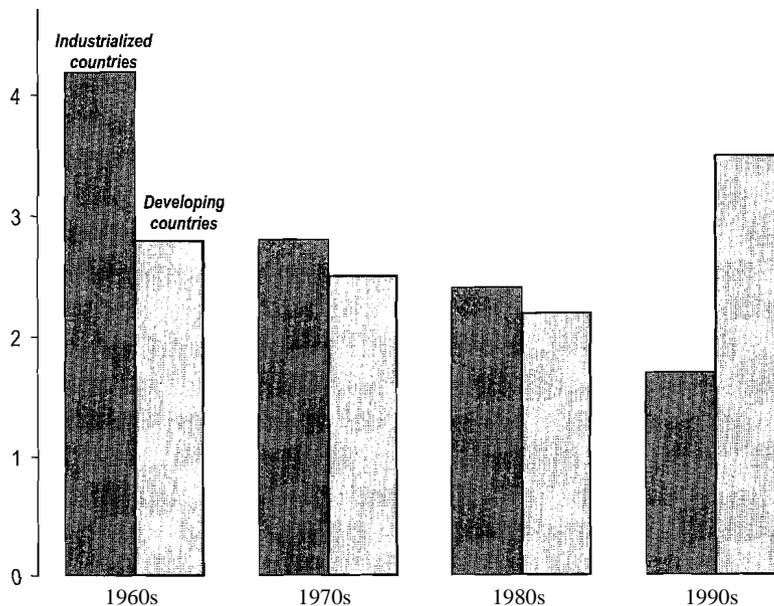
The fifth trend may seem to run counter to the fourth trend; why it does not will be explained here. The fifth trend is important for explaining some of the anxiety about globalization in industrialized countries.

### *Growth Rates in Developing Economies Have Accelerated*

Reasonably good data on economic growth since 1960 for about 100 countries that account for the vast majority of world population are summarized in the Penn World Tables (Center for International Comparisons 2004). Aggregating data on growth rates for industrialized countries and developing economies for which there are data since 1960 shows that in general growth rates have declined in rich countries while accelerating in developing countries (figure 5). In particular, in the 1960s growth of OECD countries was about twice as fast as that of developing areas. Per capita growth rates in rich countries have gradually declined from about 4 percent in the 1960s to 1.7 percent in the 1990s—close to the long-term historical trend rate of the OECD countries. The rapid growth in the 1960s was still to some extent a rebound from the destruction of World War II as well as a payoff to economic integration among rich countries.

In the 1960s and early 1970s, the growth rate of developing economies was well below that of rich countries, a paradox whose origin has been long debated. The slower growth of less developed economies was a paradox because neoclassical growth theory suggested that other things being equal poor countries should grow

**Figure 5.** GDP per Capita Growth Rate, by Country Type, 1960s–1990s (%)



Source: Center for International Comparisons (2004).

faster. This pattern finally emerged in the 1990s, with per capita growth in developing countries of about 3.5 percent—more than twice the rate of rich countries.

This high aggregate growth depends heavily on several large countries that were among the poorest in the world in 1980 but that have grown well since then. Ignoring differences in population and averaging growth rates in poor countries over 1980–2000 result in an average growth of about zero for poor countries. China, India, and several small countries, particularly in Africa, are among the poorest quintile of countries in 1980. Ignoring population, the average growth of Chad and China is about zero, and the average growth of India and Togo is about zero. Accounting for differences in population, though, the average growth of poor countries has been very good in the past 20 years. China obviously carries a large weight in any calculation of the growth of poor countries in 1980, but it is not the only poor country that did well: Bangladesh, India, and Vietnam also grew faster than rich countries in the same period. Several African economies, notably Uganda, also had accelerated growth.

### *The Number of Extremely Poor People Has Declined by 375 Million Globally*

The most important point in this section is that poverty reduction in low-income countries is very closely related to the GDP growth rate. The accelerated growth of low-income countries has led to unprecedented poverty reduction. By poverty I mean subsisting below some absolute threshold. Most poverty analyses are carried out with countries' own poverty lines, which are set in country context and naturally differ.

China, for example, uses a poverty line defined in constant Chinese yuan. The poverty line is deemed the minimum amount necessary to subsist. In practice, estimates of the number of poor in a country such as China come from household surveys carried out by a statistical bureau. These surveys aim to measure what households actually consume. Most extremely poor people in the world are peasants, and they subsist to a large extent on their own agricultural output. To look only at their money income would not be very relevant, because the extremely poor have only limited involvement in the money economy. Thus measures ask households what they actually consume and attach a value to their consumption based on the prices of different commodities. So a poverty line is meant to capture a certain real level of consumption. Estimating the extent of poverty is obviously subject to error, but in many countries the measures are good enough to pick up large trends. In discussing poverty it is important to be clear on the poverty line being used. In global discussions international poverty lines of either \$1 a day or \$2 a day, calculated at purchasing power parity, are used. For discussions of global poverty a common line should be applied to all countries.

Chen and Ravallion (2004) used household survey data to estimate the number of poor people worldwide based on the \$1 a day and \$2 a day poverty lines back to

1981. They found that the incidence of extreme poverty (consuming less than \$1 a day) was basically cut in half in 20 years, from 40.4 percent of the population in developing economies in 1981 to 21.1 percent in 2001. It is interesting that the decline in \$2 a day poverty incidence was not as great, from 66.7 percent to 52.9 percent, over the same period.

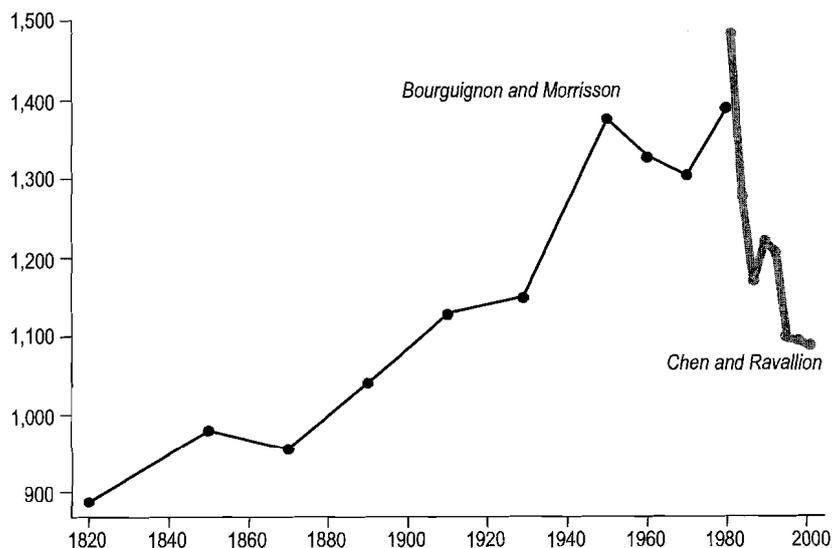
Poverty incidence has been gradually declining throughout modern history, but in general population growth has outstripped the decline in incidence so that the total number of poor people has actually risen. Even in 1960–80, a reasonably prosperous period for developing economies, the number of extremely poor people continued to rise (figure 6).<sup>2</sup> Most striking in the past 20 years is that the number of extremely poor people declined by 375 million, while at the same time world population rose by 1.6 billion. But the decline was not steady: in 1987–93 the number of extremely poor people rose, as growth slowed in China and India underwent an economic crisis. After 1993 growth and poverty reduction accelerated in both countries.

The 1981–2001 decline in the number of extremely poor people is unprecedented in human history. At the same time many of those who rose above the very low \$1 a day threshold are still living on less than \$2 a day. The number of people living on less than \$2 a day increased between 1981 and 2001 by nearly 300 million. About half the world's population still lives on less than \$2 a day, and it will take several more decades of sustained growth to bring this figure down significantly.

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**Figure 6.** Extreme Poverty in the World, 1820–2001 (millions of people living on less than \$1 a day)

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Source: Bourguignon and Morrisson (2002); Chen and Ravallion (2004).

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Although the overall decline in extreme poverty is positive news, performance has varied by region. South Asia and East Asia and Pacific grew well and reduced poverty, but Sub-Saharan Africa had negative growth between 1981 and 2001 and a rise in poverty: the number of extremely poor people there increased from 164 million (41.6 percent of the population) to 316 million (46.9 percent of the population). Two-thirds of extremely poor people still live in Asia, but if strong growth there continues, global poverty will be increasingly concentrated in Africa.

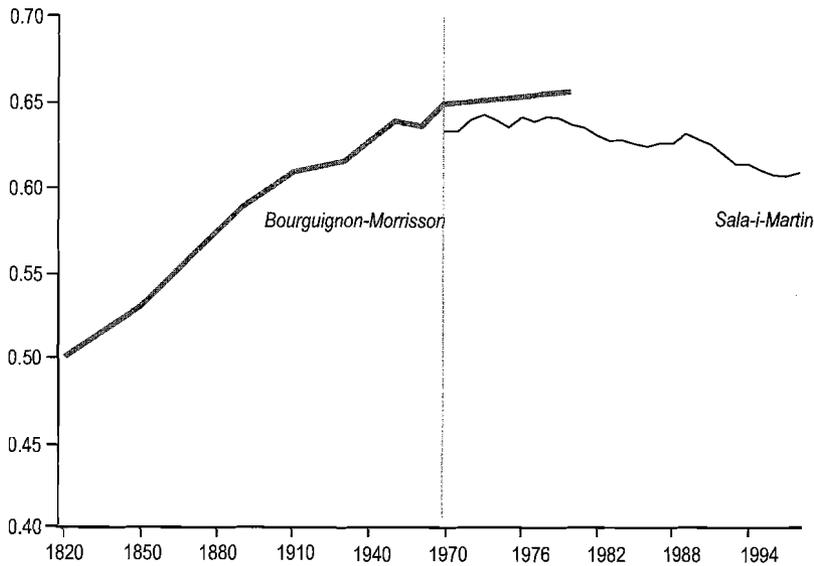
### *Global Inequality Has Declined Modestly*

Global inequality is casually used to mean several things, but the most sensible definition is the same as for a country: line up all the people in the world from the poorest to the richest and calculate a measure of inequality among their incomes. There are several measures, of which the Gini coefficient is the best known. Bhalla (2002) estimates that the global Gini coefficient declined from 0.67 in 1980 to 0.64 in 2000 after rising from 0.64 in 1960. Sala-i-Martin (2002) likewise finds that all the standard measures of inequality show a decline in global inequality since 1980. Both Bhalla and Sala-i-Martin combine national accounts data on income or consumption with survey-based data on distribution. Deaton (2004) discusses the problems of using national accounts data for studying poverty and inequality, noting among other things that the growth rates in national accounts data for China and India are arguably overestimated. This bias would tend to exaggerate the decline in global inequality over the past 25 years. Hence, there is a fair degree of uncertainty about the magnitude of the estimated decline in global inequality.<sup>3</sup>

For historical perspective, Rourguignon and Morrisson (2002) calculate the global Gini coefficient back to 1820. Although confidence in these early estimates is not high, they illustrate an important point: global inequality has been on the rise throughout modern economic history. Bourguignon and Morrisson estimate that the global Gini coefficient rose from 0.50 in 1820 to about 0.65 around 1980 (figure 7). Sala-i-Martin (2002) estimates that it has since declined to 0.61.

Other measures of inequality such as mean log deviation show a similar trend, rising until about 1980 and then declining modestly after (figure 8). Roughly speaking, the mean log deviation is the percent difference between average income in the world and the income of a randomly chosen individual who represents a typical person. Average per capita income in the world today is around \$5,000, but the typical person lives on 20 percent of that, or \$1,000. The advantage of the mean log deviation is that it can be decomposed into inequality between countries (differences in per capita income across countries) and inequality within countries. This decomposition shows that most inequality in the world can be attributed to inequality among

**Figure 7.** Global Gini Coefficient, 1820–1997



Source: Bourguignon and Morrisson (2002). Sala-i-Martin (2002).

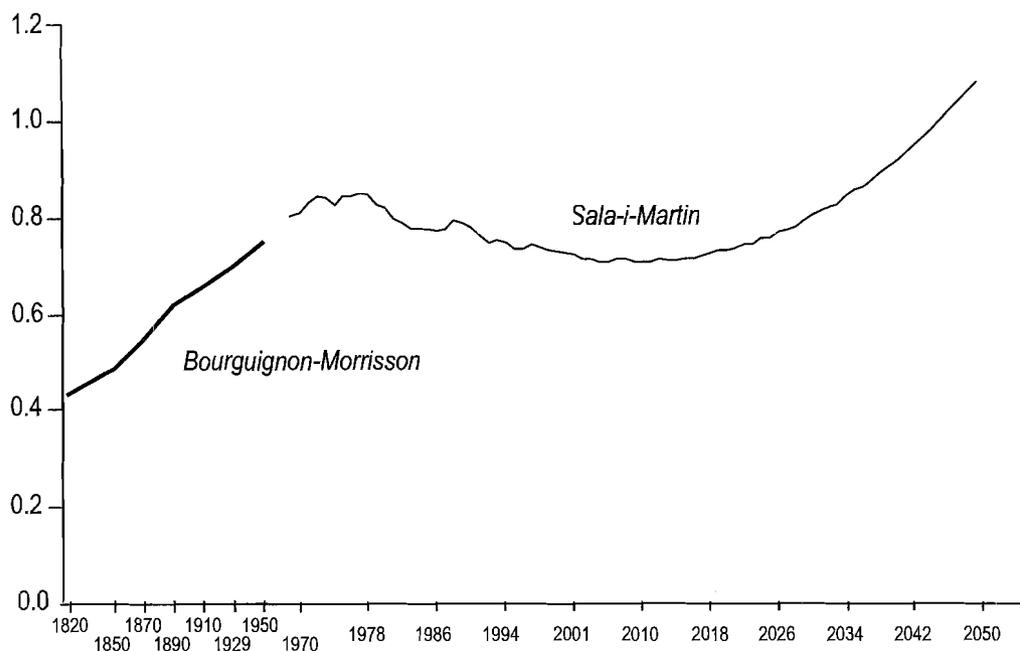
countries. Global inequality rose from 1820 to 1980, primarily because already relatively rich countries (those in Europe and North America) grew faster than poor ones. As noted in the discussion of the first trend, that pattern of growth was reversed starting around 1980, and the faster growth in such poor countries as Bangladesh, China, India, and Vietnam accounts for the modest decline in global inequality since then.<sup>4</sup> (Slow growth in Africa tended to increase inequality, faster growth in low-income Asia tended to reduce it, and Asia's growth modestly outweighed Africa's.)

Thinking about the different experiences of Africa and Asia, as in the last section, helps give a clearer picture of what is likely to happen in the future. Rapid growth in Asia has been a force for greater global equality because that is where the majority of the world's extremely poor people lived in 1980—and they benefited from growth. But if the same growth trends persist, they will not continue to be a force for equality. Sala-i-Martin (2002) projects future global inequality if the growth rates of 1980–98 persist: global inequality will continue to decline until about 2015, after which global inequality will rise sharply (see figure 8). A large share of the world's poor people still lives in India and other Asian countries, so that continued rapid growth there will be equalizing for another decade or so. But increasingly poverty will be concentrated in Africa, so that if slow growth persists there, global inequality will eventually rise again.

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**Figure 8.** Global Household Inequality, 1820–2050 (mean log deviation)

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Source: Bourguignon and Morrisson (2002); Sala-i-Martin (2002).

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### *Within-Country Inequality Is in General Not Growing*

The previous analysis shows that inequality within countries has a relatively small role in measures of global income inequality. But people care about trends in inequality in their own societies (arguably more than they care about global inequality and poverty). So a different question is what is happening to income inequality within countries. One common claim about globalization is that it leads to greater inequality within countries and thus fosters social and political polarization.

To assess this claim Dollar and Kraay (2002) collected income distribution data from more than 100 countries, in some cases going back decades. They found no general trend toward higher or lower inequality within countries. Focusing on the share of income going to the bottom quintile, another common measure of inequality, they found increases in inequality for some countries (for example, China and the United States) in the 1980s and 1990s and decreases for others. They also tried to use measures of integration to explain the changes in inequality that have occurred, but none of the changes were related to any of the measures. For example, countries in which trade integration increased showed rises in inequality in some

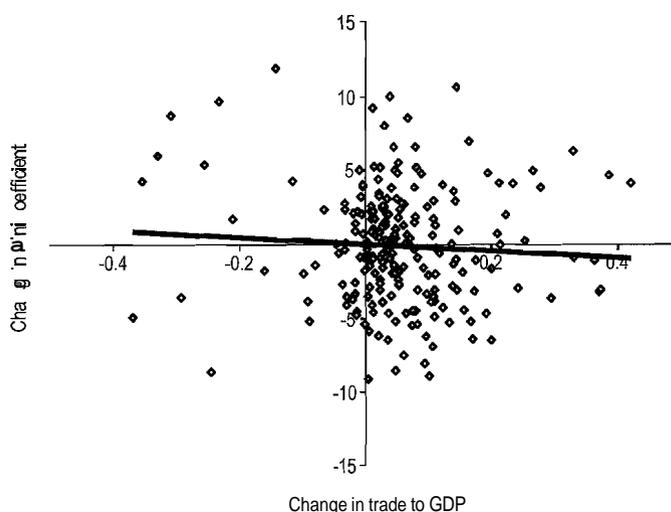
cases and declines in others (figure 9). They found the same results for other measures, such as tariff rates and capital controls. Particularly in low-income countries, much of the import protection benefited relatively rich and powerful groups, so that integration with the global market went hand in hand with declines in income inequality. It is widely recognized that income distribution data have a lot of measurement error, which makes it difficult to identify systematic relationships, but given the available data, there is no robust evidence that integration is systematically related to higher inequality within countries.

There are two important caveats to this conclusion. First, inequality has risen in several very populous countries, notably China, India, and the United States. This means that a majority of citizens of the world live in countries in which inequality is rising. Second, the picture of inequality is not so favorable for rich countries in the past decade. The Luxembourg Income Study, using comparable, high-quality income distribution data for most rich countries, finds no obvious trends in inequality through the mid- to late 1980s. Over the past decade, through, inequality has increased in most rich countries. Because low-skilled workers in these countries now compete more with workers in developing economies, global economic integration can create pressure for higher inequality in rich countries while having effects in poor countries that often go the other way. The good news from the Luxembourg Income Study is that "domestic policies and institutions still have large effects on the level and trend of inequality within rich and middle-income nations, even in a globalizing world... Globalization does not force any single outcome on any country"

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**Figure 9.** Correlation between Change in Gini Coefficient and Change in Trade as a Share of GDP

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Source: Dollar and Kraay (2002).

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(Smeeding 2002, p. 179). In other words, some rich countries have maintained stable income distributions in this era of globalization through their social and economic policies (on taxes, education, welfare, and the like).

### *Wage Inequality Is Rising Worldwide*

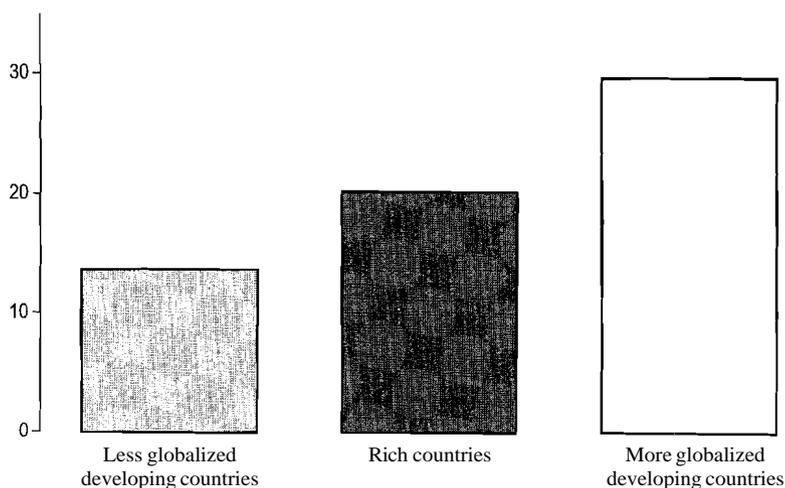
Much of the concern about globalization in rich countries relates to workers, wages, and other labor issues. The most comprehensive examination of globalization and wages used International Labour Organization data from the past two decades (Freeman and others 2001). These data look across countries at what is happening to wages for very specific occupations (for example, bricklayer, primary schoolteacher, nurse, autoworker). The study found that wages have generally been rising fastest in more globalized developing economies, followed by rich countries, and then less globalized developing economies (figure 10). More globalized developing economies are the top third of developing economies in terms of increased trade integration over the past 20 years (Dollar and Kraay 2004). Less globalized developing economies are the remaining developing economies. The fastest wage growth is occurring in developing economies that are actively increasing their integration with the global economy.

Although the general rise in wages is good news, the detailed findings from Freeman and others (2001) are more complex and indicate that certain types of workers benefit more than others. First, increased trade is related to a decline in the gender

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**Figure 10.** Wage Growth by Country Type, 1980s–1990s (%)

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Source: Freeman and others (2001).

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wage gap. More trade appears to lead to a more competitive labor market in which groups that have been traditionally discriminated against—women, for example—fare especially well (Oostendorp 2002). Second, the gains from increased trade appear to be larger for skilled workers. This finding is consistent with other work showing a worldwide trend toward greater wage inequality—that is, a larger gap between pay for educated workers and pay for less educated and unskilled workers. Galbraith and Liu (2001), for example, find a worldwide trend toward greater wage inequality among industries. Wages in skill-intensive industries, such as aircraft production, have been going up faster than wages in low-skill industries, such as garments.

If wage inequality is going up worldwide, how can income inequality not be rising in most countries? There are several reasons. First, in the typical developing economy wage earners make up a small share of the population. Even unskilled wage workers are a relatively elite group. Take Vietnam, for example, a low-income country with a survey of the same representative sample of households early in liberalization (1993) and five years later. The majority of households in the country (and thus in the sample) are peasants. The household data show that the price of the main agricultural output (rice) went up dramatically while the price of the main purchased input (fertilizer) actually went down. Both movements are related directly to globalization because over the survey period Vietnam became a major exporter of rice (raising its price) and a major importer of fertilizer from cheaper producers (lowering its price). Poor families faced a much bigger wedge between rice's input price and output price, and their real income went up dramatically (Benjamin and Brandt 2002). So, one of the most important forces acting on income distribution in this low-income country had nothing to do with wages.

Several rural households also sent a family member to a nearby city to work in a factory for the first time. In 1989 the typical wage in Vietnamese currency was the equivalent of \$9 a month. Today, factory workers making contract shoes for U.S. brands often make \$50 a month or more. So the wage for a relatively unskilled worker has gone up nearly fivefold. But wages for some skilled occupations, for example, computer programmers and English interpreters, may have gone up 10 times or more (Glewwe and others 2004). Thus, a careful study of wage inequality is likely to show rising inequality. But how wage inequality translates into household inequality is very complex. For a surplus worker from a large rural household who obtains a newly created job in a shoe factory, earnings increase from \$0 to \$50 a month. If many new wage jobs are created, and if they typically pay much more than people earn in the rural or informal sectors, a country can have rising wage inequality but stable or even declining income inequality. (The Gini coefficient for household income inequality in Vietnam actually declined between 1993 and 1998, according to Glewwe 2004b.)

In rich countries most household income comes from wages, but household income inequality and wage inequality do not have to move in the same direction. If

there are changes in the way that people partner and combine into households, household inequality can rise even if wage inequality stays the same. Another point about wage inequality and household income inequality relevant to rich countries is that measures of wage inequality are often made before taxes are taken out of earnings. If the country has a strongly progressive income tax, inequality measures from household data (which are often made after taxes are taken out of earnings) do not have to follow pretax wage inequality. Tax policy can offset some of the trends in the labor market.

Finally, households can respond to increased wage inequality by investing more in their children's education. A higher economic return to education is not a bad thing, as long as there is equal access to education for all. Vietnam saw a tremendous increase in the secondary school enrollment rate in the 1990s—from 32 percent in 1990–91 to 56 percent in 1997–98 (Glewwe 2004a). This increase partly reflects society's and the government's investment in schools (supported by aid donors) and partly reflects households' decisions. If little or no return to education is perceived (that is, no jobs at the end of the road), it is much harder to convince families in poor countries to send their children to school. Where children have decent access to education, a higher skill premium stimulates a shift of the labor force from low-skill to higher-skill occupations.

It should also be noted that there has been a large decline in child labor in Vietnam since the country started integrating with the global market. There is ample evidence that child labor is driven primarily by poverty and educational opportunities. Child labor is more prevalent in poor households, but between 1993 and 1998 it declined for all income groups (figure 11). The change resulted from the fact that everyone was richer than they were five years earlier and from the expansion of schooling opportunities.

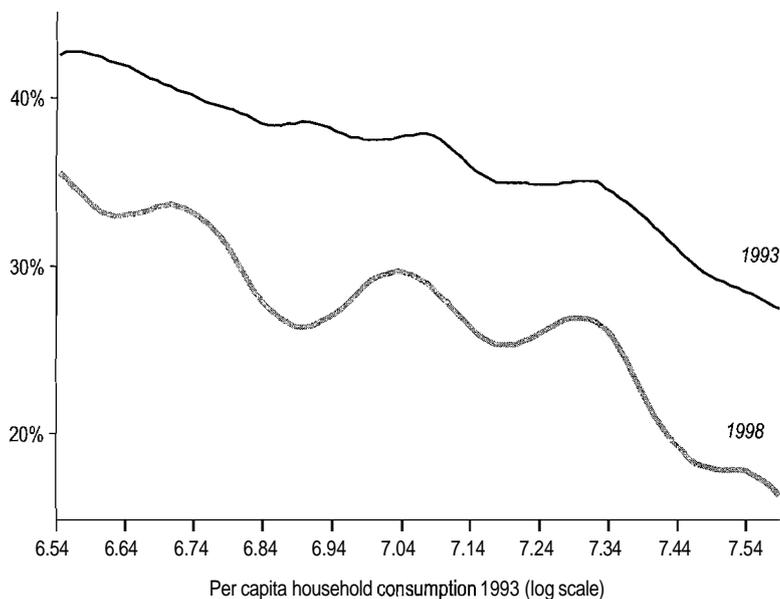
From this discussion of wage trends, it is easy to see why some labor unions in rich countries are concerned about integration with developing economies. It is difficult to prove that integration is increasing wage inequality, but it seems likely that integration is one factor. Concerning the immigration side of integration, Borjas and others (1997) estimate that flows of unskilled labor into the United States have reduced wages for unskilled labor by 5 percent from where they otherwise would be. Immigrants who find new jobs earn much more than they did before (10 times as much, according to World Bank 2002), but their competition reduces the wages of U.S. workers already doing such jobs. Similarly, imports of garments and footwear from countries such as Bangladesh and Vietnam create jobs for workers that pay far more than other opportunities in those countries but put pressure on unskilled wages in rich countries.

Thus overall the era of globalization has seen unprecedented reduction of extreme poverty and a modest decline in global inequality. But it has put real pressure on less skilled workers in rich countries—a key reason why the growing integration is controversial in industrialized countries.

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**Figure 11.** Child Labor and Household Consumption Levels in Vietnam, 1993 and 1998

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Source: Edmonds (2001).

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## Is There a Link between Integration and Poverty Reduction?

To keep track of the wide range of explanations that are offered for persistent poverty in developing nations, it helps to keep two extreme views in mind. The first is based on an object gap: Nations are poor because they lack valuable objects like factories, roads, and raw materials. The second view invokes an idea gap: Nations are poor because their citizens do not have access to the ideas that are used in industrial nations to generate economic value...

Each gap imparts a distinctive thrust to the analysis of development policy. The notion of an object gap highlights saving and accumulation. The notion of an idea gap directs attention to the patterns of interaction and communication between a developing country and the rest of the world.

—Paul Romer (1993)

Developing economies have become more integrated with the global economy in the past two decades, and growth and poverty reduction have accelerated. A natural question is whether there is a link between the two. In other words, could countries

such as Bangladesh, China, India, and Vietnam have grown as rapidly if they had remained as closed to foreign trade and investment as they were in 1980? This cannot be answered with scientific certainty, but several different types of evidence can be brought to bear on it.

It is useful to begin with what to expect from economic theory. As the quote from Romer suggests, traditional growth theory focuses on accumulation and the "object gap" between poor countries and rich ones. If increasing the number of factories and workplaces is the only important action, it does not matter whether the environment is closed or dominated by the state. This model was followed in the extreme by China and the Soviet Union, and to a lesser extent by most developing economies, which followed import-substituting industrialization strategies throughout the 1960s and 1970s. The disappointing results from this approach led to new thinking by policymakers in developing areas and economists studying growth. Romer was one of the pioneers of the new growth theory that emphasized how innovation occurs and is spread and the role of technological advance in improving the standard of living. Different aspects of integration—sending students abroad to study, connecting to the Internet, allowing foreign firms to open plants, purchasing the latest equipment and components—can help overcome the "idea gap" that separates poor countries from rich countries.

What is the evidence on integration spurring growth? Some of the most compelling evidence comes from case studies that show how this process can work in particular countries. Among the countries that were very poor in 1980, China, India, Uganda, and Vietnam provide an interesting range of examples:

### *China*

China's initial reforms in the late 1970s focused on the agricultural sector and emphasized strengthening property rights, liberalizing prices, and creating internal markets. Liberalizing foreign trade and investment were also part of the initial reform program and played an increasingly important role in growth as the 1980s proceeded (see figure 4). The role of international links is described in a case study by Eckaus (1997, pp. 415–37):

China's foreign trade began to expand rapidly as the turmoil created by the Cultural Revolution dissipated and new leaders came to power. Though it was not done without controversy, the argument that opening of the economy to foreign trade was necessary to obtain new capital equipment and new technology was made official policy... Most obviously, enterprises created by foreign investors have been exempt from the foreign trade planning and control mechanisms. In addition, substantial amounts of other types of trade, particularly the trade of the township and village enterprises

and private firms, have been relatively free. The expansion of China's participation in international trade since the beginning of the reform movement in 1978, has been one of the most remarkable features of its remarkable transformation.

## *India*

It is well known that India pursued an inward-oriented strategy into the 1980s with disappointing results in growth and poverty reduction. Bhagwati (1992, p. 48) crisply states the main problems and failures of the strategy:

I would divide them into three major groups: extensive bureaucratic controls over production, investment and trade; inward-looking trade and foreign investment policies; and a substantial public sector, going well beyond the conventional confines of public utilities and infrastructure.

Under this policy regime India's growth in the 1960s (1.4 percent a year) and 1970s (-0.3 percent) was disappointing. During the 1980s India's economic performance improved, but this surge was fueled by deficit spending and borrowing from abroad that was unsustainable. In fact, the spending spree led to a fiscal and balance of payments crisis that brought a new, reform government to power in 1991. Srinivasan (1996, p. 245) describes the key reform measures and their results:

In July 1991, the government announced a series of far reaching reforms. These included an initial devaluation of the rupee and subsequent market determination of its exchange rate, abolition of import licensing with the important exceptions that the restrictions on imports of manufactured consumer goods and on foreign trade in agriculture remained in place, convertibility (with some notable exceptions) of the rupee on the current account; reduction in the number of tariff lines as well as tariff rates; reduction in excise duties on a number of commodities; some limited reforms of direct taxes; abolition of industrial licensing except for investment in a few industries for locational reasons or for environmental considerations, relaxation of restrictions on large industrial houses under the Monopolies and Restrictive Trade Practices (MRTP) Act; easing of entry requirements (including equity participation) for direct foreign investment; and allowing private investment in some industries hitherto reserved for public sector investment.

In general, India has seen good results from its reform program, with per capita income growth above 4 percent a year in the 1990s. Growth and poverty reduction have been particularly strong in states that have made the most progress liberalizing the regulatory framework and providing a good environment for delivery of infrastructure services (Goswami and others 2002).

## *Uganda*

Uganda has been one of the most successful reformers in Africa during this recent wave of globalization, and its experience has interesting parallels with Vietnam's. It, too, was a country that was quite isolated economically and politically in the early 1980s. The role of trade reform in its larger reform context is described in Collier and Reinikka (2001, pp. 30–39):

Trade liberalization has been central to Uganda's structural reform program... In 1986 the NRM government inherited a trade regime that included extensive nontariff barriers, biased government purchasing, and high export taxes, coupled with considerable smuggling. The nontariff barriers have gradually been removed since the introduction in 1991 of automatic licensing under an import certification scheme. Similarly, central government purchasing was reformed and is now subject to open tendering without a preference for domestic firms over imports... The average real GDP growth rate was 6.3 percent per year during the entire recovery period (1986–99) and 6.9 percent in the 1990s. The liberalization of trade has had a marked effect on export performance. In the 1990s export volumes grew (at constant prices) at an annualized rate of 15 percent, and import volumes grew at 13 percent. The value of noncoffee exports increased five-fold between 1992 and 1999.

## *Vietnam*

The same collection that contains Eckaus's (1997) study of China also has a case study of Vietnam, analyzing how the country went from being one of the poorest countries in the 1980s to being one of the fastest growing economies in the 1990s (Dollar and Ljunggren 1997, pp. 452–55):

That Vietnam was able to grow throughout its adjustment period can be attributed to the fact that the economy was being increasingly opened to the international market. As part of its overall effort to stabilize the economy, the government unified its various controlled exchange rates in 1989 and devalued the unified rate to the level prevailing in the parallel market. This was tantamount to a 73 percent real devaluation: combined with relaxed administrative procedures for imports and exports, this sharply increased the profitability of exporting.

This... policy produced strong incentives for export throughout most of the 1989–94 period. During these years real export growth averaged more than 25 percent per annum, and exports were a leading sector spurring the expansion of the economy. Rice exports were a major part of this success in

1989; and in 1993–94 there was a wide range of exports on the rise, including processed primary products (e.g., rubber, cashews, and coffee), labor-intensive manufactures, and tourist services. . . In response to stabilization, strengthened property rights, and greater openness to foreign trade, domestic savings increased by twenty percentage points of GDP, from negative levels in the mid-1980s to 16 percent of GDP in 1992.

### *Are These Individual Country Findings Generalizable?*

These cases provide persuasive evidence that openness to foreign trade and investment—coupled with complementary reforms—can lead to faster growth in developing economies. But individual cases always beg the question, how general are these results? Does the typical developing economy that liberalizes foreign trade and investment get good results? Cross-country statistical analysis is useful for looking at the general patterns in the data. Cross-country studies generally find a correlation between trade and growth. To relate this to the discussion in the first section, some developing economies have had large increases in trade integration (measured as the ratio of trade to national income), and others have had small increases or even declines. In general, the countries that had large increases also had accelerations in growth. The group of developing economy globalizers identified by Dollar and Kraay (2004) had population-weighted per capita growth of 5 percent in the 1990s, compared with 2 percent in rich countries and –1 percent for other developing countries (figure 12). This relationship between trade and growth persists after controlling for reverse causality from growth to trade and for changes in other institutions and policies (Dollar and Kraay 2003).

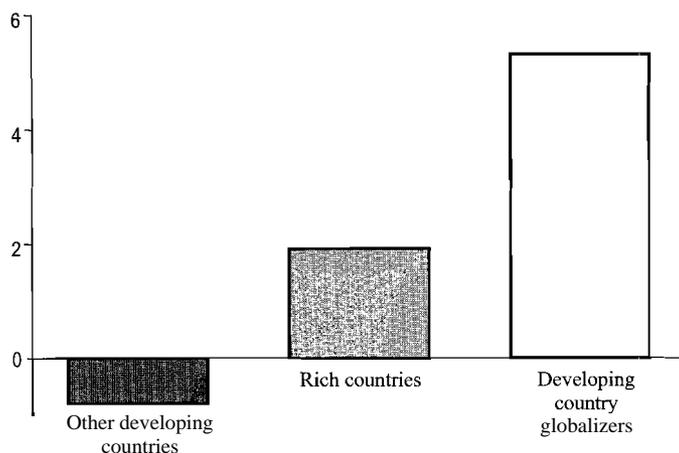
A third type of evidence about integration and growth comes from firm-level studies and relates to the epigraph from Romer. Developing economies often have large productivity dispersion across firms making similar things: high-productivity and low-productivity firms coexist, and in small markets there is often insufficient competition to spur innovation. A consistent finding of firm-level studies is that openness leads to lower productivity dispersion (Haddad 1993; Haddad and Harrison 1993; Harrison 1994). High-cost producers exit the market as prices fall; if these firms were less productive or were experiencing falling productivity, their exits represent productivity improvements for the industry. Although the destruction and creation of new firms is a normal part of a well-functioning economy, attention is simply too often paid to the destruction of firms—which misses half the picture. The increase in exits is only part of the adjustment—granted, it is the first and most painful part—but if there are no significant barriers to entry, there are also new entrants. The exits are often front loaded, but the net gains over time can be substantial.

Wacziarg (1998) uses 11 episodes of trade liberalization in the 1980s to examine competition and entry. Using data on the number of establishments in each sector,

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**Figure 12.** Per Capita GDP Growth Rates, by Country Type, 1990s (% , based on GDP in purchasing power parity terms)

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Source: Dollar and Kraay (2004).

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he calculates that entry rates were 20 percent higher in countries that liberalized than in countries that did not. This estimate may reflect other policies that accompanied trade liberalization, such as privatization and deregulation, so this is likely to be an upper bound of the impact of trade liberalization. However, it is a sizable effect and indicates that there is plenty of potential for new firms to respond to the new incentives. The evidence also indicates that exit rates may be significant, but entry rates are usually of a comparable magnitude. Plant-level data from Chile, Colombia, and Morocco spanning several years in the 1980s when these countries initiated trade reforms indicate that exit rates range from 6 percent to 11 percent a year and entry rates from 6 percent to 13 percent. Over time the cumulative turnover is quite impressive, with a quarter to a third of firms having turned over in four years (Roberts and Tybout 1996).

The higher turnover of firms is an important source of the dynamic benefit of openness. In general, dying firms have falling productivity and new firms tend to increase their productivity over time (Aw and others 2000; Liu and Tybout 1996; Roberts and Tybout 1996). Aw and others (2000) find that in Taiwan (China) within a five-year period the replacement of low-productivity firms with new, higher-productivity entrants accounted for half or more of the technological advance in many Taiwanese industries.

Although these studies shed some light on why open economies are more innovative and dynamic, they also show why integration is controversial. There will be more dislocation in an open, dynamic economy—with some firms closing and others

starting up. If workers have good social protection and opportunities to develop new skills, everyone can benefit. But without these policies there can be some big losers.

Surveys of the literature on openness and growth generally find the totality of the evidence persuasive. Winters (2004, p. F4), for example, concludes: "While there are serious methodological challenges and disagreements about the strength of the evidence, the most plausible conclusion is that liberalisation generally induces a temporary (but possibly long-lived) increase in growth. A major component of this is an increase in productivity." Similarly, economic historians Lindert and Williamson (2001, pp. 29–30) sum up the different pieces of evidence linking integration to growth: "The doubts that one can retain about each individual study threaten to block our view of the overall forest of evidence. Even though no one study can establish that openness to trade has unambiguously helped the representative Third World economy, the preponderance of evidence supports this conclusion." They go on to note the "empty set" of "countries that chose to be less open to trade and factor flows in the 1990s than in the 1960s and rose in the global living-standard ranks at the same time. As far as we can tell, there are no anti-global victories to report for the postwar Third World. We infer that this is because freer trade stimulates growth in Third World economies today, regardless of its effects before 1940."

## Making Globalization Work Better for Poor People

So far, the most recent wave of globalization starting around 1980 has been associated with more rapid growth and poverty reduction in developing economies and with a modest decline in global inequality. These empirical findings from a wide range of studies help explain what otherwise might appear paradoxical: opinion surveys reveal that globalization is more popular in poor countries than in rich ones. In particular, the Pew Research Center for the People and the Press (2003) surveyed 38,000 people in 44 countries in all developing regions. In general, there was a positive view of growing economic integration worldwide. But what was striking in the survey was that views of globalization were distinctly more positive in low-income countries than in rich ones.

Although most people expressed the view that growing global trade and business ties are good for their country, only 28 percent of people in the United States and Western Europe thought that such integration was "very good." By contrast, the share who thought integration was very good was 64 percent in Uganda and 56 percent in Vietnam. These countries stood out as particularly proglobalization, but respondents from developing economies in Asia (37 percent) and Sub-Saharan Africa (56 percent) were also far more likely to find integration "very good" than respondents from rich countries. Conversely, a significant minority (27 percent) in rich countries thought that "globalization has a bad effect" on their country,

compared with a negligible number of households in developing economies in Asia (9 percent) or Sub-Saharan Africa (10 percent).

Developing economies also had a more positive view of the institutions of globalization. Some 75 percent of households in Sub-Saharan Africa thought that multinational corporations had a positive influence on their country, compared with only 54 percent in rich countries. Views of the effect of the International Monetary Fund, the World Bank, and the World Trade Organization (WTO) were nearly as positive in Africa (72 percent of households said they had a positive effect on their country). By contrast, only 28 percent of households in Africa thought that antiglobalization protestors had a positive effect on their country. Views of the protestors were more positive in the United States and Western Europe (35 percent said the protestors had a positive effect on their country).

Although global economic integration has the potential to spur further growth and poverty reduction, whether this potential is realized depends on the policies of developing economies and the policies of industrialized countries. True integration requires not just trade liberalization but also wide-ranging reforms of institutions and policies, as the cases of China and India illustrate so clearly. Many of the countries that are not participating very much in globalization have serious problems with the overall investment climate, for example, Kenya, Myanmar, Nigeria, and Pakistan. Some of these countries also have restrictive policies toward trade. But even if they liberalize trade, not much is likely to happen without other measures. It is not easy to predict the reform paths of these countries. (Consider the relative successes cited here: China, India, Uganda, Vietnam. In each case their reform was a startling surprise.) As long as there are locations with weak institutions and policies, people living there are going to fall further behind the rest of the world in terms of living standards.

Building a coalition for reform in these locations is not easy, and what outsiders can do to help is limited. But one thing that industrialized countries can do is make it easy for developing areas that do choose to open up to join the club of trading nations. Unfortunately, in recent years rich countries have made it harder for poor countries to do so. The General Agreement on Tariffs and Trade was originally built around agreements concerning trade practices. Now, however, a certain degree of institutional harmonization is required to join the WTO, for example, on policies toward intellectual property rights. The proposal to regulate labor standards and environmental standards through WTO sanctions would take this requirement for institutional harmonization much farther. Developing economies see the proposal to regulate their labor and environmental standards through WTO sanctions as a new protectionist tool that rich countries can wield against them.

Globalization will proceed more smoothly if industrialized countries make it easy for developing economies to have access to their markets. Reciprocal trade liberalizations have worked well throughout the postwar period. There still are significant protections in OECD countries against agricultural and labor-intensive products that are important to developing economies. It would help substantially to reduce these protections. At the

same time, developing economies would benefit from opening their own markets further. They have a lot to gain from more trade in services. Also, 70 percent of the tariff barriers that developing areas face are from other developing economies. So there is much potential to expand trade among developing areas, if trade restrictions are further eased. But the trend to use trade agreements to impose an institutional model from OECD countries on developing economies makes it more difficult to reach trade agreements that benefit poor countries. The current Doha round of WTO negotiations is taking up these issues of market access, but it remains to be seen whether rich countries are willing to significantly reduce their trade barriers in agriculture and labor-intensive manufactures.

Another reason to be pessimistic about further integration of poor economies and rich ones is geography. There is no inherent reason why coastal China should be poor—or southern India, or Vietnam, or northern Mexico. These locations were historically held back by misguided policies, and with policy reform they can grow very rapidly and take their natural place in the world income distribution. However, the same reforms are not going to have the same effect in Chad and Mali. Some countries have poor geography in the sense that they are far from markets and have inherently high transport costs. Other locations face challenging health and agricultural problems. So, it would be naive to think that trade and investment can alleviate poverty in all locations. Much more could be done with foreign aid targeted to developing medicines for malaria, HIV/AIDS, and other health problems in poor areas and to building infrastructure and institutions in these locations. The promises of greater aid from Europe and the United States at the Monterrey Conference were encouraging, but it remains to be seen if these promises will be fulfilled.

So integration of poor economies with rich ones has provided many opportunities for poor people to improve their lives. Examples of the beneficiaries of globalization can be found among Chinese factory workers, Mexican migrants, Ugandan farmers, and Vietnamese peasants. Lots of nonpoor people in developing and industrialized economies alike also benefit, of course. But much of the current debate about globalization seems to ignore the fact that it has provided many poor people in developing economies unprecedented opportunities. After all the rhetoric about globalization is stripped away, many of the practical policy questions come down to whether rich countries are going to make it easy or difficult for poor communities that want to integrate with the world economy to do so. The world's poor people have a large stake in how rich countries answer these questions.

## Notes

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1. The phrase *free trade* refers to a situation in which trade is not monopolized by the government, but rather is permitted to private firms and citizens as well—so China began to shift to a policy of free trade in 1979.

2. It is difficult to obtain survey-based estimates of poverty before 1980. Bourguignon and Morrisson (2002) combine what survey data are available with national accounts data to provide rough estimates of poverty since 1820. The broad trend is clear: the number of poor people in the world kept rising until about 1980.

3. Bhalla (2002) and Sala-i-Martin (2002) also estimate very large reductions in global poverty based on the national accounts data, but Deaton (2004) makes a convincing case that the survey-based estimates from Chen and Ravallion (2004) are a more reliable indicator of changes in global poverty.

4. Milanovic (2002) estimates an increase in the global Gini coefficient for the short period between 1988 and 1993. How can this be reconciled with the Bhalla (2002) and Sala-i-Martin (2002) findings? Global inequality has declined over the past two decades primarily because poor people in China and India have seen increases in their incomes relative to incomes of rich people (that is, OECD populations). As noted, 1988–93 was the one period in the past 20 years that was not good for poor people in China and India. India had a serious crisis and recession, and rural income growth in China was temporarily slowed.

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# Data and Dogma: The Great Indian Poverty Debate

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Angus Deaton • Valerie Kozel

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*What happened to poverty in India in the 1990s has been fiercely debated, both politically and statistically. The debate has run parallel to the wider debate about globalization and poverty in the 1990s and is also an important part of that debate. The economic reforms of the early 1990s in India were followed by rates of economic growth that were high by historical standards. The effects on poverty remain controversial, however. The official numbers published by the government of India, showing an acceleration in the rate of poverty reduction from 36 percent of the population in 1993/94 to 26 percent in 1999/2000, have been challenged for showing both too little and too much poverty reduction. The various claims have often been frankly political, but there are also many important statistical issues. The debate, reviewed in this article, provides an excellent example of how politics and statistics interact in an important, largely domestic debate. Although there is no consensus on what happened to poverty in India in the 1990s, there is good evidence both that poverty fell and that the official estimates of poverty reduction are too optimistic, particularly for rural India. The issues covered in this article, although concerned with the measurement of poverty in India, have wide international relevance—discrepancies between surveys and national accounts, the effects of questionnaire design, reporting periods, survey nonresponse, repair of imperfect data, choice of poverty lines, and interplay between statistics and politics.*

Hundreds of millions of Indians are poor by national and international standards. Indian politics are dominated by discussions of poverty, and measures of poverty rightly attract a great deal of attention and debate. In the second half of the 1990s India's gross domestic product (GDP) grew rapidly by historical standards, and many commentators have associated this acceleration with the economic reforms that began in the 1990s. Yet the reforms themselves, and the limited opening of the Indian economy that they involved, remain controversial, as does their effect on poverty.

This debate is far from unique to India. The worldwide controversy about globalization and its effects on poverty and inequality has followed much the same lines as the internal debate in India. India accounts for about 20 percent of the global count of those living on less than \$ 1 a day, so what happens in India is not only a reflection of the worldwide trend but one of its major determinants.

## A Brief Introduction to the Indian Poverty Monitoring System

India's official poverty estimates are based on the regular consumer expenditure surveys conducted by the National Sample Survey Organization (NSSO). These surveys, pioneered by P. C. Mahalanobis in the 1940s and 1950s (Mahalanobis and Sen 1954), were the world's first system of household surveys to apply the principles of random sampling established in the 1920s and 1930s.

The NSSO conducts large consumer expenditure surveys every five or six years and smaller surveys annually. In recent years even small surveys have collected some data on consumer expenditures. But to calculate official poverty statistics, the Planning Commission uses only the larger surveys that focus on consumer expenditures on the grounds that the larger surveys are required to estimate poverty accurately for each state because those estimates are the basis for various transfers from the central government to the states. In recent years large surveys were conducted in 1983 (Round 38), 1987/88 (Round 43), 1993/94 (Round 50), and most recently, 1999/2000 (Round 55). (The next, Round 61, for 2004–2005, was in the field at the time of writing.) For each of these surveys the Planning Commission has published estimates of the number and proportion of people in poverty, by state and sector.

These official poverty estimates count the number of people living in households with monthly per capita total expenditure below a poverty line specific to the state and sector (urban or rural). The original official state-specific poverty lines, based on state differences in price levels, come from the report of an expert group (India, Expert Group on Estimation of Proportion and Number of Poor 1993), which derived them from earlier academic studies that had compared prices across states. The poverty lines are updated periodically using a system of state-by-state price indexes, which are estimated separately for rural households (the consumer price index for agricultural laborers) and urban households (the consumer price index for industrial workers). There are no predetermined all-India urban and rural poverty lines. Instead, rural and urban poverty counts for each state are aggregated to get urban and rural totals. All-India urban and rural poverty lines are then set so that when they are applied to all urban or rural households without differentiation by state, the total number of urban and rural poor people matches the sum of the state counts. The poverty data from 1983 onward, which are based on these procedures, are the subject of the current debate.

## Conflicts between National Accounts and Sample Surveys

Estimates of mean consumption are generated by both the national accounts statistics and the NSSO from their regular surveys of consumer expenditures. The two sets of estimates can be used to cross-check and validate one another, both for total consumer expenditure and for individual commodities or groups of commodities, such as grains, clothing, or services. There is a long tradition of such comparative work in India. More controversially, before the 1990s, the Planning Commission used the national accounts estimate of consumption as a "control" total for the surveys in estimating poverty. Thus, for example, if the ratio of the national accounts estimate to the survey estimate of mean consumption was greater than one, the Planning Commission would multiply the total expenditure of each household by that ratio before calculating the number of people living in households below the poverty line.

This procedure is practiced in many countries, particularly in Latin America, where income estimates from surveys are typically much smaller than those from national accounts. India's abandonment of such scaling up (for reasons discussed later) has been the subject of considerable controversy. The proponents of such procedures believe that national accounts data are superior to survey data, so that it is appropriate to use the additional information they contain to adjust the surveys. Bhalla (2002), like Sala-i-Martin (2002), uses a variant of the method to estimate global poverty (see Deaton 2005 for a discussion). Opponents of such procedures question the automatic assumption of superiority for the national accounts data and note that scaling up the surveys bypasses a central question in the debate: does the growth measured in the national accounts show up in improvements in the living standards of the poor?

In India during the 1990s the national accounts estimates of mean consumption grew much more rapidly than did the survey estimates. Scaling up would thus have shown a more rapid reduction in poverty in the 1990s than shown by the survey-based poverty estimates. In consequence, those who believe that the economic growth following the reforms has been associated with large-scale poverty reduction have tended to argue that the national accounts are right and the surveys wrong. Antireformers and skeptics have argued for the surveys.

Early comparisons of surveys and national accounts in India were carried out by Mukherjee and Chatterjee (1974) and by Srinivasan and others (1974). Using survey and national accounts data from the 1950s and 1960s, they examined the match between the two estimates of total consumption and its distribution. For the decade up to 1963 Mukherjee and Chatterjee write that agreement between the revised series for national accounts consumption and the survey estimates is close, although they note that the survey estimates are systematically and (on average) increasingly below the national accounts estimates in the period up to the end of the 1960s. They also note discrepancies in the distribution of consumption over

commodities, with the surveys recording a higher share of food in the budget than do the national accounts. Srinivasan and colleagues' analysis is broadly consistent with that of Mukherjee and Chatterjee, though they find that the surveys are lower than the national accounts estimates from an earlier date. They also note that the distribution of consumption is broadly similar in the two sources.

If the early comparisons of national accounts and survey estimates of mean consumption were relatively reassuring, more recent comparisons are anything but. The gap between the two estimates has continued to widen, reaching levels that would have been viewed with horror by the early researchers. Depending on the set of adjustments made, the survey estimate of consumption is currently around two-thirds of the national accounts estimate and has been falling steadily since the late 1960s, by 5–10 percentage points a decade.

This differential rate of growth in consumption estimates is far from unique to India. There appears to be a similar discrepancy between survey and national accounts estimates of the growth rate of consumption for the world as a whole (Deaton 2005). To take a specific example at a very different level of development, the differential rate of growth in the United States is very similar to that in India (Triplett 1997; Garner and others 2003). Although there are almost certainly errors in both sets of estimates, the view of what is happening to poverty depends a good deal on how much of the discrepancy is attributed to each.

For many economists, who are well versed in the concepts of national income accounting but much less so in survey practice, the automatic reaction is to trust the national accounts over the surveys. That there is little basis for such a judgment was carefully argued by Minhas (1988) in an article that should be read by anyone concerned with the issue of the differences between national accounts and survey data. Minhas's work was central to the Planning Commission's decision to abandon its practice of scaling up the survey results to match the national accounts. Minhas lays out the issues that have dominated the contemporary debate: the differential definition and coverage of consumption in the surveys and the national accounts, differences in timing, and the heavy reliance in national accounting practice on various "rates and ratios" that link observable but irrelevant quantities to the unobservable but relevant ones. These ratios are derived from surveys (for example, surveys that link earnings in services sectors to value added in the sectors), but they are frequently many years—often decades—out of date.

The use of outdated rates and ratios in a growing economy experiencing structural development will typically lead to systematic trend errors in the accounts. Consider the netting out of intermediate production from value added, which is frequently done using a fixed ratio. Because the degree of intermediation tends to grow as the economy becomes more complex and more monetized, the rate of growth of GDP and of consumption will be systematically overstated in a growing economy. Cooking oil, particularly vanaspati, provides a good example for India. The

national accounts estimate consumption of vanaspati as total production less imports plus exports, less consumption by government or business. In an economy in which all vanaspati is used for household cooking, this gives the right answer. But as the economy grows, consumers eat more meals out, so that an increasing fraction of vanaspati is used by commercial food suppliers, restaurants, hotels, and street vendors. Consumer spending on these services is derived from (fairly shaky) data on the gross output of the services sector, adjusted to a value-added basis by deducting the value of intermediate inputs, including vanaspati. At best, this adjustment is done using one of the rates and ratios, which means progressive and increasing overstatement if intermediation increases with income and if rates and ratios are infrequently adjusted. In the case of vanaspati in India, no adjustment is made at all, so that all vanaspati used in restaurants is counted twice, helping overstate the rate of growth of consumption and GDP and to increase the ratio of national accounts to survey consumption (see Kulshrestha and Kar 2005).

Minhas (1988, p. 14) notes that "many discussions of sampling errors seem to imply as if only the NSS estimates suffer from those errors. This is a gross misconception." He warns against adjustments that assume that only the survey estimates are at fault:

It is indeed hazardous to carry out pro-rata adjustment in the observed size distribution of consumer expenditure in a particular NSS [National Sample Survey] round by multiplying it with a scalar derived from the ratio between the NAS [National Accounts Statistics] estimates of aggregate private consumption for the nearest financial year and the total NSS consumer expenditure available from that particular round of household budget survey. This kind of mindless tinkering with the NSS size distribution of consumer expenditure, as practiced by the Planning Commission in the Seventh Five Year Plan documents, does not seem permissible either in theory or in light of known facts. (p. 37)

With consumption growing more than 1 percent a year faster in the national accounts estimates than in the survey estimates, application of the pro rata adjustment makes an enormous difference to the trend in measured Indian poverty. It is unfortunate that so much of the current debate over this issue should have been so little informed by what Minhas wrote 15 years ago.

Kulshrestha and Kar (2005) and Sundaram and Tendulkar (2003b) provide a more contemporary perspective on the discrepancy. Kulshrestha and Kar were primarily responsible for the production of the national accounts in the 1990s, so their views on the accuracy of the consumption estimates carry considerable weight. They document the growing discrepancy between the two sources, from 5 percent in 1957/58 to more than 38 percent in 1993/94, and note that the discrepancy is larger and increasing faster for nonfood items than for food.

These authors explore food items in more detail because there is often enough additional information to make an informed judgment about the likely balance of accuracy. With a few exceptions, their findings are similar to those of Minhas (who comes at the issue from the survey side): when there is a discrepancy, the national accounts estimates are typically less plausible and more likely to be in error. They determine that the discrepancy for food and tobacco can be attributed to a few specific commodities (fruit, milk products, chicken, eggs, fish, minor cereals and their products, vanaspati, oilseeds, and tobacco) and that for the major subgroups that are important in poverty studies (major cereals, more commonly used pulses, edible oils, liquid milk, and vegetables), the two estimates are relatively close. They conclude that nothing in their findings would make the survey data on household consumption expenditure "unfit for measurement of poverty incidence" (p. 117). Although this assessment may be too sanguine—nonfood items also play a role in poverty measurement—this work establishes that there can be no automatic presumption in favor of the national accounts.

Sundaram and Tendulkar (2003b) report on the findings of a joint Central Statistical Organization–NSSO exercise on cross-validation of the two sets of estimates. They draw attention to the fluidity of the national accounts estimates, noting that revisions for some categories are often so large as to cast doubt on the estimates in general. This is closely related to Minhas's concern with the outdated rates and ratios. When the Central Statistical Office abandons a long-used ratio and new survey or other information is collected, information based on actual data paints a very different picture from that based on the long-used approximation. Such revisions, though welcome, do little to improve the large number of items still held hostage to the inaccuracy of old and aging ratios. Sundaram and Tendulkar also argue that survey data are to be preferred because they measure living standards directly, as opposed to national accounts statistics, which derive consumption as a residual at the end of a long chain of calculations.

Sundaram and Tendulkar also draw attention to items included in the national accounts estimates but not in the surveys, such as the imputed rents of owner-occupiers and expenditures by nonprofit institutions serving households. Like Kulshrestha and Kar, they demonstrate the increasing importance of a relatively new item, financial intermediation services indirectly measured (FISIM), introduced in accord with the recommendations of the 1993 revision of the LIN System of National Accounts. FISIM—the difference between interest paid to and interest paid by banks and other financial intermediaries—has been added to national accounts estimates of household consumption since 1993, with some backdating to the 1980s. The idea is that interest charged to borrowers contains, in addition to the market rate of interest, a charge for intermediation services to lenders, while interest paid to lenders is lower than market rates, with the difference attributed to financial intermediation services to depositors. The difference between interest paid and interest

received is therefore a measure of the value of financial intermediation to borrowers and lenders. A similar item is included for risk-bearing services, measured as the profits of insurance companies.

In India the value of *FISIM* increased from close to zero in 1983/84 to 2.5 percent of consumption in 1993/94, accounting for a quarter of a percentage point per year of the difference in annual growth rates in consumption between national accounts and surveys. In measuring the living standards of the poor, it can reasonably be doubted whether any of the value of financial intermediation is relevant.

## Survey Methodology: Reporting Periods

The design of the Indian surveys has evolved over time and is continually under discussion. An important design issue for poverty measurement is the length of the reporting period. The *NSSO* had adopted a uniform 30-day recall period, based on experiments carried out by Mahalanobis and Sen (1954) in the 1950s. The *NSSO* ran a new series of experiments in the "thin" survey Rounds 51 (1994/95) through 54 (1998), which are run between the quinquennial rounds, randomly assigning households to one of two questionnaires with different reporting periods. A questionnaire with a 7-day reporting period for high-frequency items (food, pan, tobacco), 365 days for low-frequency items (durable goods, clothing, footwear, institutional [hospital] medical care, and educational expenses), and 30 days for everything else gave poverty counts that were only half of those derived from the questionnaire with a uniform 30-day reporting period.

The reduction in measured poverty comes from two quite separate effects. The first is that a higher rate of monthly expenditure is reported when people are asked to report food, pan, and tobacco over the past 7 days rather than over the past 30 days. Higher reported expenditure, other things being equal, decreases measured poverty. The second effect comes from the low-frequency items. Although the mean reported expenditure for this category decreases for the longer reporting period, the lower tail of the distribution increases. With 30-day reporting periods, most households report no purchase of low-frequency items, but in 365-day periods most households report at least some purchases. Thus despite the decrease in the mean, the longer reporting period for the low-frequency items also acts to reduce measured poverty.

Measures of inequality are substantially reduced by moving from a 30-day to a 365-day reporting period for low-frequency items. Because the mean falls and the bottom tail increases, measured dispersion in these purchases is much reduced, and this carries through to total expenditure. This means that it is never legitimate to compare measured inequality across surveys with different reporting periods without some sort of correction.

The questionnaire experiments showed that reporting periods make a difference but did not settle the question of which is better. To find out, the NSSO launched another set of experiments in the Round 55 survey in 1999/2000, updating and extending the experiments of Mahalanobis and Sen (1954). Alternative questionnaires were randomized over the experimental households, using three different reporting periods, 7 days, 30 days, and a gold standard of daily visits accompanied by direct measurement. A pilot study was undertaken in five Indian states from January through June 2000. According to initial results reported by the NSSO Expert Group on Non-Sampling Errors (2003), for rural households the 7-day estimates were on average 23 percent higher than the 30-day estimates, somewhat lower than the discrepancy in the large-scale NSSO thin-round surveys. But comparisons with the daily estimates show that the 30-day estimates were more accurate than the 7-day estimates for many important commodities, including cereals and cereal products. Over all the goods examined, there is no clear superiority of one reporting period over another, and there is little evidence that the traditional 30-day reporting period is seriously inadequate. This important study does not support the apparently sensible hypothesis that high-frequency items in India are better measured with a 7-day than a 30-day recall. It also does not support the idea that the discrepancy between the national accounts and sample survey measures of consumption is due largely to underestimation in the survey data associated with an overly long reporting period.

How reporting periods affect estimates of consumption and poverty is relevant for surveys in many countries. Nor is it the only such issue. In literate populations, respondents can be asked to keep diaries as an alternative or supplement to interviews. Surveyors can also visit households several times, for example, to take account of seasonality in expenditures or to gather data a day or two at a time when it is believed that respondents cannot accurately recall expenditures over long reference periods. There is considerable international experience with these issues (see, for example, Deaton and Grosh 2000), although there can be no presumption that a design that is good for one country will be good for another.

## What Happened to Poverty in India in the 1990s?

At the end of the 1990s there had not been a large-scale consumer expenditure survey in India since 1993/94, so there were no official estimates of national or state poverty rates after that date. The Planning Commission does not endorse poverty estimates based on the smaller consumer expenditure surveys that the NSSO runs between the quinquennial rounds, even though the sample sizes are large enough to support accurate poverty estimates at the national level. The last of these thin surveys before the Round 55 survey of 1999/2000 was a half-year survey in 1998.

Neither it nor the immediately preceding small surveys showed progress in reducing poverty (see, for example, Datt 1999). It is widely believed that there were problems with the sampling in the rounds from 1994 through 1998, but there has been no official confirmation of any such difficulty.

### *The Design of Round 55, 1999/2000*

In planning for Round 55, the NSSO faced the immediate problem of deciding what design to use. The experimental questionnaires tried in Rounds 51 through 54 had showed more consumption and less poverty. The results of the expert group analysis of the experimental questionnaires were not yet available, so there was little solid scientific guidance. By contrast, the consequences for poverty estimation of adopting the new questionnaire were well understood, so that a decision that would normally be left to statistical experts became politicized.

After considerable internal debate, a compromise solution was adopted. For food, pan, and tobacco each household was asked to report all items over both a 7-day and a 30-day period. The traditional 30-day reporting period for durables, clothing, education, and institutional medical expenses was replaced by a 365-day period only.

Although this new, compound design might well be defensible on its own terms, it was incompatible with previous surveys. Consumption and poverty estimates based on it thus cannot reliably be used to assess trends or even changes from the previous large survey, Round 50. For high-frequency items, having both the 7-day and the 30-day reporting periods is likely to prompt respondents to reconcile the two reports. Thus, for example, the reported consumption of milk might be expected to be quite similar for the 30-day period, on the one hand, and for the 7-day period, on the other, once the 7-day results have been scaled up by a factor of 30 over 7, something that might not happen if the same respondent were asked to report over one period or the other but not both. Indeed, the means of total estimated consumption for the two reporting periods are much more similar in Round 55 than was the case in the experimental thin rounds, which randomly assigned each household to one or the other reporting period, not both. It remained unclear whether this meant that consumption reported with the 30-day recall was pulled up to meet the 7-day reports or whether consumption reported for the 7-day recall periods was cut back to accord more closely with the 30-day reports. Most likely, some combination of both was at work.

The presence of both questionnaires on the survey increased the interviewing time and forced a number of other changes in the survey. The employment and unemployment survey, usually given to the same households that answer the consumer expenditure schedules, was given to a separate sample of households in the Round 55 survey. But even within the consumer expenditure schedule, there were important changes, nearly all in the interests of compression and time saving.

Despite these difficulties, the 30-day responses were adopted as the basis of the new official poverty totals, although Planning Commission press releases also provided (lower) estimates of poverty using the 7-day reporting period results. Estimates based on 30-day recall, which were the only ones even nominally comparable with the previous poverty estimates from 1993/1994, showed a marked reduction in poverty rates between 1993/1994 and 1999/2000. Estimated poverty fell from 37 percent to 27 percent among rural households and from 33 percent to 24 percent among urban households. All-India poverty fell 10 percentage points over the six-year period, from 36 percent to 26 percent.

Although these estimates were accepted by the government of India and vigorously defended by at least one government minister, there was widespread skepticism about their validity. Estimated poverty was believed to be too low because reported consumption over the 30-day reporting period had been upwardly biased by the simultaneous presence of the 7-day reporting period. But no one knew how far off the official estimates were. One of the first researchers to see the difficulties with Round 55 was Abhijit Sen (2000). Even before the results were published, he delineated the contamination problems that were to dominate the interpretation of Round 55, which he refers to as a "failed experiment."

Such problems are far from unique to India. There is always a conflict between updating and improving a survey instrument on the one hand and maintaining consistency in estimation on the other. Yet there have been few cases as dramatic or where the consequences of the change were so little anticipated in advance.

### *Making Adjustments*

Various researchers have developed ways of adjusting the Round 55 expenditure data to correct the official estimates. These adjustments are based on assumptions that allow imputation of missing data or adjustments to contaminated data and, by the nature of the problem, at least some components of the assumptions are untestable. Assumptions differ, none is uncontroversial, and all have been debated. As will be discussed later, the official counts have also been challenged based on the poverty lines used and how they have been updated over time.

Deaton (2003a) and Tarozzi (2003) base their corrections on the fact that an important section of the questionnaire was unchanged between Rounds 50 and 55 and can therefore be compared. If the probability of being poor conditional on expenditures on the consistently measured goods does not change from 1993/1994 to 1999/2000, then that probability can be calibrated from Round 50 and used together with expenditure on the consistent items in Round 55 to estimate poverty in that round.

According to Deaton's and Tarozzi's calculations, most of the "official" decline in poverty is real. For rural households, for which official calculations show the poverty headcount ratio falling from 37.3 percent in 1993/1994 to 27.0 percent in 1999/2000,

Deaton finds a fall from 37.3 percent to 30.2 percent, or 70 percent of the official estimate. In the urban sector, where the official headcount ratio is 23.6, his estimate is 24.7 percent, which reduces the decline from 8.8 percentage points to 7.5. Driving these results is the substantial increase in consumer expenditures on items that were consistently surveyed using the 30-day reporting period and the difficulty of explaining the increase without a substantial increase in total expenditure and thus in the fraction of the population that is poor.

Sundaram and Tendulkar (2003a, c, d) argue that the 30-day responses were not much contaminated by the presence of the 7-day responses, based on an examination of the results of an abbreviated consumption questionnaire given to the employment and unemployment subsample of Round 55. If that is the case, the only source of inconsistency between Round 50 and Round 55 questionnaires is the treatment of the low-frequency items (clothing, durables, educational expenses, and institutional medical expenditures), which were surveyed at 30-day reporting periods in Round 50 and at 365-day periods in Round 55. Because Round 50 solicited expenditures on these goods for both 30-day and 365-day reporting periods, however, reconstructing total expenditure for Round 50 using the 365-day data permits construction of a notionally consistent "mixed reference period" measure of per capita expenditure for both Rounds 50 and 55.

Sundaram and Tendulkar (2003d) estimate a decline in rural poverty from 34 percent in 1993/94 to 29 percent in 1999/2000, or about half the official estimate and less than Deaton's estimate, which was about 70 percent of the official estimate. For urban households, Sundaram and Tendulkar estimate a poverty decline from 26 percent in 1993/94 to 23 percent in 1999/2000, confirming only about a third of the official decline compared with Deaton's confirmation of 85 percent.

Sundaram and Tendulkar's estimates are not comparable with official estimates because of their use of the mixed reference period measure for Round 50 and because they use different poverty lines than the state- and sector-specific poverty lines of the Planning Commission. Rather than work with the Planning Commission's poverty lines, which have been called into doubt (as discussed later), Sundaram and Tendulkar use the all-India lines for 1973/74, updated only for the general rate of price inflation. Sundaram and Tendulkar (2003c, d, e) have also extended their results to the major states and have used the same corrections to investigate what happened to the poverty rates of different social and economic groups. In line with other work, particularly that of Deaton and Dreze, discussed shortly, they find that some groups have done much better than others. They conclude that although poverty reduction among some of the most vulnerable groups (scheduled castes, agricultural laborers, and urban casual laborers) has been in line with that of the general population, groups such as the scheduled tribes have been left behind.

Sen and Himanshu (2004) have recently challenged both Deaton's and Sundaram and Tendulkar's conclusions. With respect to Deaton, they apply the

"consistent goods" methodology to calculate the probability of being poor according to the mixed reference period definition of consumption used by Sundaram and Tendulkar. Given the validity of the mixed reference period correction, the incompatibility of Rounds 50 and 55 comes from the responses on food, pan, and tobacco, which were most likely biased upward in Round 55 by the presence of the seven-day questions. In consequence, applying Deaton's method with the mixed reference period adjustment should raise the poverty count over the unadjusted counts. But Sen and Himanshu show that exactly the reverse is true. Since it is implausible that the presence of the 7-day questions resulted in a decrease in the consumption responses in the 30-day reports, something had obviously gone wrong.

Although exactly what went wrong is not yet entirely clear, the most likely possibility is that Indian households have been shifting their consumption away from food toward an assortment of nonfood goods and services, not just by moving along the Engel curves (which would not be a problem for Deaton's method) but by shifting the Engel curves. As a result, the increase in consumption of miscellaneous goods and services from 1993194 to 199912000 cannot be used to measure the extent of poverty reduction, as Deaton supposed.

Sen and Himanshu also find unconvincing Sundaram and Tendulkar's justification for their use of the uncorrected 30-day expenditures for food, pan, and tobacco. Sen and Himanshu produce new estimates using different, sensible, but largely ad hoc corrections. Their estimates are in line with Sen's (2000) original view that there was little decline in headcount poverty in India in the 1990s. Using comparable mixed reference periods for both rounds, they estimate that the rural headcount ratio fell by only 2.7 percentage points between the two rounds, from 31.9 percent to 29.1 percent, and the urban headcount ratio by 3.1 percentage points, from 29.2 percent to 26.1 percent. These estimates define the pessimistic pole in the Indian poverty debate. Although there is no way to know with certainty what the results of Round 55 would have been had the questionnaire been unchanged, this small a drop in poverty during the 1990s seems implausible. There is considerable evidence from sources other than the consumption surveys, such as information on wage rates, ownership of durable goods, and incomes from other surveys, which, though imperfect indicators on their own, taken together are extremely difficult to reconcile with an India in which poverty rates are not declining.

### *Other Estimates of Poverty*

The poverty estimates by Deaton (2003a, b), Sundaram and Tendulkar (2003d), and Sen and Himanshu (2004) are all based on corrections to the Round 55 unit record data. Several other researchers have followed alternative approaches, linking poverty to external evidence. This is perhaps most explicit in the work by Datt and others (2003), who use an econometric model that links poverty rates to their

plausible determinants, including agricultural yields, nonfarm growth, development spending, and inflation. Using the estimated model to project poverty for 1999-2000 and ignoring the flawed data from Round 55, they find that the changes in the explanatory variables would have warranted a decrease in the headcount ratio from 39 percent in 1993-1994 to 34 percent in 1999-2000. This suggests that the pace of poverty reduction was slightly lower in the 1990s than in the 1980s and lower than might be expected given India's high rate of economic growth in second half of the 1990s. The differences between official and predicted rates of progress are largely due to slower progress in some of India's largest and poorest states, particularly Bihar, Uttar Pradesh, and Maharashtra. Bihar and Uttar Pradesh alone account for over half the difference between official estimates and predicted poverty levels. Datt and others' projections are similar to Sundaram and Tendulkar's (2003d) adjusted calculations but show a good deal less poverty reduction than Deaton's method does and a good deal more than Sen and Himanshu's.

Kijima and Lanjouw (2003) combine forecasting with limited use of Round 55 data. Their forecasts are based on household characteristics that are among the ultimate determinants of poverty. They use Round 50 data to regress household expenditure on household characteristics such as education of household members, land holding, household size, caste, and a set of district dummy variables. The fitted regression is then taken to the Round 55 data and used to predict total household expenditure based on the same factors, and these predictions are then used to estimate poverty. Kijima and Lanjouw's poverty estimates are close to those of Sen and Himanshu but show about half as much poverty reduction as those based on the Deaton method.

In assuming that returns to factors cannot change, Kijima and Lanjouw's method is inherently conservative. The major objection to these calculations is that if poverty declined substantially over the 1990s and if, as might be expected (and certainly hoped), the reductions were driven by increases in the rate of return to factors such as labor, education, and land, then the calculations would not pick them up. Those who argue that the reforms have reduced poverty in India do not claim that the reforms have augmented India's supply of factors, at least not in the short run, but that they have raised the rate of return to those factors, for example, by allowing people to participate in global markets previously closed to them. The Kijima and Lanjouw poverty calculations rule out any such effects by construction and so cannot address whether they exist.

In another set of poverty estimates, Bery and Shukla (2003) update a similar exercise by Lal and others (2001). These studies use information collected from the Market Information Surveys of Households (MISH), large-scale annual surveys of household expenditures on consumer durables and other consumption items run by the National Council on Applied Economic Research. Because the design, sample size, and survey methodology have been consistent over time, Bery and Shukla

argue that the MISH is useful for identifying trends in consumption patterns. The MISH also includes a question on total household income, and these data are used to estimate poverty. This analysis suggests that poverty has fallen sharply in India, whether estimated from the income data or from the data showing increased ownership of durable goods.

A major concern with the MISH surveys is the adequacy of a single income question: "What is your annual household income from all sources?" Household income is a difficult concept to explain and to measure, especially for rural households, many of whose members are self-employed in agriculture. For these households, calculating incomes requires a great deal of imputation, as well as a careful separation of business and personal expenses. For these reasons most creators and users of household surveys do not regard such a question as useful. Unfortunately, it is difficult to explore these issues in detail, because the MISH data are proprietary and have never been made available to independent researchers.

Surjit Bhalla has been one of the most consistent advocates of the position that poverty fell rapidly during the 1990s, not only in India but worldwide. Using national accounts data to adjust the survey data, Bhalla (2003, p. 338) argues that there was a sharp decline in poverty in India in the 1990s and that the official estimate of 24 percent in 1999–2000 is too low: "It is almost incontrovertible that poverty in India was less than 15 percent in 1999–2000." Bhalla's work defines the opposite pole to that of Sen and Himanshu (2004) in the Indian poverty debate.

## The Choice of Poverty Lines

Although the recent debate on poverty in India has focused mainly on the measurement of expenditures, poverty lines are equally important. How they are updated and adjusted across regions or urban and rural households has a major effect on poverty estimates. In India, as in many other countries, a base poverty line is adjusted across time and space using price indexes, so the selection and construction of these indexes become a key input into poverty measurement.

The history of poverty lines in India is a case study in the interaction of science and politics, with political decisions often claiming a scientific basis, sometimes with justification, more often without. Although poverty lines are often linked to the amount of money needed for a minimally adequate diet, the use and long-term survival of poverty lines depend on policymakers and others accepting them as useful. For example, Rudra (1974), in discussing the history of Indian poverty lines up to that time and the persistence of the "magic number" of 20 rupees per head in 1960/61 prices shows that a food-based analysis would lead to a considerably higher number. Yet the magic number persisted, as similar magic numbers have persisted in other

countries, not because they are correct but because, once established as useful in economic and political discussions, poverty lines are resistant to change.

From the late 1970s to the mid-1990s the Planning Commission used only two poverty lines for per capita household expenditure, 49 rupees for rural households and 57 rupees for urban households at 1973/74 prices, which was close to the 15 percent urban price differential estimated by Bhattacharya and Chatterjee (1971) using unit value data from the National Sample Survey. The poverty lines were held constant in real terms and were converted to current rupees using the implicit price deflator of consumption in the national accounts. This process ignored interstate differences in price levels and in urban to rural price differentials. Furthermore, the national accounts consumption deflator is probably not the best measure of inflation for households near the poverty line. These problems and several others were dealt with by an expert group in 1993 (India, Expert Group on Estimation of Proportion and Number of Poor 1993). Their recommendations for new poverty lines were adopted (in somewhat modified form) by the Planning Commission, and these poverty lines have been used in official calculations since 1983 (back-casting the methodology), as described in the first section.

The expert group poverty lines have a serious flaw, however: the urban to rural price differentials that they imply are too large to be credible. It is unclear how this happened, whether because of an error in calculation or because the price indexes used in the calculations produced the result through some unexpected cumulative effect. The state by state urban and rural poverty lines were calculated independently, without consideration of the implicit urban to rural price differentials. In any case, the average ratio of urban to rural poverty lines is around 1.4 and varies widely across states. In Round 50 (1993/94) it is more than 1.7 in Andhra Pradesh and nearly as high in Maharashtra, Madhya Pradesh, and Karnataka, but less than unity in Assam. As a result, official headcount measures of poverty are higher in urban than in rural areas in some states, and the all-India headcount ratios differ little for urban and rural areas. In Andhra Pradesh, which is the most dramatic example, the 1999/2000 official estimates give a poverty rate of 27.2 percent for urban areas and only 10.8 percent for rural areas. In addition, it is unclear whether there is any good basis for the differences in poverty lines across states, given that the studies used by the expert group were outdated even a decade ago.

Another serious issue is the accuracy of the inflation rate used in the state-level price indexes. Errors in the indexes will induce errors in the trend rate of poverty reduction. These indexes are reweighted infrequently. For example, until 1995 the consumer price index for agricultural laborers used weights based on a 1960/61 survey. And although this index and the index for industrial workers are almost certainly better than the price deflator of national accounts consumption, it is unclear whether the prices or the weights that go into these indexes are the right ones for a national poverty measure.

Alternative price indexes can be calculated directly from the National Sample Survey consumption surveys. Because respondents report both expenditures and quantities for most foods in the survey as well as for tobacco, alcohol, and fuels, it is possible to calculate unit values for each good for each household and to use these unit values to form price indexes for urban and rural areas, states, and different rounds of the survey. The details of this work were originally laid out in Deaton and Tarozzi (2005) and were brought up to date by Deaton (2003b), who presents a set of poverty lines based on the indexes. These price indexes are quite different from the indexes implicit in the official poverty lines and much closer to the uniform 16 percent urban to rural price differential originally calculated by Bhattacharya and Chatterjee (1971) using similar procedures. As a result, headcount ratios calculated using Deaton and Tarozzi's lines show much higher rates of rural poverty relative to urban poverty than do the traditional lines. Because their price indexes also rise somewhat less rapidly than do the official indexes, the associated poverty rates for the country as a whole decline somewhat more rapidly than do the official rates, at least until Round 55 in 1999/2000, when contamination becomes an issue.

Deaton and Tarozzi's poverty lines and their procedures for correcting the Round 55 data form the basis for an analysis of poverty and inequality by Deaton and Dreze (2002). Their estimates show a fairly steady rate of poverty decline in India in the 1980s and 1990s. Deaton and Dreze argue that their estimates are broadly consistent with a range of other evidence, including growth rates from state GDP accounts and growth in agricultural wages. So even if their estimates for 1999/2000 are overoptimistic, as Sen and Himanshu (2004) argue, their general assessment of trends is unlikely to be wildly incorrect.

Deaton and Drèze show that the new poverty lines sometimes make a dramatic difference to the estimates, particularly for urban and rural comparisons. For the previously mentioned example of Andhra Pradesh, they estimate that 10.5 percent of the urban population were poor in 1999/2000 and 26.2 percent of the rural population, compared with the official estimate of 27.2 percent urban poverty and 10.5 percent rural poverty. They also note that there was a marked increase in consumption inequality in the late 1990s between states, with the better-off states in the south and west growing more rapidly than the poorer states in the north and east; between rural and urban households, with growth more rapid in urban than in rural areas; and within the urban sectors of many states, where consumption has been growing more rapidly among the wealthiest.

The questionnaire changes in Round 55 have obscured the trends in inequality. The substitution of a 365-day reporting period for a 30-day period for low-frequency items pulls up the bottom tail of the distribution of expenditures for those items while simultaneously depressing its mean, so that expenditures on low-frequency items are less unequally distributed than with a 30-day reporting period. This effect carries through to per capita total household expenditure, artificially compressing

its distribution in Round 55 compared with Round 50. This questionnaire-driven reduction in measured inequality obscures the underlying increase in inequality, which cannot be detected if the old and new questionnaires are compared without explicit correction.

A different perspective on inequality is provided by Banerjee and Piltetty (2005). Their data come from individual income tax returns, which, under some heroic assumptions, can be used to document the very top end of the Indian income distribution. As many observers have conjectured, Indians with the highest incomes did extremely well during the boom of the 1990s. Banerjee and Piketty calculate that average incomes increased by 70 percent in real terms for the top 1 percent and tripled for the top 0.01 percent. This is the first evidence on the extent of increasing inequality attributable to the rising income share of the wealthiest Indians. Their findings are likely to trigger further analysis and debate. Their work is also relevant for the debate over the use of national accounts and surveys. If inequality is increasing, and if people with higher incomes are less likely than others to respond to surveys, then the ratio of measured consumption in the surveys to true consumption will fall. Indeed, Banerjee and Piltetty show that around a quarter of the increase in the gap between national accounts and survey estimates can plausibly be attributed to the increase in inequality because of the rising income share of high-income Indians.

## Updates and Lessons

Despite an extensive body of empirical work by eminent researchers, the debate on what happened to poverty in India in the 1990s continues. No doubt there will be more reinterpretations of the 1999/2000 survey—though diminishing returns have surely set in—and new data are continuously being collected. There have been four thin rounds since the large survey, Rounds 56, 57, 58 (a half-year survey), and 59. But a preliminary examination suggests as much confusion as clarification. Round 56, conducted in 2000/01, shows a further reduction in poverty, very much along the trend line calculated by Deaton and Dreze (2002). The Round 57 data for 2001–2002 show a sharp increase in poverty over the previous year, which appears to have been even more sharply reversed in the last six months of 2001–2002, according to Round 58. The Round 59 poverty numbers are close to the level in Round 58. It is unclear why there should be such a pattern, although the disposal of large public cereal stocks in 2000–2001 temporarily reduced the rural consumer price index and certainly induced a fall in rural poverty. Yet these sharp fluctuations from survey to survey also raise the suspicion that as was the case from 1994 to 1998, the thin round surveys suffer from some little understood sampling problem.

It is impossible for a country to pursue a coherent antipoverty strategy without an adequate poverty monitoring system. The statistical problems and debates discussed here concern a country with one of the best developed survey capacities in the world. The NSSO statisticians are highly skilled, and field staff are disciplined and well trained. Matters are almost certainly worse elsewhere.

Several conclusions and lessons can be drawn from the great Indian poverty debate, for India and for other countries. Most lessons are especially relevant for statistical offices, but several are important for policymakers and researchers.

### *Lessons for Statistical Offices*

India's experience demonstrates the importance of annual consumption or income surveys. With major poverty surveys occurring only every five or six years, the failure of even one survey means that there is no reliable estimate of the rate of poverty decline for more than a decade. India switched from large annual surveys to less frequent surveys because it was thought that poverty changed too slowly to make annual measurement necessary. But the reduced frequency does not make adequate allowance for variability in conditions and survey structure. In largely agricultural societies, where harvests vary from year to year, a 5-year cycle runs the risk of having surveys coincide with unusual harvests, so that it can take 10 or 15 years to establish a trend. Or, as with Round 55 in India, if a particular survey is compromised, and if the survey period coincides with important policy changes, there can be a long gap between a policy change and measurement of the effect on poverty. In India there will be no poverty measures that are comparable to the 1993-1994 estimates until the 2004-2005 survey results are available in early 2006.

Good annual surveys, even if not comprehensive, are an insurance against these problems. In India the thin rounds could serve this function in principle, but there have been persistent doubts about their validity based on sampling methods and on the frame from which the samples are drawn, which is typically not the same as that used for the large rounds.

In balancing consistent survey design with changes to reflect economic development, new areas of interest, and improved survey technologies, the key point is that survey design should change slowly relative to the frequency of poverty monitoring. Revisions once every five years may be acceptable if poverty surveys are run every year, but catastrophic if poverty monitoring is done at five-year intervals. For measuring changes in poverty, a single survey is of little value without an earlier, comparable survey. When major design changes (such as changes in reporting periods) are implemented, it is desirable to randomly split the survey between the old and new design, to provide a basis for both forward and backward comparability.

The Indian NSSO has had a long history of experimentation in using what are essentially randomized controlled trials to assess the consequences of changes in

survey practice. That such experimentation precipitated the failure of the major 1999-2000 round should not be taken as a condemnation of experimentation. Rather, the fault lies with an oversight mechanism that failed to stop the introduction of what was effectively a completely new and untested design into an important and long-awaited survey. Statistical offices are often reluctant to undertake costly experiments that have no immediate input into published statistics. But without experimentation there can be no satisfactory progress in survey design. If properly used, experimentation can help prevent bad designs from being adopted in regular surveys.

Another general issue concerns the relationship between the national accounts and the surveys. These are usually the responsibility of different government agencies, which complicates collaboration for resolving discrepancies and sharing data to improve performance. Placing both functions within an overall national statistical office or otherwise making collaboration easier is likely to improve the performance of both. India's experience shows that scaling up survey data to match the national accounts is not a simple shortcut to better poverty estimates. The two measures of consumption are not the same, and there is no straightforward way to adjust one to the other. India's experience also demonstrates that when surveys and national accounts disagree, it should never be assumed that one or the other is correct. In many countries growth as measured in the national accounts appears to be greater than growth as measured through surveys of income and consumption. That makes it difficult to use the national accounts to cross-check survey data or to forecast poverty trends in the absence of good survey data. Once again, there is no shortcut to poverty monitoring without a sound, regular survey.

Finally, India's experience shows how important it is for the survey agency to develop a dialogue with outside users, particularly independent researchers and journalists. Very little of the Indian debate would have taken place without public access to the raw data, particularly by local analysts. This openness is a major change from policy in the 1980s, when the raw data were not released to outside researchers. That said, there still appears to be no effective mechanism through which users can bring questions and suggestions to those who process and design the surveys.

### *Lessons for Policymakers*

Policymakers are accountable to the whole population, not just to the poor. But poverty reduction is a key aim of policy in India and in most other poor countries. Thus policymakers are accountable to the public for poverty reduction, and progress cannot be monitored without an adequate statistical agency. Policymakers need to establish and fund such an agency and ensure adequate financing for annual surveys of consumption or income. Policymakers are also responsible for ensuring the

openness of statistical data, including unit record data, something that statistical offices are sometimes reluctant to implement without orders from above. Without domestic openness and debate, policymakers are unlikely to be held accountable for their policies. Although many countries do not have the domestic statistical or analytical capacity to generate broad debate, as in India, moving in that direction would be a worthy aim for many countries.

There is no suggestion here that the statistical failures in India in the 1990s were the result of undue interference by politicians or policymakers in data collection or publication. Yet politics in the broad sense played a role. In evaluating the reforms, the political right had an interest in showing low poverty, and the political left in showing high poverty, and this undoubtedly intensified the debate on survey design and led to the unfortunate compromise design that temporarily undermined the poverty monitoring system.

This politicization of data collection and interpretation is often bemoaned. Yet political accountability is essential to poverty reduction, and policymakers have a legitimate interest in monitoring the statistical system and asking for changes that serve their interests. The principles of insulating statistical services from undue political influence are well understood (see Martin and others 2002), but poverty monitoring systems are ultimately part of the political process. Most countries can only envy India its statistical capacity and the central part that poverty and poverty measurement play in Indian public life.

### *Lessons for Researchers*

Mistakes are inevitable, and survey data can be compromised by internal and external factors. Thus poverty assessments will often have to be made using imperfectly comparable surveys. India's experience illustrates the possibility of repairs to enhance the credibility of estimates. But that experience also demonstrates that repairs, however creative, are a poor substitute for the collection of clean, credible, and comprehensive data. What are convincing assumptions to one person can be unconvincing to another, and political positions inevitably influence the assumptions that people are prepared to make or accept.

Nevertheless, the Indian debate shows that discussion and advance are possible, even among those with very different preconceptions, and that the balance of opinion can be changed by well-reasoned and transparent arguments. Some of the arguments and methods used in the Indian debate were country specific (for example, the use of the supplementary consumption questions in the employment and unemployment survey), but some are more broadly applicable for dealing with partially contaminated data. This is an area in which there are likely to be returns to good, technical statistical work.

Another lesson is the importance of high-quality domestic researchers. Analysis by outside researchers can often be helpful, but it has a quite different effect from a

domestic debate among local researchers, policymakers, and the press. India is still exceptional in having a large group of domestic researchers who can work with basic data, but this is a relatively new phenomenon even in India. The Indian press has also played a distinguished role in the debate. Daily newspapers regularly report on new findings on poverty and regularly carry related op-ed pieces. A unique contribution to the poverty debate was made by *Economic and Political Weekly*, in whose pages much of the Indian debate took place. It is a cross between an academic journal and a popular magazine like *The Economist*. Published weekly, it provides rapid dissemination of viewpoints and research findings and links researchers, the press, and policymakers. Other countries, including many rich countries, would do well to emulate its approach.

## Notes

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# Insights on Development from the Economics of Happiness

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Carol Graham

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*The literature on the economics of happiness in developed economies finds discrepancies between reported measures of well-being and income measures. One is the so-called Easterlin paradox: that average happiness levels do not increase as countries grow wealthier. This article explores how that paradox—and survey research on reported well-being in general—can provide insights into the gaps between standard measures of economic development and individual assessments of welfare. Analysis of research on reported well-being in Latin America and Russia finds notable discrepancies between respondents' assessments of their own well-being and income- or expenditure-based measures. Accepting a wide margin for error in both types of measures, the article posits that taking such discrepancies into account may improve the understanding of development outcomes by providing a broader view on well-being than do income- or expenditure-based measures alone. It suggests particular areas where research on reported well-being has the most potential to contribute. Yet the article also notes that some interpretations of happiness research—psychologists' set point theory, in particular—may be quite limited in their application to development questions and cautions against the direct translation of results of happiness surveys into policy recommendations.*

The study of happiness or subjective well-being (terms that are used interchangeably) is fairly new to economists, although psychologists have been studying it for years. Some of the earliest economists, such as Jeremy Bentham, were concerned with the pursuit of individual happiness. As the field became more rigorous and quantitative, however, much narrower definitions of individual welfare, or utility, became the norm. In addition, economists have traditionally shied away from the use of survey data because of justifiable concerns that answers to surveys of individual preferences—and reported well-being—are subject to factors such as the respondents' mood at the time of the survey and minor changes in the phrasing of survey questions, which can produce large biases in results (Bertrand and Mullaipathan

2001). Thus traditional economic analysis focuses on actual behavior, such as revealed preferences in consumption, savings, and labor market participation, under the assumption that individuals rationally process all the information at their disposal to maximize their utility.

## Insights on Development from the Economics of Happiness

In recent years, however, the strictly rational vision of economic decisionmaking has come under increasing scrutiny. One important innovation is the concept of bounded rationality, in which individuals are assumed to have access to limited or local information and to make decisions according to simple heuristic rules rather than complex optimization calculations (Conlisk 1996; Simon 1978). A more recent trend has been the increased influence of behavioral economics, which supplements economists' methods and questions with those more common to psychologists. A notable recognition of the behavioralist approach was the awarding of the 2002 Nobel Prize in Economics to Daniel Kahneman, a psychologist.

Economists who work in the area broadly define happiness or subjective well-being as satisfaction with life in general. Indeed, the three phrases are used interchangeably. Most studies are based on a very simple set of survey questions that ask respondents "How satisfied are you with your life?" or "How happy are you with your life?" Critics used to defining welfare or utility in material or income terms bemoan the lack of precise definition in these questions. Yet the economists who use these surveys emphasize their advantages in making comparisons across cohorts of individuals—in which they find a surprising consistency in the patterns of responses both within and across countries—over evaluating the actual happiness levels of specific individuals. Psychologists, meanwhile, find a significant degree of "validation" in subjective well-being surveys with individuals who report higher levels of happiness actually smiling more and meeting several other psychological measures of well-being (Diener and Biswas-Diener 2000; Diener and Seligman 2004).

Central to the findings of much of the happiness literature in developed economies are numerous discrepancies between reported measures of well-being and income measures. Richard Easterlin, who pioneered the economics of happiness in the mid-1970s, found that the way that most people spend their time is similar across countries and cultures: working and trying to provide for their families.' Thus the concerns that they express when asked about happiness are similar. His finding—that wealthy people tend to be happier than poor people in the same country, but that there is no such relationship across countries or over time—has since been supported by several subsequent studies and is known as the Easterlin paradox.<sup>2</sup>

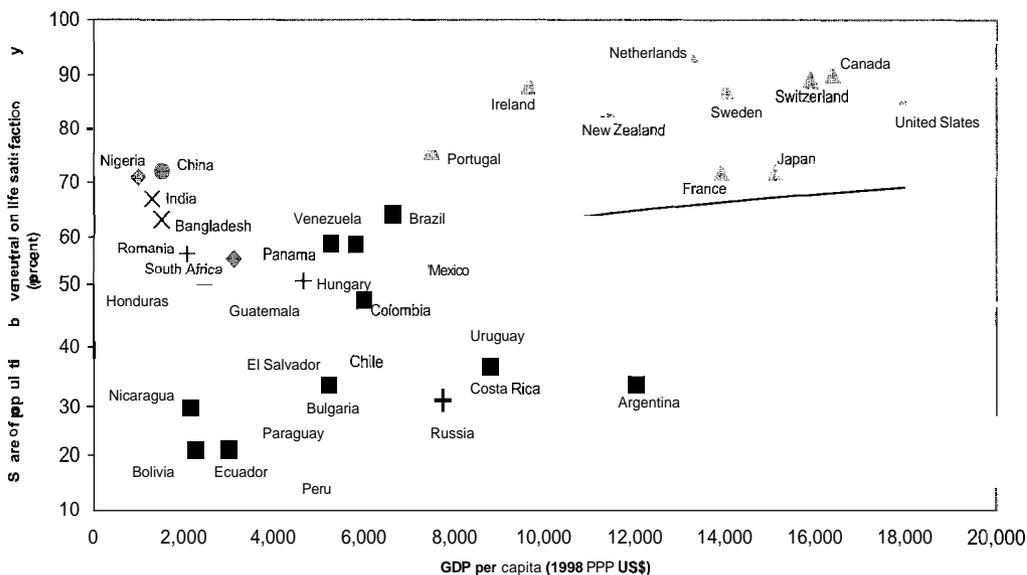
More recently, Graham and Pettinato (2001) examined data for a sample of 17 developing economies in Latin America and found a similar result: no obvious

relationship between gross national product per capita and happiness. Yet for the most part average happiness levels are higher in developed economies than in developing ones (figure 1).

The objective of this article is to explore how the Easterlin paradox—and the study of happiness more generally—provide insight into the way in which individuals in developing economies assess their own welfare and how their assessments differ from those based on traditional measures. Understanding those divergences better—particularly if they are significant and related to factors that can be influenced by policy—may help development economists and practitioners improve their benchmarks for measuring progress.

The broader question posed by the Easterlin paradox—why people do not get happier as they get wealthier—is also very relevant to this discussion. At a minimum it introduces a different element into the discussion of the tradeoffs involved for developing economies when they opt to pursue objectives other than growth, such as more equitable distribution and better social welfare systems. The research here on happiness in developing economies of course cannot answer these widely debated questions. But perhaps it can provide new insights into them. Research in Latin America and Russia discussed in this article suggests that happiness surveys can

**Figure 1.** Happiness and Income per Capita, by Country, 1990s



Source: Graham and Pettinato (2002b).

Note:  $R^2 = 0.14$ .

explain much about how the dynamics of poverty and inequality affect well-being, as well as about many other elements of well-being that are not captured by income measures alone. In particular, they may help explain public frustration when income measures alone provide insufficient explanation. They may also shed light on issues when a revealed preferences approach is limited—for example, when seeking the effects of inequality on well-being. It is difficult to imagine how poor Bolivians, for example, who are unhappy with nationwide inequality can reveal their preferences and move to a place with less inequality (short of emigrating). Nor can they do much to alter the income distribution by voting because progressive taxation is not on the policy agenda in much of the region. In such contexts, surveys of well-being may provide useful information.

It is important, though, to think of happiness surveys as complements to rather than substitutes for income-based measures of progress. Happiness surveys can provide novel information and suggest new analytical approaches, but they can also pose challenges when translated into direct policy recommendations. For example, countries have grown wealthier over time, and they have made major improvements in other indicators, such as morbidity, mortality, and literacy rates.<sup>3</sup> But if the direct policy conclusion from the Easterlin paradox is that more money does not make people happier, a related conclusion could be that long-term gains in health and education also do not make people happier. Most development economists would find this extremely problematic.

## Solving the Discrepancy between Reported and Income-Based Measures of Happiness

Economists who study the economics of happiness have devoted a fair amount of attention to trying to explain the paradox that improvements in living standards over time were not reflected in people's answers to happiness surveys. Easterlin (1974) explained the anomaly by suggesting that absolute income levels matter up to a certain point—particularly when basic needs are unmet—after which relative income differences matter more. Decades earlier, Pigou (1920) reasoned that because rich people derive much of their satisfaction from their relative (rather than absolute) income, satisfaction would not be reduced if the incomes of all the rich were diminished at the same time, justifying redistributive taxation.

Using a cross-section of 18,000 college students in 39 countries (primarily developed economies) and a longitudinal study of 4,942 adults in the United States over 1971–81, Diener and others (1993) found a stronger relationship between income and happiness at the lower end of the income scale and a weaker one at higher incomes that are well above subsistence levels. They also found a moderate relationship between affluence and life satisfaction across countries.

Norms and expectations also adapt upward with economic progress. Thus the expected gains of income on happiness are mediated by the rising aspirations that accompany the income gains. Empirical studies support this proposition, showing a much stronger relation between income and happiness at the lower end of the income scale (Veenhoven 1991). Some scholars have also found an additional effect at the top of the scale, which might be explained by greed or changing preferences resulting from high degrees of wealth (Argyle 1999).

Easterlin's proposition about changing reference norms is supported by the well-known sociological work of Merton (1957), based on Stouffer's (1949) analysis of the effects of promotions among U.S. soldiers. Stouffer found that members of the infantry, for whom promotion was quite rare, were much more satisfied when they received a promotion than were members of the air force, for whom upward mobility was the norm rather than the exception.<sup>4</sup>

At about the same time that Merton was writing, Duesenberry (1949) explored the relationship between income aspirations and social status. His specific interest was in ascertaining how the relationship influences savings behavior, but the empirical work on which he based his analysis was remarkably similar to Merton's work. He relied on sociological research based on public opinion polls in the United States in the 1940s. He found that people in the highest income group surveyed said that they needed a higher percentage increase in income to allow their family to live comfortably than did people in many lower income groups. In a much later study Kapteyn (1999) found that residents of higher income neighborhoods in the Netherlands save less than residents with similar income levels that live in lower income neighborhoods.

The importance placed on relative income and reference groups can lead to an ever-rising bar of perceived needs. In a classic work Veblen (1967) suggests that in affluent societies spending—and in particular conspicuous consumption—becomes the vehicle through which people establish social position. Several decades later, Schor (1998) cited repeated surveys in which more than half the respondents in the United States, the richest population in the world, said that they could not afford everything they really needed.

The importance of relative income differences to perceived well-being depends in part on social norms, which vary by society. Under certain norms some societies, such as the United States, are more willing to tolerate higher levels of inequality in exchange for benefits (real or perceived) such as greater freedom or opportunity (Esping-Andersen 1990; McMurrer and Sawhill 1998; Graham and Young 2003).

The concept of changing reference norms and aspirations is also relevant to economic development in poor countries. An anecdotal example comes from Peru in the 1960s. Webb (1977) interviewed a random sample of urban workers of different income levels and asked how much more income than they earned at the time they would need to "live well." The vast majority of respondents across all income levels responded that they would need twice as much.

Increasing income levels—and economic growth—are a necessary if not sufficient condition for development. The process can be quite uneven. Thus, aspirations and reference norms may adapt upward well before significant sectors of society see the benefits. The integration of global markets, meanwhile, has been accompanied by a marked increase in the availability of global information regarding living standards within poor countries and beyond their borders. Many developing economies, particularly in Latin America, have large gaps between the very wealthy and the rest of society, gaps that are often exacerbated by integration into global markets. If skilled labor benefits disproportionately from the process, as has been the case in Latin America, it is likely to require much more work to narrow the gaps, which also requires expanding the pool of skilled labor, than to simply increase awareness about them (Behrman and others 2000).

The concepts of rising aspirations and relative deprivation are not at all new to the study of development economics. They are highlighted in Hirschman's (1973) work, for example. Yet they are not well incorporated into existing measures of progress, even though they can have significant effects on individuals' assessments of their welfare.

### *Set Point Theory*

A prominent explanation for the Easterlin paradox is that norms and expectations adapt upward at about the same rate as income increases, and thus after basic needs are met, more income does not make people happier. An additional—and in some cases plausible—explanation for the paradox is that happiness questions, which are usually based on a four- or seven-point scale, have an upper bound, whereas progress does not. This may explain some of the cross-country conundrum but not why happiness levels have fallen after 40 years of economic progress in Japan, for example. The extreme view of adaptation is the psychologists' set point theory, which suggests that all individuals have a set point of happiness, which they revert back to even after major events, such as winning the lottery or getting divorced.

Others, though, such as Easterlin (2003), cite research showing that there are some events—such as unemployment and being widowed—that individuals either never adapt to or take a long time to adapt to. A recent study of monozygotic and dizygotic twins in Denmark, meanwhile, shows that reported happiness has some genetic components but is also heavily influenced by experiences with partners and children (Kohler and others 2005).

A strict interpretation of the set point theory suggests that policy can do little to make people happier and that happiness surveys cannot be usefully applied to development questions without accepting that extremely poor and destitute people who report that they are happy, most likely because of psychological attributes, are as well off as much wealthier, healthier, and more educated respondents. Few policymakers or

social scientists would be comfortable with this, especially because decades of research and economic progress demonstrate that people live longer, healthier, and more fulfilling lives when they are not destitute, regardless of how they report their well-being. Easterbroolc (2003), for example, discusses the paradoxical case of the United States, where virtually all of these indicators—health, wealth, and education—have improved over time, but reported well-being has gone down.

Yet the set point interpretation is extreme. There is no doubt a tremendous amount of adaptation to all kinds of change, and the evidence suggests that people often do return to or near their set point, particularly in the case of income changes. But there is also evidence that some things have more lasting effects on people's happiness. Certainly people adapt over time to events such as divorce or serious illness, but the evidence is much less conclusive on whether they ever fully adapt. Easterlii (2003) suggests that people adapt and recuperate much faster from pecuniary changes or shocks (upward or downward) than from changes in nonpecuniary areas, such as marriage or health. His data show that individuals never fully adapt to significant marital or health shocks. By contrast, panel data for Germany suggest that people eventually fully adapt to the negative effects of divorce.

Even if norms and adaptation play a major role in determining subjective well-being, there is ample evidence that objective conditions—and changes in objective conditions—matter. In virtually all countries where surveys are conducted, cross-section data show that wealthier people are happier than poor people. Healthier people are also happier, as are more educated people, employed people, and married people (Clark and Oswald 1994; Blanchflower and Oswald 2004). Conversely, economic and other forms of insecurity, such as high levels of crime, seem to have negative effects on people's happiness (Graham and Pettinato 2002a, b; Powdthaoe forthcoming).

The extreme set point interpretation suggests that progress does not matter to happiness at all—an uncomfortable interpretation for some. A more nuanced view, however, posits that happiness surveys can show things that purely income-based measures of progress do not, and this may shed light on how the direction and nature of progress affect well-being. Having enough income seems to matter to people's happiness and is essential to poverty reduction, but other nonincome factors, such as stable employment, marital status, and good health, also matter a great deal to well-being (and, except for marital status, to poverty reduction).

### *Other Findings*

Although there are diminishing returns to increasing income across countries, other things that are correlated with income, such as health, quality of government, and human rights, are also correlated with higher levels of happiness (Diener and Seligman 2004; Donovan and Halpern 2002; Frey and Stutzer 2002). In a recent

cross-country study, for example, Helliwell (2004) concludes that people with the highest well-being "are not those who live in the richest countries, but those who live where social and political institutions are effective, where mutual trust is high, and corruption is low" (p. 6). In addition, Graham and Pettinato (2002b) found that happiness levels are still, on average, lower in most developing economies than in developed ones, suggesting that if there is a threshold beyond which more money does not increase average levels of enhance reported well-being, most developing economies have not yet crossed it.

The discrepancy between cross-section and over-time country-level findings, meanwhile, is a paradox of its own. After minimum basic needs are met, respondents do not seem to factor in long-term, aggregate improvements in per capita income levels or in basic health and literacy standards when they assess their well-being. At the same time, at any point in time within individual countries wealthier and healthier people are happier than poorer and less healthy people. Responses are also influenced by changes in both income and health status. Even if gains do not affect people's answers to happiness surveys over time, when life expectancy is longer and disease incidence lower, these temporarily happier, wealthier, and healthier people within countries will have more years to enjoy their lives.

One example of well-being surveys answering unresolved questions is the evidence (albeit mixed) they provide that distributional outcomes matter to welfare. Experimental-, firm- and region-level studies show that inequities in rank or in the distribution of particular rewards can erode the positive gains accrued from income.<sup>5</sup> Using U.S. data from the General Social Survey, Blanchflower and Oswald (2004) found that relative income differences matter to happiness even when absolute income is held constant.<sup>6</sup> Graham and Felton (2005) found that relative income differences (as well as perceived income differences) make rich people in Latin America happier than average and poor people less happy. The authors suggest that although inequality can signal mobility and opportunity as much as injustice in developed economies, in Latin America inequality seems to be a constant source of advantage for rich people and disadvantage for poor people.

Happiness surveys also suggest that macroeconomic conditions matter to well-being. Studies in developed economies show that higher inflation and unemployment rates make respondents less happy, all else being equal (de Tella and others 2001). Other research corroborates these findings for Latin America, with high inflation and unemployment rates bad for happiness (Graham and Pettinato 2002a, b; Eggers and Graham 2004). Most economists and policymakers would be quite comfortable with the logical conclusion from these results: high inflation and unemployment are bad for well-being.

But caution is also necessary. A more recent study of the costs of regional unemployment rates in Russia shows that respondents who live in regions with higher unemployment rates are happier than their counterparts in regions with lower

rates, all else held equal (Eggers and others forthcoming). These results reflect the unusual nature of the Russian economy and its uneven transition to the market. A detailed interpretation is beyond the scope of this article, but the policy implications, taken at face value, are that high unemployment rates are good for well-being in Russia. Few analysts would find that useful or conscionable.

Accepting that caution is necessary when drawing policy prescriptions, the point of this article is to demonstrate how happiness research can provide new insights into the development process and how individuals fare—and how they perceive that they fare—during that process. These insights complement but cannot replace the valuable information and benchmarks of progress provided by income-based measures. They are also useful for explaining policy puzzles, such as differences in societies' tolerance for inequality, divergent assessments of the benefits of globalization, and unexpected interruptions in social and political stability.

### *What Are Standard Measures Missing?*

An obvious question is what are traditional or standard measures missing? Respondents' assessments of their own welfare often highlight factors that are not adequately captured by income measures, including real and perceived insecurity of rewards and incentives systems adapting to structural changes; the state of essential public services, such as education, health, and crime prevention; and norms of fairness and justice. Even the trends that can be measured in income terms, such as poverty and inequality, have broader dimensions and dynamic elements that are not captured by such traditional income-based measures as poverty headcounts and Gini coefficients.

Gini coefficients, for example, are static, aggregate measures that do not change very much over time and usually do not reflect distributional shifts among regions or skill cohorts. Poverty headcount studies based on cross-section data collected every few years often miss short-term movements in and out of poverty.<sup>7</sup> Such movements are common in developing economies and create widespread insecurity among the middle class as well as the poor (Birdsall and others 2001). Panel data that measure income mobility are better suited to capturing such changes. Yet these data are rare and exist for only a few developing economies (and even then usually for short time periods and small samples). Fixed international poverty lines, such as the \$1 or \$2 a day lines, although useful for cross-country comparisons, often have very little to do with public conceptions of poverty within particular countries and regions, which is why they are rarely used for these purposes.

An example of the incomplete picture provided by income-based measures is the gap between economists' assessments of the effects of globalization based on traditional measures and the more negative assessments of the average citizen experiencing the process. This gap may be exaggerated by the vocal opponents or proponents of globalization, but it may also reflect trends—and broader dimensions of welfare—that

standard income measures do not. Few development economists dispute that growth is a necessary but insufficient condition for poverty reduction. So it should come as little surprise that measures of poverty and inequality that capture only income and expenditure trends do not provide a complete picture of the many broader dimensions of poverty and inequality or how they are affected by the complex process of globalization.

Another example of income measures providing an incomplete picture is the theory that civil unrest and social protest are more likely to occur in developing and growing societies than in stagnant ones. Gurr's (1970) often cited cross-country study cites relative deprivation as "the basic, instigating condition for participants in collective violence...Societal conditions that increase the average level or intensity of expectations without increasing capabilities increase the intensity of discontent" (p. 254). Despite many subsequent studies, there is still vast disagreement over the relationships between gross domestic product growth, inequality, and civil violence (Collier and others 2003; Sambanis forthcoming). Using broader measures may offer some insights.

A related example is public tolerance for inequality. In a classic article Hirschman (1973) compared public tolerance for inequality in the development process with a traffic jam in a tunnel. He said that when one lane moves forward, it gives drivers in the stalled lanes hope, because it provides a signal or information about where they might be going in the future. But if only one lane moves and the others remain stalled for a long period of time, drivers in the stalled lanes become frustrated and are tempted to revert to radical behavior such as jumping the median strip. Note that the frustration and radical behavior come after a period of growth and development (albeit unevenly shared), not at a time of overall stagnation. There is no standard measure of growth or inequality that can gauge the timing of such frustration and how the tolerance threshold differs among societies.

The more important question, however, is whether this gap between economists' assessments and broader measures of well-being matters to outcomes in poor countries. Surely the bottom line or minimum requirement for economic development is economic growth. Will understanding broader and surely more difficult to measure dimensions of welfare contribute anything to the already complex challenges of development? If there is merit in pursuing these broader concepts, how can researchers better measure what traditional tools do not capture? Can the economics of happiness provide new tools to answer these questions?

## The Economics of Happiness in Developing Economies: An Initial Exploration

There are very few studies of happiness in developing economies, and to the extent they exist, they tend to cover individual countries (Namafie and Sanfey 1998 in

Kyrgystan; Rojas 2003 in Mexico; Ravallion and Lokshin 1999 in Russia). Graham and Pettinato's (2001, 2002a, b) study of reported well-being in Latin America and Russia is the first with a large sample of developing economies. Their results strongly support the important role of relative income differences, reference norms, and other nonincome factors highlighted earlier. Indeed, for the most part the determinants of happiness in developing economies were very similar to those in developed ones.

Graham and Pettinato's work began as an attempt to better understand the determinants of income mobility (as a proxy for the distribution of opportunities) in developing countries that are in the process of opening their economies. The challenge in answering this question is the paucity of data. Baulch and Hoddinot (2000) provide an excellent summary of the few mobility studies that exist for developing economies.

Graham and Pettinato also expanded their approach to examine the role of perceptions of past and future mobility, linking data on subjective well-being to detailed over-time data on income mobility for the same respondents. This approach was introduced to collect data in Peru and in Russia. Unfortunately, similar mobility data were not available for the larger Latin America sample, which is a large cross-section survey of respondents in 17 countries.<sup>1</sup> In Peru a subsample of 500 respondents in a large, nationally representative panel for 1991–2000 was reinterviewed and asked several questions about their perceptions of their past progress and future prospects. This perceptions survey was repeated three years in a row. A more detailed discussion of the methods used can be found in Graham and Pettinato (2002a, b).

### *Measurement Error and Other Concerns*

Panel data on income mobility are rare because they require individuals to be followed over a prolonged period of time and are expensive to generate. There are only a few nationally representative panels for developing economies. Even then, the data are rarely without flaws. Respondents move, leading to attrition and possible bias. Attrition tends to be greatest at the tails of the distribution, as the wealthiest respondents tend to move to better neighborhoods and the poorest ones move in with others or return to their places of origin. In addition, as respondents in the panel age, they become less representative of the population as a whole. The studies by Graham and Pettinato had a 38 percent attrition rate over a five-year period in Russia and a 25 percent attrition rate for the three-year period covered by the perceptions survey in Peru (and a lower rate for the 1991–2000 expenditures survey).

Another problem with longitudinal data is accounting for error in reporting income, a problem that is gravely aggravated by policy shocks, such as devaluations and high levels of inflation. People who are self-employed or employed in the informal sector have a difficult time estimating any sort of monthly or annual salary, in part because their income fluctuates a great deal. Thus expenditure data are more

accurate than income data for samples with large numbers of self-employed, informal sector, and agricultural workers. It is also more difficult to misreport expenditures. Yet expenditure data miss part of the story, particularly at the upper end of the distribution, and do not capture volatility in income flows, as people tend to smooth their consumption where possible by saving and dissaving.

Adding perceptions data to longitudinal data has benefits, but creates its own set of methodological problems. Although happiness questions are not very useful in measuring the well-being of particular individuals, there is surprising consistency in the patterns of responses both within and across countries. Psychologists have found that several well-being indicators validate how most individuals respond to happiness or life satisfaction surveys. The correlation coefficient between happiness and life satisfaction questions, meanwhile, is approximately 0.50, and the microeconomic equations have almost identical form.

The data are most useful in the aggregate, because an individual's answer to a question on happiness can be biased by day-to-day events and because the same person's answer could be quite different from day to day or year to year. The simple correlation from a regression of happiness in year two on happiness in year one was 0.2734 for the Russia sample, suggesting a significant amount of fluctuation in happiness levels. (Given the highly volatile economic context in Russia during the period, this correlation is probably lower than the average for other countries.)

Accuracy in reporting is another major issue. Responses can be biased by the phrasing or the placement of questions in the survey. Another problem is bias introduced by different or changing reference norms. When people are asked how much income they would need to make ends meet or to be happy, they usually base their answers on either their existing income or the income of others in their community like themselves and increase it by some proportion, regardless of the absolute level. When people in the Peru survey were asked to compare themselves with others in their community and then with others in their country, they were much more consistent in how they compared themselves with those in their community than with those in their country, which is a much vaguer reference point.

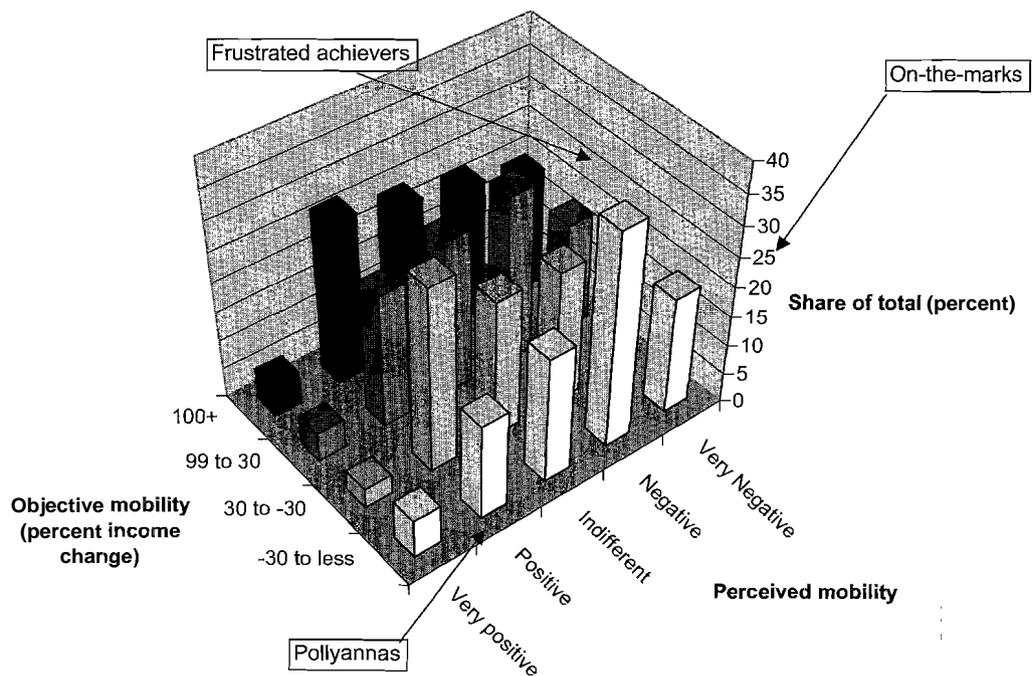
There is clearly a large margin for error with both kinds of data. The most important, from the perspective of the analysis here, is that income gains could be mismeasured. Thus, what is recorded as respondents' positive or negative perceptions of those gains could instead be a more realistic assessment than what the measures report. Although this may account for some of the findings here, the positive correlation between reported perceptions and other contextual variables offers some support that these results are not solely artifacts of error. After one accepts that some error is likely and that caution is necessary in interpreting the results, they provide useful information that static income data alone would not.

## Results

The most significant and surprising finding in Peru was that almost half the respondents with the most upward mobility reported that their economic situation was negative or very negative compared with 10 years earlier (figure 2). A similar analysis based on comparable data for Russia showed an even higher share of frustrated respondents—or "frustrated achievers" as they are called here.<sup>10</sup> These results are consistent with the existence of measurement error in the data (figure 3).

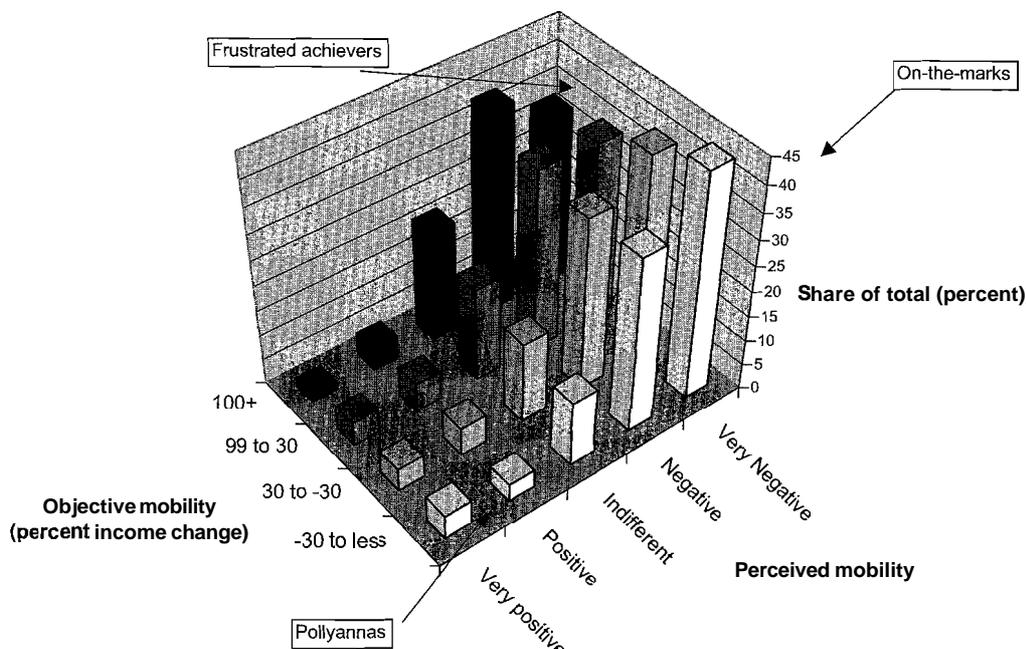
A closer look at these frustrated achievers shows that they are at or near average income (and therefore not the poorest in the sample) and that they are more urban and slightly older on average than nonfrustrated respondents with upward mobility. There are no significant gender or educational differences (Graham and Pettinato 2002b). Frustrated achievers scored lower on a host of perceptions questions, such as their perceived prospects of upward mobility and their positions on a notional economic ladder (where respondents were asked to place themselves on a nine-step ladder representing their society, with step one representing the poor and step nine representing the rich). In keeping with the direction of these findings the frustrated

**Figure 2.** Long-Term Perceived Mobility and 1991–2000 Income Mobility in Peru, 2000



Source: Graham and Pettinato (2002b).

**Figure 3.** Perceived Past Mobility and 1995–99 Income Mobility in Russia, 1999



Source: Graham and Pettinato (2002b).

achievers also had more fear of being unemployed in the future. In addition, the Russian frustrated achievers were more likely to want to restrict the incomes of the rich and were less satisfied with the market process and democracy (these questions were not in the original survey for Peru).

In Peru the likelihood of having upward mobility and being frustrated is negatively correlated with initial income levels (table 1). In other words, the frustrated achievers started from lower income levels, on average, even though they were not the poorest in the sample when they answered the survey. This is not surprising because even large percentage increases in their incomes would have seemed insufficient to reach the levels of wealthier groups. The frustrated achievers were also more likely to be urban dwellers and therefore more informed about the lifestyles of others, including the very wealthy. There is, of course, also the strong possibility that initial income was mismeasured, which would overstate the gains made by the frustrated achievers.

Assuming that all these findings are not caused by error, what explains these frustrations? Relative income differences certainly could. Both Peru and Russia have high degrees of inequality. The frustrated achievers in both countries were more

**Table 1.** Frustrated Achievers in Peru, 1991–2000

<i>Independent Variable</i>	<i>Regression 1</i>		<i>Regression 2</i>	
	<i>Coefficient</i>	<i>z-Statistic</i>	<i>Coefficient</i>	<i>z-Statistic</i>
Age	0.025	3.30	0.025	3.29
Male dummy variable	–0.012	–0.05	–0.005	–0.02
Years of education	0.042	1.61	0.051	1.93
Married dummy variable	–0.207	–0.89	–0.209	–0.89
Urban dummy variable	1.495	3.58	1.349	3.35
Log equivalence expenditure, 1991	–1.229	–6.04		
Equivalence expenditure, 1991			0.000	–5.70
Constant	6.437	4.13	–2.471	–4.23
Number of observations	500		500	
Pseudo = R <sup>2</sup>	0.0968		0.1093	

*Source:* Graham and Pettinato (2002b).

*Note:* Logit estimation. The dependent variable is frustrated achiever.

likely to score lower on the notional economic ladder; those in Peru were more likely to negatively compare their situations with the situations of others in their community and their country (a question not included in the Russia survey).

A lack of adequate social insurance and insecurity could be another explanation. The frustrated achievers had more fear of unemployment than did nonfrustrated achievers. Thus even though the frustrated achievers are doing well by objective income measures, they perceive no guarantee of stability in their earnings levels. This is not surprising given that both surveys were conducted in very volatile economic contexts and that the objective mobility data reveal a remarkable degree of vulnerability. A higher share of respondents went from "rags to riches"<sup>m</sup>—or from the bottom quintile to the top quintile—in a 10-year period in Peru (5 percent) than in a similar period in the United States (1 percent), for example. Yet a surprising 11 percent of respondents in the middle of the distribution (the fourth quintile in Peru) fell all the way to the bottom quintile, which is analogous to falling from the middle class into extreme poverty. In both cases some of the mobility could be driven by newly educated individuals entering the labor force. But because neither study could control for this, the rates are at least comparable.

If the frustrated achievers suffered more from this volatility, it might drive some of their frustrations. But in Peru the frustrated achievers have less volatility in their income trajectory, as measured by the coefficient of variation—a puzzling result if uncertainty or volatility explains the frustrations. In Russia the coefficient of variation is higher, which at first glance seems a more intuitive finding.

Clark (2003) found that respondents with greater income variance (controlling for levels) are more tolerant of inequality in the United Kingdom, presumably because the variance signals that great gains or opportunities are possible. This is

the opposite of initial intuition, in which volatility produces insecurity and reduces well-being. It may be that some combination of both interpretations is at play: although frustrated achievers may be concerned about inequality and unemployment, they may also view income variance as a reflection of new opportunities, at least in Peru. Tolerance for inequality varies across societies. There may be similar differences in tolerance for volatility related to inequality.

The fact that most of the frustrated achievers were at mean levels of education is probably relevant to the discussion of volatility versus opportunity. In Latin America, with the opening of trade and capital markets in the 1990s, people with higher levels of education receive high marginal returns compared with the rest of society; people with secondary education see decreasing marginal returns compared with people with primary education (Behrman and others 2000).

Last, it is quite plausible that some of the frustrations are driven by individual character traits rather than economic and other variables. There is probably some share of every sample that will always be negative or unhappy, regardless of objective conditions. It is impossible to determine whether these population samples are significantly different from others because similar income mobility and perceptions data are not available for a broader sample of countries to compare the share of frustrated achievers. A reinterview of an urban subsample of the panel in 2003 showed that there are still frustrated achievers, although a slightly lower share of the (fewer) upwardly mobile respondents were frustrated (27 percent of urban respondents were frustrated achievers in 1991–2000 and 18 percent were in 2000–2003). The economy was contracting from 2000 to 2003 in contrast to the previous, rapid growth period, suggesting that frustrations decrease somewhat with aspirations, but that some share of the sample may be frustrated regardless of conditions (Graham and MacLeod 2004).

There is also the broader question of whether the determinants of happiness in developing economies differ from those in advanced industrial economies. The determinants of happiness in Latin America and Russia were compared with those of the United States using the pooled data for 1973–98 from the General Social Survey for the United States (table 2), the 2000 Russian Longitudinal Monitoring Survey for Russia (table 3), and the 2001 Latinobarometro survey for Latin America (used because 2001 is the only year with data for both self-reported health status and minority status, which make it comparable to the U.S. and Russian surveys) (table 4).

The effects of age, income, education, marriage, employment, and health are remarkably similar. In all contexts, unemployed people were less happy than others. In the United States and Russia, self-employed people were happier than others on average, whereas in Latin America they were less happy. This may be because in the United States self-employment is a choice, but in Latin America the self-employed are often in the informal sector by default. Another difference is that in the United States women were happier than men, but in Russia men were happier than

**Table 2.** Happiness in Latin America, 2001

<i>Independent Variable</i>	<i>Coefficient</i>	<i>z-Statistic</i>
Age	-0.025	4.21
Age <sup>2</sup>	0.000	4.72
Male dummy variable	-0.002	-0.07
Married dummy variable	0.056	1.63
Log wealth index	0.395	10.56
Years of education	-0.004	-0.64
Minority dummy variable	-0.083	-2.49
Student dummy variable	0.066	1.01
Retired dummy variable	-0.005	-0.06
Homemaker dummy variable	-0.053	-1.04
Unemployed dummy variable	-0.485	-7.54
Self-employed dummy variable	-0.098	-2.33
Health index (self-reported)	0.468	24.58
Number of observations	15,209	
Pseudo-R <sup>2</sup>	0.062	

*Source:* 2001 Latinobarometro survey and author's calculations.

*Note:* Ordered logit estimation. The dependent variable is happiness. Country dummy variables are included but not shown.

**Table 3.** Happiness in Russia, 2000

<i>Independent Variable</i>	<i>Coefficient</i>	<i>z-Statistic</i>
Age	-0.067	-7.42
Age <sup>2</sup>	0.001	7.15
Male dummy variable	0.152	2.80
Married dummy variable	0.088	1.40
Log equivalent income	0.389	11.48
Years of education	0.015	0.96
Minority dummy variable	0.172	2.46
Student dummy variable	0.199	1.59
Retired dummy variable	-0.378	-3.97
Housewife dummy variable	0.049	0.33
Unemployed dummy variable	-0.657	-6.51
Self-employed dummy variable	0.537	2.23
Health index	0.446	3.82
Number of observations	5,134	
Pseudo-R <sup>2</sup>	0.033	

*Source:* Graham and others (2004).

*Note:* Ordered logit estimation. The dependent variable is happiness.

**Table 4.** Happiness in the United States, 1972–98

<i>Independent Variable</i>	<i>Coefficient</i>	<i>z-Statistic</i>
Age	–0.025	–5.20
Age <sup>2</sup>	0.038	7.53
Male dummy variable	–0.199	–6.8
Married dummy variable	0.775	25.32
Log income	0.163	9.48
Years of education	0.007	1.49
Black dummy variable	–0.400	–10.02
Other race dummy variable	0.049	0.59
Student dummy variable	0.291	3.63
Retired dummy variable	0.219	3.93
Housekeeper dummy variable	0.065	1.66
Unemployed dummy variable	–0.684	–8.72
Self-employed dummy variable	0.098	2.29
Health index	0.623	35.91
Number of observations	24,128	
Pseudo-R <sup>2</sup>	0.075	

*Source:* General Social Survey and author's calculations.

*Note:* Ordered logit estimation. The dependent variable is happiness. Year dummy variables included but not shown.

women, perhaps due to disparities in status. (In Latin America there was no gender difference.) In the United States blacks were less happy than other races, and people who identified as minorities in Latin America were less happy. By contrast, minorities in Russia were happier than ethnic Russians.

In both Latin America and Russia happier people were more likely to support market policies, to be satisfied with how democracy was working, and to prefer democracy to other systems of government. (Support for market policies was measured by an index based on several scaled questions about the private sector, foreign investment, free trade, and privatization.) A cross-canton study in Switzerland by Frey and Stutzer (2002) shows that people who participate in direct democracy are happier than those who do not, all else being equal. Although similar information on respondents' voting patterns is not available, the results here suggest a virtuous circle of sorts between happiness and support for democracy (even though the direction of causality cannot be determined).

Happier people, on average, had higher prospects for their own and their children's future mobility, were more likely to believe that the distribution of income in their country was fair, placed themselves higher on a notional economic ladder, and had less fear of unemployment.

By contrast, the negative perceptions of frustrated achievers in Peru and Russia are correlated with lower life satisfaction (happiness) scores, lower scores on a

notional societal economic ladder (compared with nonfrustrated respondents of comparable income levels), lower perceived prospects of upward mobility, more fear of unemployment, less satisfaction with market policies, and a lower probability of preferring democracy as a system of government.

No surveys that take the approach of comparing objective trends in income mobility with reported trends could be found for Organisation for Economic Co-operation and Development countries. However, there are some studies that link people's perceptions about mobility — such as perceived prospects of upward mobility — with voting behavior and views about redistribution. Most of these studies suggest that societies with widely held faith in prospects for upward mobility are more tolerant of income inequality than those where social mobility is more limited. Benabou and Ok (1998) developed a model that they applied to data from the panel study on income dynamics and found that even though the majority of Americans are well below the mean income level, they do not vote for redistribution because they believe that they will be above the mean in the future (even though this is an unrealistic expectation for the median voter) (see also Pilocetty 1995).

Alesina and others (2000) compare views about inequality in the United States and Europe. They find that inequality has a modest negative effect on all respondents in Europe, and it is strongest for the poor. By contrast, in the United States the only group made less happy by inequality is left-leaning wealthy respondents. The authors posit that differences in views about the prospects of upward mobility between the two continents explain these results. This is something noted two centuries ago by de Tocqueville (1969) in comparing the United States and Europe. In the analysis of General Social Survey data here, U.S. respondents that support redistribution are, on average, less happy than others (Graham 2003).

Graham and Felton (2005) analyze inequality in Latin America, as already noted, and find that it makes the rich happier and the poor less happy, signaling persistent advantage for the rich and disadvantage for the poor. Graham and Sukhtanlar (2004) also examined responses to several questions related to redistribution. One asked respondents to place themselves on a nine-point scale, where one was preferring more freedom and money and nine was preferring more rules and equality. Respondents that had higher perceived prospects of upward mobility were wealthier on average and were less likely to prefer equality and regulation.<sup>11</sup> This finding is similar to those for the United States.

Rather surprisingly, wealthier people were more likely to support more taxation and social spending. Although a surprising 67 percent of respondents said that taxes should be lower even if social welfare spending suffers, the wealthier respondents tended to disagree. Even after splitting the sample into respondents that were likely to pay taxes and those that were not, the results were not significantly different. At least some of these results reflect Latin Americans' mistrust of the state's ability to fairly redistribute wealth rather than widely held beliefs about prospects for upward

mobility (only 13 percent of Latin American respondents believed that the income distribution was fair or somewhat fair).<sup>12</sup> The limited support for redistribution seems to be among wealthier groups. A positive interpretation is that this reflects enlightened self-interest, but a more realistic interpretation may be that the poor typically receive fewer benefits from state spending than do wealthier groups in the region, and public faith in the state's capacity to redistribute fairly is quite minimal.

The share of respondents who thought that their children would live better than they did was remarkably similar in the United States (57 percent) and Latin America (58 percent). By contrast, far fewer Latin American respondents than U.S. respondents felt that they lived better than their parents did (Graham 2003). In Latin America there still seems to be a surprising amount of faith in individual effort and prospects for getting ahead. Some of this faith is no doubt based on respondents' awareness that their children are likely to have access to more and better quality education than they did, and some reflects hope and expectations as much as anything else. For the Peru sample some of the same respondents that assessed their own situation more negatively than was warranted by objective income measures still positively assessed their children's prospects.

People with higher prospects for upward mobility were also more likely to favor market policies, support democracy over any other system of government, and place themselves higher on the notional economic ladder. By contrast, frustrated achievers in Peru and Russia, who on average had more fear of unemployment and lower prospects of upward mobility scores, tended to be less supportive of market policies and democracy. Notable public frustration was linked to concerns about income differentials and unemployment and with reduced support for markets and democracy (Graham and Pettinato 2002b).

### *Causality Conundrums*

Although frustrations and unhappiness are indeed linked to policy-relevant questions, the direction of causality is not clear. It is unknown whether policies, environments, or both drive the frustrations or whether underlying character traits (such as lower innate levels of happiness) drive negative assessments of policies and environments. In other words, it may well be that frustrated or unhappy people are more likely to be pessimistic about the future and concerned about relative income differences or insecurity.

At least some of the explanation for patterns in reported well-being lies in character traits. One study in Russia shows that only 3 percent of the variation in happiness is explained by socioeconomic and demographic variables; the rest is either behavioral or error-driven (Graham and others 2004). Yet there also seems to be an explanatory role for factors that policy can influence, such as inequality, macroeconomic volatility, and large gaps in rewards to different skill cohorts.

In a recent study Graham and others (2004) tried to gain a better understanding of the interaction between contextually driven attitudes and behaviorally driven ones. Using Russian data with observations on both happiness and income at two points in time, they found that behavioral traits had a role in explaining differences among individuals' performances and outcomes. Happier people earn more income in later periods, on average, than less happy people (table 5). Their method of analysis

**Table 5.** Effect of Happiness on Income in Russia, 1995–2000

Independent Variable	Regression 1		Regression 2		Regression 3	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
Age	-0.013	-3.00	-0.013	-2.97	-0.015	-3.25
Age <sup>2</sup>	0.000	3.18	0.000	3.15	0.000	3.52
Male dummy variable	0.010	0.42	0.010	0.42	0.000	-0.02
Married dummy variable	0.205	7.84	0.205	7.84	0.205	7.84
Years of education	0.030	4.51	0.030	4.51	0.030	4.44
Minority dummy variable	0.121	3.98	0.123	4.03	0.122	4.00
Student dummy variable	-0.034	-0.34	-0.030	-0.31	-0.037	-0.38
Retired dummy variable	-0.191	-4.85	-0.190	-4.83	-0.166	-4.18
Housewife dummy variable	-0.249	-3.9	-0.249	-3.90	-0.239	-3.73
Unemployed dummy variable	-0.345	-8.16	-0.344	-8.12	-0.343	-8.07
Self-employed dummy variable	0.142	1.46	0.141	1.46	0.128	1.33
Health index	0.060	1.11	0.059	1.09	0.056	1.04
Log equivalence income, 1995	0.242	18.11	0.243	18.12	0.224	15.69
Log equivalence income, 1995, poor <sup>a</sup>					0.009	2.60
Log equivalence income, 1995, rich <sup>b</sup>					0.018	4.36
Unexplained happiness, 1995 <sup>c</sup>	0.030	2.64	0.063	2.32	0.027	2.38
Unexplained happiness, 1995 <sup>c</sup> , second quintile			-0.044	-1.14		
Unexplained happiness, 1995 <sup>c</sup> , third quintile			-0.036	-0.95		
Unexplained happiness, 1995 <sup>c</sup> , fourth quintile			-0.063	-1.71		
Unexplained happiness, 1995 <sup>c</sup> , fifth quintile			-0.023	-0.65		
Constant	5.833	36.35	5.823	36.19	5.936	34.62
Number of observations	4,457		4,457		4,457	
Adjusted R <sup>2</sup>	0.134		0.133		0.152	

Source: Graham and others (2004).

Note: The dependent variable is log equivalence income in 2000 (ordinary least squares). Regression 1 makes no income quintile distinctions; regression 2 tests for a difference in the effect of unexplained happiness on 2000 income, by 1995 income quintile; regression 3 tests for a difference in the effect of 1995 income on 2000 income, by 1995 income quintile. Independent variables are from 2000 unless otherwise noted.

<sup>a</sup>Poor is defined as the bottom 40 percent of the income distribution in 1995.

<sup>b</sup>Rich is defined as the top 20 percent of the income distribution in 1995.

<sup>c</sup>The residual of basic happiness 1995 regression.

entailed calculating the residual or unexplained happiness for each respondent in the first period, that is, the happiness that was not explained by the usual socioeconomic and demographic variables, which is something that must be close to the behavioral component of reported happiness. That residual was included as an independent variable, with second-period income as the dependent variable. Controlling for first-period income, the residual had positive and significant effects on second-period income, and happier people were healthier in later periods.

Even though there is a large margin for error or correlated error in this analysis, these results suggest that happier people earn more income, perform better in the labor market, and are healthier. Psychologists attribute traits such as positive outlook and high self-esteem (so-called positive cognitive bias) to happier people. It is not surprising that these traits also contribute to productivity and health. A very tentative extension of these findings is that the frustrations of achievers could be a signal of more negative future outcomes.

The correlation between happiness and future income was stronger for people at lower levels of income, whereas the role of first-period income was more important for future income for people at higher levels of income (see table 5). A positive outlook and high self-esteem may be valuable labor market assets for people with fewer assets or less income, particularly people who provide services. These traits probably matter less for people who have sufficient income or assets to leverage in making future gains.

Related perceptions variables had a similar relationship with future income. Having a high prospects of upward mobility score or placing oneself high on the notional economic ladder in the first period was positively correlated with higher levels of income in the second period. By contrast, having more fear of unemployment was negatively correlated with future income (although this result was significant only at the 10 percent level) (table 6). Respondents' views or attitudes about their future prospects are correlated with their future outcomes and may play a role in determining those outcomes. It is likely that both happiness and perceptions variables are picking up similar character traits, such as optimism and self-esteem.

Indeed, it is plausible that some of these results are explained by people's abilities to forecast or predict their future income, and thus first-period attitudes merely reflect people's knowledge of the future.<sup>13</sup> The highly unstable nature of the Russian context, however, renders this unlikely as the entire explanation. There is broader psychological evidence that character traits have effects on individuals' labor market performance and on their health outcomes (Cummins and Nistico 2002; Diener and Seligman 2004). Behavioral or attitudinal variables may be more important in extremely uncertain contexts, such as Russia, where it is more difficult to predict the future. Research using comparable data for other countries is necessary to test such a proposition.

**Table 6.** Effect of Perceptions Variables on Future Income in Russia, 1995–2000

<i>Independent Variable</i>	<i>Regression 1</i>		<i>Regression 2</i>	
	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Coefficient</i>	<i>t-Statistic</i>
Age	-0.013	-3.00	-0.009	-0.78
Age <sup>2</sup>	0.000	3.18	0.000	1.24
Male dummy variable	0.010	0.42	-0.008	-0.23
Married dummy variable	0.205	7.84	0.241	6.15
Years of education	0.030	4.51	0.032	2.44
Minority dummy variable	0.121	3.98	0.081	1.80
Student dummy variable	-0.034	-0.34	0.427	1.07
Retired dummy variable	-0.191	-4.85	-0.273	-4.60
Housewife dummy variable	-0.249	-3.90	-0.166	-1.60
Unemployed dummy variable	-0.345	-8.16	-0.373	-5.82
Self-employed dummy variable	0.142	1.46	0.094	0.72
Health index	0.060	1.11	0.061	0.84
Log equivalence income, 1996	0.242	18.11	0.230	11.55
Unexplained happiness, 1995 <sup>a</sup>	0.030	2.64	-0.002	-0.11
Fear of unemployment, 1995			-0.014	-1.22
Family better off next year, 1995			0.041	2.27
Economic ladder question, 1995			0.027	2.17
Constant	5.833	36.35	5.533	17.49
Number of observations	4,457		2,296	
Adjusted R <sup>2</sup>	0.134		0.126	

*Source:* Graham and others (2004).

*Note:* The dependent variable is log equivalence income in 2000 (ordinary least squares). Regression 1 does not include perceptions variables; regression 2 includes perception variables. Independent variables are from 2000 unless otherwise noted. — not applicable.

<sup>a</sup>The residual of basic happiness 1995 regression.

These results are suggestive and do not establish any direction of causality. It is possible that causality runs from policy-relevant variables or factors such as economic performance to happiness, as well as in the other direction, or from third factors that influence both. What, then, are the implications?

At a minimum, it is clear that using longitudinal data on both mobility and subjective well-being gives a very different picture than looking at standard income data in isolation. Though it is fairly standard to associate well-being or utility with income, the research here and that of many others suggests that there are very important nonincome determinants of well-being, a finding that is in keeping with the broader questions raised by the Easterlin paradox. These elements of well-being also seem to be correlated with labor market performance and future earnings outcomes. An unanswered question, however, is how to most usefully—and prudently—incorporate these novel approaches and new kinds of data into the analysis of developing economies and into the policies that stem from that analysis.

## Relevance of Happiness Research to Development Theory and Policy

The fairly new research on reported well-being in both developed and now developing economies suggests that models based on rationally calculated, income-based utility may not capture all of what drives economic behavior and determines welfare. In addition, the research may provide new tools to answer questions much debated by economists and other social scientists, such as the effects of inequality on well-being and the relationship between economic growth (or lack thereof) and social unrest.

Perhaps the most notable finding from this research is the gaps between measures of welfare as reported in surveys of well-being and as gauged in standard terms, such as earned income or expenditures, and even in other standard measures of development progress, such as gains in life expectancy, education, and reductions in infant mortality. These complementary measures of welfare could inform efforts to model and analyze economic behavior and micro-level responses to policy incentives. But this poses a conceptual as well as an empirical challenge, not least because there are times that the policy implications of findings from reported well-being surveys run in the opposite direction of what most development experts would consider sound policies.

One problem is that it is difficult to cleanly separate cause from effect when assessing the importance of these gaps. In other words, the differences between measured and reported welfare may be driven by the effects of nonincome variables that the income measures used here do not capture, such as job insecurity, relative income differences, and health and marital status. But it is also quite plausible that less happy people are more likely to attribute importance to these insecurities and differences and less likely to be healthy and to get married.

Across countries the Easterlin paradox suggests that there are limits to the extent that income growth alone—and even aggregate improvements in important areas such as health and education—can increase average levels of happiness, as individuals adapt their expectations upward as societies progress. A strict interpretation of the set point theory would suggest that happiness surveys cannot offer any realistic insights for policy, because virtually nothing will make people happier for long.

There is some debate about the long-term effects on happiness of events such as serious illness, unemployment, and losing a spouse. Some studies suggest that with sufficient time individuals rebound from virtually any event. And other studies find that many events have permanent effects on happiness. The findings on the effects of unemployment are the most consistent of these (Clarke and others 2004; Darity and Goldsmith 1996; Easterlin 2003).

Cross-section studies of happiness within societies consistently show that individuals value such things as health, stable employment, and marriage as much as (if

not more than) income, and at the same time adapt less—or less quickly—to changes in these realms than to changes in income. Indeed, it may well be that changes in these variables, such as getting married or divorced—and related leads and lags—are the main drivers of these results, and the extent to which the effects last is less clear (and most likely varies across variables).<sup>14</sup> Even if happiness levels eventually adapt upward to a longer term equilibrium (after a negative shock such as illness or divorce), mitigating or preventing the unhappiness and disruption that individuals experience for months, or even years, in the interim certainly seems like a worthwhile policy objective.

Across nations there are diminishing returns to increasing income. Yet other things are correlated with national income, such as health, quality of government, and respect for human rights, which seem to be correlated with higher levels of happiness. There is also some evidence that perceived equity in the distribution of income or rewards can matter as much to people's happiness as the rewards themselves. All of this suggests that happiness surveys—if used cautiously and with awareness that they do not well reflect long-term gains in income and health, which are important to the welfare of the poor—may broaden the understanding of several development questions.

Reported well-being seems to be correlated with economic outcomes. Reported happiness and many related perceptions, such as people's perceived prospects of upward mobility (which are highly correlated), are correlated with economic outcomes and with political views. No doubt some of what might be considered "effect" is individuals' abilities to predict or forecast their future outcomes. But there is also psychological evidence that character traits, such as high self-esteem and optimism, have effects on individuals' labor market performance and on their health outcomes. Thus a remaining challenge is how to better account for the role of subjective well-being and related perceptions in explaining individual economic and political behavior. Addressing such questions might enhance the understanding of such development challenges as persistent poverty traps, in which low expectations play a role in the willingness of poor people to take risks and make investments in their children's future.

The same psychological factors that affect subjective evaluations of well-being also seem to explain individuals' abilities to adapt to tremendous adversity and negative shocks and often even to return to previous levels of happiness. A nuanced view of adaptation—to either negative shocks or to the disruptions and changes that often accompany economic progress and development—is that the process is very much moderated by people's norms about equity and perceptions of fairness. This helps explain why there is often unexpected social stability in very poor societies and, at the same time, unexpected outbreaks of violence and social unrest in societies where there is a great deal of economic progress but differential rewards to different cohorts. The upwardly mobile frustrated respondents are a case in point,

A remaining challenge is better understanding the interaction between norms about fairness and equity with economic progress and change—including integration into global markets and information systems. Norms about what is fair are endogenous to policy choices in the long run and may explain, for example, the loss of unions' bargaining power over time (Atkinson 1999). Tolerance for inequality seems higher in contexts where there are perceived (even if not real) prospects for upward mobility (Graham and Young 2003). Meanwhile, downward mobility, or the threat thereof, is more likely to cause frustration and social unrest than is persistent poverty, as in the case of the frustrated achievers in Peru and Russia, or more generally as in Argentina in the late 1990s.

Graham and Pettinato's (2002a,b) research results suggest that the effects of macroeconomic volatility, unstable employment, and highly unequal income distributions on the well-being of individuals in the developing economies are underestimated. One logical policy implication is the need for better social insurance and social policies in these countries. Not only the very poor, but those in the middle of the distribution are often very vulnerable to falling into poverty, which can have lasting costs (Cline 2002; Prasad and others 2003). Although such policy conclusions are hardly novel, what is novel is their strong backing in individual welfare assessments rather than in a more general political or public policy debate, as is usually the case.

The more fundamental point is that broader or novel measures of welfare can help us better understand development outcomes, both positive and negative. Surveys of reported well-being are a helpful tool, although alone they are insufficient. Their potential contribution increases markedly when they can be matched with objective (and hopefully sound) income data for the same respondents. Yet caution is necessary when using this information as the basis for policy, particularly when surveys are conducted in unstable economic and political climates.

In the end, many of the results from surveys of reported well-being—r put more simply, from asking people what is important to their own welfare—drum home an old saw that seems to need constant reinforcing: growth is a necessary but not sufficient condition for poverty reduction. Other key factors—such as public investments in health, institutions that can ensure adherence to basic norms of equity and fairness, and collective investments in social insurance to protect workers from the volatility that often accompanies integration into global markets—are essential for sustaining the gains that growth and development bring about and for increasing the chances that larger numbers of the world's poor will eventually lead happy and fulfilling lives.

## Notes

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cgraham@broolrings.edu. The author thanks Nancy Birdsall, Gary Burtless, Angus Deaton, Andrew Eggers, Michael Kremer, Margaret MacLeod, Andrew Oswald, and three anonymous referees for helpful comments. A companion paper with a special emphasis on globalization was presented at a World Institute for Development Economic Research conference on globalization and inequality in October 2004; it benefited greatly from comments from participants there and will be published as part of the conference proceedings.

1. Easterlin used 30 surveys from 19 countries, including some developing economies. See Easterlin (1974, 1995, 2001, 2003). He also found that health is a demographic variable with clear effects on happiness in all societies, a finding that other studies corroborate. For an excellent summary of many of these studies, see the October 4, 2003, issue of *New Scientist*.

2. Easterlin (1974) and Blanchflower and Oswald (2004). They find that well-being in the United States has trended slightly downward, whereas in the United Kingdom it has trended slightly upward. See also Diener (1984) and Frey and Stutzer (2002).

3. For an excellent review of the relationship between health and development (and the links or lack thereof to inequality) see Deaton (2003).

4. I thank George Akerlof for pointing me in the direction of Stouffer's work.

5. Experimental studies, such as the ultimatum game, show that people are more willing to turn down fairly large amounts of reward money than to accept a reward that is unfairly divided between two people. Oswald and others (2003) found that workers place a higher value on their rank in a firm and how their salary compares with that of their co-workers than to the actual amount of salary. Haggerty (2000) found that after controlling for personal income individuals living in higher income areas in the United States were less happy than those living in lower income areas.

6. They use two specifications as proxies for relative income. The first is the ratio of individual income to per capita national income (controlling for regional housing prices). The second is a series of variables that measure individual income relative to the average level of income in each quintile of income in the individual's country. Under both proxies greater relative differences make people less happy. Under the second proxy the greatest effects come from the ratio of individual income to income in the top quintile.

7. In the first three years of Indonesia's financial crisis in the late 1990s, 20 percent of the population was below the poverty line at any given point in time, and 50 percent of the population was in poverty at some point. See Pritchett and others (2000).

8. The Latinobarometro survey consists of approximately 1,000 interviews in 17 countries in Latin America, providing 17,000 observations for statistical analysis. The samples are conducted annually by a prestigious research firm in each country and are nationally representative except for Brazil and Paraguay, where some parts of the population in remote areas are not fully represented. The survey is produced by the nongovernmental organization, Latinobarometro, which is based in Santiago and directed by Marta Lagos ([www.latinobarometro.org](http://www.latinobarometro.org)). The first survey was carried out in 1995 and covered eight countries. Funding began with a grant from the European Community and is now from multiple sources. Data are available for purchase with a four-year lag in public release. The author has worked with the survey team for years and assisted with fundraising and therefore has access to the data.

9. Blanchflower and Oswald (2004) found a correlation coefficient of 0.56 for U.K. data for 1975–92 where both questions are available; Graham and Pettinato (2002a,b) found a correlation coefficient of 0.50 for Latin American data for 2000–2001 in which phrasing alternated by year.

10. The Peruvian data are expenditure-based and the Russian data income-based. The uncertain economic context and income data in Russia make potential error an even larger problem. One way to correct for error was to eliminate the roughly 60 respondents with no income from the panel, because many of them also reported that they were employed.

11. In a regression with *EQUALSUP* as the dependent variable, the coefficient on the prospects of upward mobility variable, *POUM*, was negative and significant. The coefficient on the wealth index was positive and significant, even when squared to check for differences in the attitudes of the very wealthy. Results of this regression are available on request.

12. In an earlier study Graham and Pettinato (2002b) found that support for redistribution was lower in poorer, more unequal countries in the region, whereas within countries wealthy people were more likely to favor productivity over redistribution. This finding is based on a question in the 1998 Latinobarometro survey asking respondents if what their country needs most to get ahead is more redistribution or more productivity.

13. I thank several participants at the Brookings Warwick Conference on "Why Inequality Matters: Lessons for Policy from the Economics of Happiness," June 5–6, 2003, for discussing this insight, and in particular Gary Burtless for raising the point. It is also plausible, of course, that the results are also error-driven and that in the presence of measurement error the effects of mismeasured variables are projected onto variables that are correlated with them. I thank Angus Deaton for raising this point.

14. I thank Angus Deaton for raising the point about the effects of changes. He cites evidence from the German Socio-Economic Panel, which found that people adapt to the welfare losses of marriage or widowhood in about seven years. Graham and others (2004) found that during a five-year period in Russia the single most detrimental event for their sample of respondents was getting divorced. Although the respondents may have adapted after the period of study, they were significantly less happy than others during that period.

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# Housing Policy in Developing Countries: Conjectures and Refutations

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Robert M. Buckley • Jerry Kalarickal

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*This article discusses housing policy in developing economies. It examines recent research findings in light of earlier arguments as to the benefits of more market-oriented approaches. It also looks at whether the recommendations of earlier work have been refuted or developed in subsequent analyses and policy measures. In particular, it reviews the empirical analysis of the effects of policy on housing supply, the richer understanding of the effects that land market regulations have on housing affordability and the functioning of urban areas, and the alleged mysterious effects that researchers claim effective property rights have on housing policy and on development more generally. It also examines the effects of the increased emphasis on community participation, showing how it helps to more fully reconcile the incentives faced by beneficiaries of housing policy and donors. Finally, it examines recent literature on the welfare effects of rent control. The article shows that some of the conjectures as to the likely benefits of more market-based policy have been refuted, but large welfare gains for poor people can still be realized by adapting this approach. Furthermore, this approach appears to be gaining ground as the consensus approach to effective housing policy.*

In a 1986 article Mayo and others summarized research on housing economics in developing countries. At that time empirical work on housing was a relatively new field, with the first cross-country econometric study by Burns and Grebler (1977) less than a decade old.<sup>1</sup> Since then, research has grown rapidly, and the policy framework that governs the approach to providing shelter has evolved considerably. This article is an attempt to give shape to the changing consensus on housing policy in light of the research findings and broader changes in perspectives on public policy. The first section captures the broad changes in the world over the past 20 years that have significantly affected public policy and traces the implications of these changes for housing policy. The second section provides a brief overview of the research consensus on developing country housing problems in the 1980s. The

third section reviews the implications of more recent research on housing economics for housing policy strategy. The final section highlights some evidence of the effects of the research on the emerging policy consensus.

## The Changed Housing Policy Environment in Developing Countries

Much has changed in the 19 years since the Mayo and others (1986) review of housing policy in developing areas. First, and perhaps most important, is the change in perspective on what constitutes effective forms of public governance. There are now twice as many democratic governments in the world, and they are overwhelmingly much more decentralized. Developing country policymakers now operate in a more open and generally stable, if sometimes volatile, policy environment.<sup>2</sup> Second, with the fall of the Soviet Union in 1989 and the adoption of market-oriented economic policy in China and India during the 1990s, the central planning approach to policy has largely been discarded. Most countries now rely on a public policy approach that augments and complements market processes rather than substitutes for them. These changes mean that arguments about the comparative advantages of the public and private sectors are considerably less likely to cloud discussion. Third, most developing economies now have more sophisticated and diversified economies and financial systems that often include emerging housing finance systems. This was not the case in the 1980s.<sup>3</sup>

But by no means have all the changes been benevolent. Financial crises have led to capital flight and massive simultaneous mortgage defaults, as in Mexico in the mid-1990s. In some cases overheated real estate markets seem to have precipitated these crises (see Quigley 2001 on the role property markets played in the Asian financial crisis). Moreover, the correlation between urbanization and rising per capita incomes in developed economies was found to be absent in some developing countries, particularly those in Sub-Saharan Africa. Instead, as Fay and Opal (2000) argue, urbanization without growth characterized many Sub-Saharan African countries in the 1990s, creating a new type of housing demand in a much more urbanized, if poorer, world."

One of the most notable recent changes in housing policy in developing areas is the fundamental change in the spatial dimension of poverty. Though the majority of the world's poor people continue to live in rural areas, poverty is rapidly becoming an urban phenomenon. Today, unlike in the mid-1980s, most poor people in large developing countries such as Brazil, Mexico, and Russia already reside in urban areas. Moreover, although most poor people in India remain in the countryside, in many of the country's larger states the poverty rate is higher in urban areas than in rural areas for the first time (see India, Planning Commission 2002). By some

estimates, more than 50 percent of the world's poor people will be living in urban areas by 2035 (see Ravallion 2002).

In this environment it is not surprising that urban slums are not being absorbed into formal urban economies. Surveys in Brazil and India, for example, find that in many places slum dwellers are no longer participants in the temporary demographic transition process that was earlier thought to be the case. Many slum dwellers are not recent immigrants from rural areas in search of better livelihoods. Today, many of the 100,000 pavement dwellers in Mumbai, for instance, are second-generation residents (SPARC 2002; Balter and others 2004), as are many of the residents in Rio's Favelas (Perlman 1976, 2002).

Since the fall of the Soviet Union, the world has become a very different place, and the understanding of what constitutes effective public policy has been transformed. At the same time, there is a more robust understanding of how housing and land markets in both developed and developing economies work. As Renaud (1999) argues, there is now an active body of research on real estate economics in general and for developing countries in particular. How this new environment and evolving policy perspective affect strategies to improve the conditions of the millions who live in substandard housing is reviewed here.

## The Evolution of Housing Policy in Developing Countries: A Brief Overview

The overarching idea of housing policy in the 1970s was that public assistance could be used to build on the strengths of the sector rather than to replace the informal sector. Although this may seem a relatively straightforward notion now, it faced considerable resistance at the time. Most developing areas still produced expensive and heavily subsidized housing that could meet only a fraction of demand.' Moreover, demolishing squatter settlements was a widely practiced, if not explicit policy, in many countries.

As Turner (1976) argues, providing only basic services and shelter allowed poor families to expand their units over time as their savings and resources permitted and to use their own labor to maintain and increase their wealth. By the time Mayo and colleagues (1986) wrote, this perspective had been further developed after research on

The regularity of housing demand across time and space.

- The importance of providing formal property titles.
- The important role of developing housing finance in expanding shelter opportunities for poor people.

The effects of land market regulations on the efficacy of specific low-income housing projects.

- The distortive and often counterproductive effects of rent control on the functioning of housing markets and the housing opportunities of poor people.

The first research finding — that housing demand across the world was highly regular — provided perspective on how governments and international institutions could help effectively structure the components of housing projects. This work, in two studies by Malpezzi and Mayo (1987a, 1987b), examined cross-country evidence of housing demand and found a great deal of evidence of comparable trends in housing demand in both the medium term (within cities) and the long term (across cities). For instance, within cities, income elasticity for housing demand was less than one. But across cities, when average per capita incomes were accounted for, the average share of income spent on housing by all households increased as the average level of development increased. In other words, it was possible to make generalizations of the regularity of housing demand across countries based on per capita incomes and levels of development, in contrast to the alarmist views about housing demand in developing countries (see Bairoch 1988 for a review of this large set of literature).

In retrospect, this finding may now seem almost naive. But it was made less than 10 years after the first cross-country empirical study of housing investment. More important, when the study was completed public housing production and ownership were the main vehicles of housing assistance throughout many developing areas. In effect, most countries' housing policy at the time was the public sector attempting to replace or control the private sector rather than to complement it. For instance, in the late 1980s the 15 countries established from the former Soviet Union as well as Argentina, China, India, the Republic of Korea, Mexico, and many African countries had very active public housing programs. At the same time, many of them proscribed or actively discouraged private housing production.

The work on housing demand also provided a basis for understanding the standards and units that low-income families could afford. It sought to demonstrate how and why the high standards pursued in most countries not only left the public sector unable to meet housing demand but also drove so much housing supply into the informal and illegal sectors. It also showed the importance of focusing on such details as the kind of housing units that poor people could afford without subsidies. That is, the work emphasized why the units produced could be sustainably financed only if lower and more modest housing standards appropriate to beneficiaries' income levels were used.

The second research finding stressed the importance of providing security of tenure and title to those in the informal sector (see Doebele 1983; Jimenez 1984; Friedman and others 1988). It often involved empirically estimating how much value low-income beneficiaries placed on having title, foreshadowing the later work of de Soto (1989, 2000), which sparked a lively debate on the importance of property rights in transforming the economic opportunities of poor people.

The central policy implication of this work was the importance of clear property title—a view that was in many respects at odds with what might be described as the mainstream property rights literature in economics, such as Demsetz (1967), and the anthropological literature, such as Peattie and Aldrete-Hass (1981). Demsetz argued that property rights develop when there is sufficient demand for them, that is, when the benefits of internalizing the externalities exceed the costs of not doing so. Based on this perspective, the absence of property rights reflects the absence of demand for them—not a supply constraint. The anthropological perspective of Peattie and Aldrete-Hass suggested that the notion of property rights is not a discrete choice but a spectrum of choices that depend on idiosyncratic circumstances.

The concern with housing finance arose because it had become increasingly apparent by 1986 that not only were the details of the asset being financed important but also how effectively funds were being mobilized to support demand for them. In a sense, this shift recognized that in virtually all developing economies, not only was housing of unaffordable dimensions being produced by the public sector but also little finance was available to support the funding of housing investments (see Mehta and Mehta 1989 for a discussion of housing finance systems in India in the 1980s). Besides public production of housing, equity finance had to be used to finance almost all housing purchases. Renaud (1984) documents how the interest rates charged by specialized, usually public lenders were unsustainable and often hindered the entry of private financial institutions. These findings required an emphasis on unclung lenders' ability to compete for the financial resources to on-lend.

In some ways the notion that competitive financial systems could generate more resources now appears to be an almost foregone conclusion. But it is once again useful to consider how much conditions have changed. In the 1980s, as Boleat (1985) notes, most European financial systems operated under extensive controls—credit controls, limits on the terms for loans, and often public ownership of the financial institutions involved—that were also segmented and subsidized. At the same time the United States was in the middle of a savings and loan crisis. Against this backdrop the view that developing economies should move to liberalize housing finance systems could in many ways be viewed as more market-oriented than the systems of market-oriented developed economies existing at that time.

Like interest in finance, interest in land market regulations arose with the realization of how important the physical layout of sites and service projects were to the success of low-income housing projects (see Bertaud and others 1988). This work showed that land use regulations, such as rights of way and requiring land for community facilities, could cumulatively increase costs markedly, making housing affordable only for higher income groups. Ultimately, this work suggested that projects that did not consider the broader dimensions of land policy were likely to become enclaves that could not be replicated.

Finally, although rent control is widely practiced in both developed and developing countries, empirical work on rent control by Tewari and Kumar (1987) and Struyk (1988), among others, provided empirical support for the somewhat polemical view of Lindbeck (1977) that "next to bombing, rent control seems in many cases to be the most efficient technique so far known for destroying cities" (p. 39). This work largely buttressed the arguments made 40 years earlier by Friedman and Stigler (1946), as well as the survey results by Kearn and others (1979), which found that rent control was the one policy issue on which there was the most consensus among economists; they overwhelmingly saw it as a highly ineffective and counter-productive policy option.

## Subsequent Research Findings

In recent years there has been a burgeoning body of literature on the economics of housing markets in developing countries. This section highlights seven areas of research that are significant to any discussion on housing policy.

### *Evidence on the Effects of Policy on Housing Supply*

In contrast to earlier empirical work on housing demand by Reid (1962), little was known about housing supply in the 1970s and 1980s. To address this, a data collection effort called the Housing Indicators Program was initiated in 1989 by the World Bank and the United Nations Human Settlements Programme to collect more empirically based, cross-country data on housing sector performance. Data on basic urban and housing indicators were collected for a sample of 53 cities in both developed and developing countries. The program provided the first empirical basis on which to analyze the cross-country effects of policies on housing market supply conditions and, like the earlier work on housing demand, resulted in a variety of published works, including Hegediis and others (1997), Malpezzi and Mayo (1997), Angel (2000), and Murray (2001).

Their basic proposition was that the effects of policy on housing supply matter—in some cases a great deal (see Angel 2000). Policies that restrict the housing market or building industry decrease housing supply elasticity. When supply is inelastic, an increase in demand—driven by, say, rapid urbanization—results in a much larger increase in price and a much smaller increase in quantity supplied. These results imply that public sector controls to limit the private supply of housing can more than offset direct assistance to poor people, as argued by Das and Lobo (2001) for India.

Though the intuition behind the notion of public sector interventions creating an inelastic supply curve was straightforward, the empirical support for it was not—until the late 1980s when Mankiw and Weil (1989) argued that because of the

combination of low housing supply elasticity and a housing market that operated with less than perfect foresight that the demographic changes in the United States were likely to have extraordinary effects on house prices. Their argument generated a cottage industry concerned with estimation techniques, which, in turn, had the salutary effect of producing sufficient evidence of both supply inelasticity and of the degree to which policy contributed to inelasticity (see Woodward 1992; Green and Hendershott 1996).

The literature on the subject continues to grow and to improve in terms of its analytical rigor. For example, Cheshire and Sheppard (1989) cover the United Kingdom, Maclennan and others (1998) several European countries, and Glaeser and Cyourlco (2003) the United States. Glaser and Gyourko's work, for instance, was the first time that the data permitted fully specified hedonic models to estimate the effects of regulations on the value consumers place on the underlying land.

Similar, if less robust, quantitative results on the effect of policy on housing supply elasticity have also been obtained for developing areas. For instance, Malpezzi and Mayo (1997) use a simple regression model to compare housing supply elasticities in the Republic of Korea, Malaysia, and Thailand to show how various public interventions constrain supply elasticity, particularly in Malaysia's housing market. They find that interventions, such as the provision of publicly constructed housing and inappropriate building and land use standards, cause supply to be considerably less elastic. Admittedly, their empirical analysis is basic and almost certainly suffers from omitted variable bias of the sort posed by Baken and van de Linden (1993), meaning that it ignores political and cultural frameworks within which land markets function. Nevertheless, the finding is so stark that it is hard to deny the causality between regulation and housing prices.

But perhaps the most serious criticism of this work is that supply inelasticity is caused not only by regulations but also by the broader policy framework that governs land supply. As long as the public sector continues to own and control large amounts of the supply of serviced land, as is the case in many developing economies, one of the key inputs into housing production will be less responsive to increases in demand. Consequently, increased demand will be accompanied by rising prices. For example, Son and Kim (1998) examined whether urban land shortages exist in the Republic of Korea and found that 35 percent of the 171 cities studied experienced them. They then use city-specific characteristics to find the roots of the shortages, examining both natural and regulatory constraints as well as infrastructure, population, population growth, and regional dummy variables. Their conclusions on the important role of Greenbelt restrictions in house price determination are similar to those of Green and others (1994) and Hannah and others (1993), both of whom found similar results for the Republic of Korea. Thus the high housing prices are clearly a direct result of misdirected policy that not only makes supply of housing inelastic but also constrains the absolute level of housing available in the market.

Admittedly, the empirical world considered here covers only a very small part of the developing world, in particular middle-income countries of Southeast and East Asia. But the regulatory characteristics of the low-income countries are if anything more stringent than in the countries considered in the studies just mentioned. A larger failing in much of this world is that the authors do not consider the potential endogeneity of the regulatory framework, that is, whether regulations are a reflection or a cause of underlying scarcity. Only a deeper study of the political economy of these countries can answer this question. However, as the study comparing Malaysia and Thailand found, a harsh regulatory framework worsens already existing scarcity.

To sum up, recent research on the effects of housing policy on the supply of housing has provided empirical support for the view that having the public sector enable rather than control or displace the private sector is essential to improving the affordability of housing in general—and thus for low-income groups as well. This work suggests that if public assistance is to help more than the limited number of direct beneficiaries of programs, much more attention must be paid to the often idiosyncratic and city-specific policies that affect the type, location, and standards of housing. Payne (2004) provides a practical method for local communities to obtain a clearer understanding of just how constraining their specific policies are.

### *Emphasis on Community Participation*

The implications of finding strong regularities in housing demand focused more attention on affordable design standards and understanding beneficiaries' expected willingness to pay. But for the most part, these results did not lead policymakers to increase attention on involving beneficiaries in projects in any way other than as direct consumers. The result was that even the policy innovations of the 1970s—with the emphasis on producing low-cost sites and service projects—were in effect usually a lower cost public housing program instead of an exercise to capture beneficiaries' initiative. In many ways, as Baross (1990) finds, in the early shelter sites and service projects the aspirations for enabling and empowering poor people remained unfulfilled.

This orientation has changed. In recent years the importance of community involvement and using social capital to leverage resources has become increasingly evident, and governments have started shaping policy that integrates them as crucial parts of shelter projects. Efforts to stimulate community-driven development have grown rapidly as studies, such as Galasso and Ravallion (2000), have shown the positive effects of community groups and nongovernmental organizations on poverty alleviation. Consequently, many countries now adopt a community-based perspective—rather than the engineering, technocratic approach embodied in early shelter projects—that focuses on providing what might be termed the local public goods involved. Under this approach nongovernmental organizations and community-based

organizations help address questions about the provision of shared goods, such as water and sanitation, as well as help with shelter design and targeting (see Burra and others 2003 for a discussion and Mitlin and Satterthwaite 2004 for some case studies).

But an emphasis on community participation has to be tempered with caution and an understanding about the challenges of increased participation. Community participation can also provide an opportunity for rent-seeking, which only augments the social capital of the most aggressive members of the community groups (see Conning and Kevane 2002). In addition, without a lot of information about the nature of groups active in communities, community programs can be captured by local elites whose preferences may not match the donor government's.

### *Land Markets and Urban Spatial Structure*

For many years the overriding analytical perspective governing urban and housing economics was based on an abstract model of the urban economy supported by what Mills and Tan (1980) refer to as "one of the most pervasive and best documented trends in the developed world" (p. 316), that is, the monocentric city model (developed by Alonso 1964, Muth 1969, and Mills 1967, 1972). This model predicts a radial city with residences in rings around a central business district. The rent and land price gradient (and density) fall as the distance from the central business district increases. Land use in a monocentric model is determined by a tradeoff between the desire for space and the desire to minimize commuting costs. Housing supply elasticity, as Muth (1969) inferred, is close to infinitely elastic.

Mohan (1994) shows that this simple, if abstract, model has characterized both developing and developed economy cities over time. His results, as well as that of Asabere and Owusu-Banahene (1983), support the aphorism of Clark (1951) that all cities west of Budapest and east of Los Angeles—that is, market-based cities—have had the negative density gradients implied by the model. This finding, in turn, implied that policymakers could affect the structure of cities and the functioning of housing markets only at a very high cost to the public coffers or through prohibitive restrictions.

Not surprisingly, given this result, many countries' land market concerns in shelter strategy focused on the microeconomic aspects of land use regulations. Like the focus on the empirical regularity of housing demand, this perspective led to a neglect of idiosyncratic, localized market conditions. Subsequent world events, however, such as the fall of the Soviet Union and the end of apartheid in South Africa, permitted cities outside Clark's ambit to be subjected to empirical analysis. Based largely on the analysis of these cities as well as on the first set of comparable spatial density data on more than 50 cities, it became clear that urban spatial patterns diverge substantially from those predicted by the standard urban models.<sup>6</sup> Moreover, the divergences are particularly strong in environments where policymakers could ignore

the high political and economic costs of, for example, ignoring the underlying land values in construction decisions or providing enormous mass transit subsidies, as in the former Soviet Union and South Africa.

Figure 1 shows some of these patterns. The top two graphs are the density gradients for two very different market-oriented cities, Atlanta and Paris, and the bottom two are from more extreme policy-controlled cities, Johannesburg and Moscow. These four graphs together provide some sense of how much policy can disrupt the functioning of land markets and the underlying structure of cities and housing markets. They also suggest how idiosyncratic urban spatial patterns can be across cities.

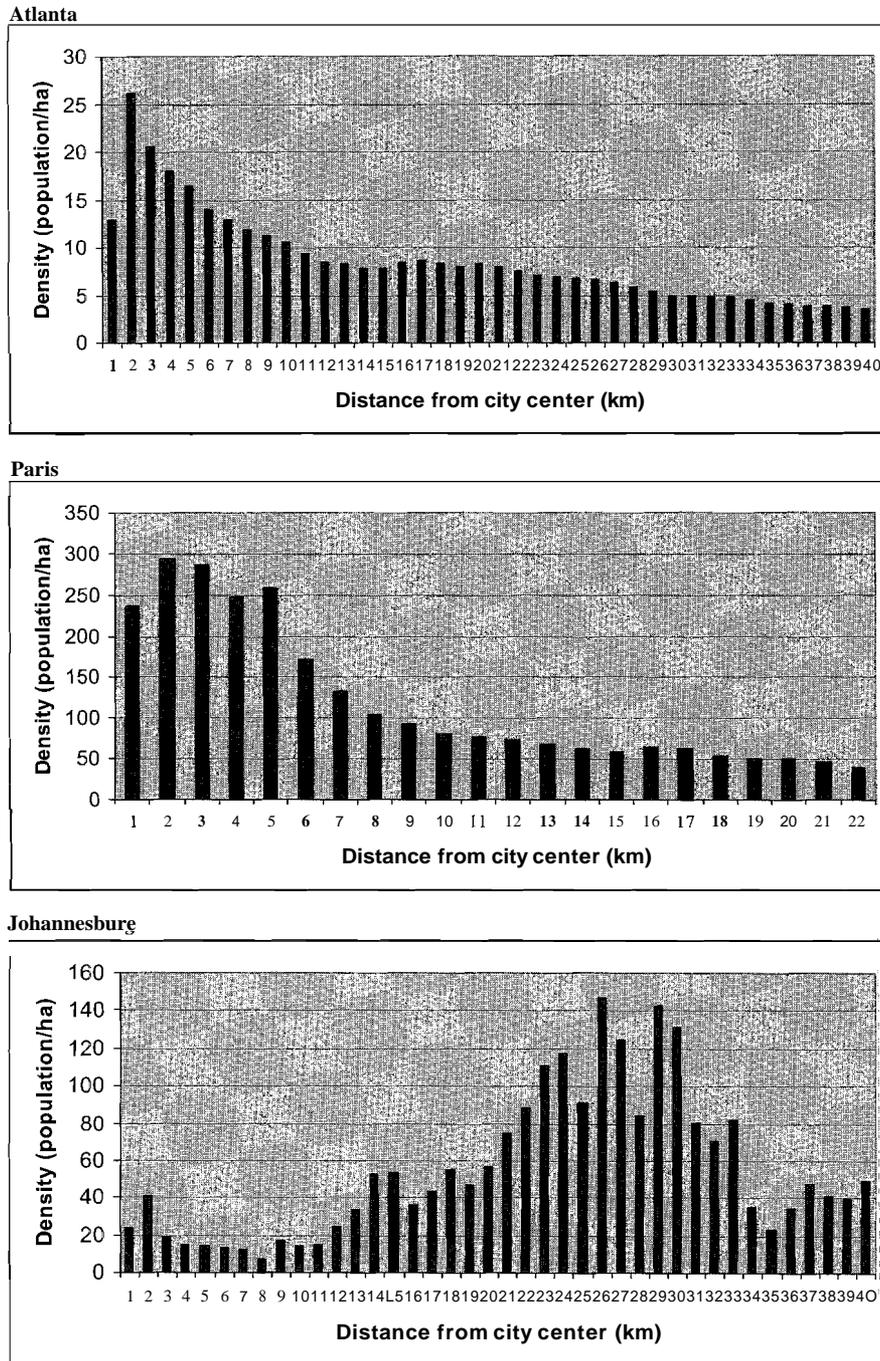
The first two graphs depict cities that are very different but that are characterized by negative gradients over most of their built-up area. Atlanta is among the least densely populated cities in the world, and its automobile-based spatial structure is significantly different from that of Paris. But the patterns observed in both cities generally follow the predictions of the monocentric city model.

This consistency of the model disappears in the next two graphs. In both Johannesburg and Moscow the negative gradient disappears. The data on Moscow are from a study by Bertaud and Renaud (1997) that examines the spatial structure of Moscow after 70 years of nonmarket planning. They found that a tightly controlled government investment and rationing system created dilapidated factories in prime locations and high-density residential areas in distant suburbs. This spatial outcome, they argue, reduced economic and social efficiency and worsened the city's environment.

Brueckner (1996) models the welfare gains from the repeal of the Group Areas Act in 1991, an apartheid era law that required black workers to live in dormitory towns separated from the white core cities by buffer zones, resulting in extremely long commutes and economic hardship for black South Africans. Brueckner finds that allowing all South Africans the freedom to locate would increase aggregate welfare. He also implies that apartheid policies were also highly inefficient. (Bertaud and Renaud concluded the same thing about government-controlled policies in Moscow.)

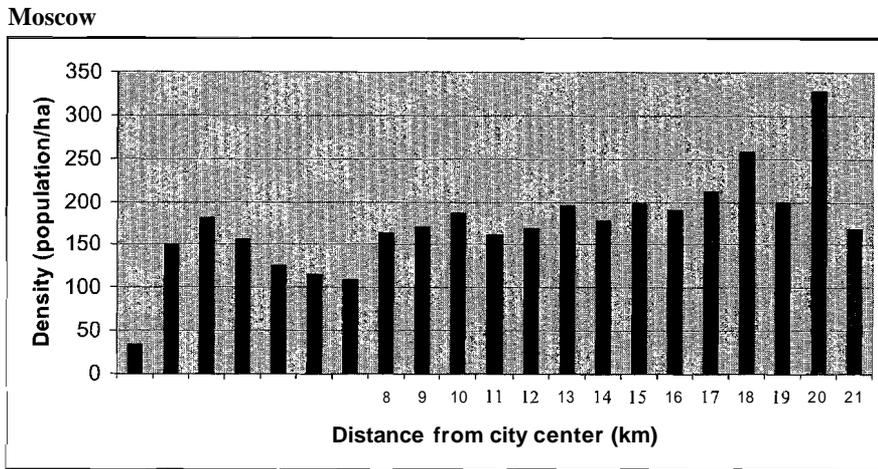
From the perspective of the effects of land market restrictions the fundamental points suggested by these graphs are that land use restrictions have imposed heavy costs, which have decreased both efficiency and equity and are undoubtedly highly variable across cities and history. To gain a sense of how variable these costs can be, it is useful to contrast the work of Bertaud and Brueckner (2005), who examine the welfare impact of floor area ratio restrictions in Bangalore, India, with that of Bertaud and others (2003), who analyze the same sorts of restrictions in Mumbai. In both cities policies that restrict the density of jobs and population in the city center led to the expansion of the cities, which resulted in longer commute times and inefficient energy use. In Bangalore the authors found that the restrictions imposed welfare costs of 3–6 percent of average household consumption. That is a costly result, but it is nowhere near as costly as the estimates for Mumbai. In that severely

**Figure 1.** Population Density Gradients for Various Cities



(Continued)

**Figure 1.** (Continued)



Source: Bertaud (2003) for Atlanta and for Paris; Bertaud (2004) for Johannesburg; Bertaud and Renaud (1997) for Moscow.

topographically constrained city the same simple modeling approach finds that regulatory restrictions impose much higher welfare costs and contribute to Mumbai being one of the most expensive housing markets in the world (see *The Economist* 1995).<sup>7</sup>

The main lesson from this literature is that land market policies go well beyond the project-specific concerns previously given so much prominence in policy formulation. These policies can fundamentally restrict cities' ability to provide agglomeration economies and thereby serve as growth centers. In so doing, they can constrain not only housing opportunities but also higher more equitable economic growth.

### *A New Form of Market Failure*

The fall of the Soviet Union has posed perhaps the biggest conceptual challenge faced by housing policymakers in recent years because the resulting problems are so different. For instance, in transition economies migrations of rural poor people do not rapidly envelop urban areas. In fact, the exact opposite has usually occurred (see Tosics 2004). Lower-income workers were often already in cities, and in the case of the former Soviet Union often in one-industry cities where they experienced some of the worst recessions recorded in the past century. As a result, low-income workers quickly became the unemployed poor as the manufacturing base imploded. At the same time, there was no physical shortage of housing. By international standards, as shown by Hegediis and others (1997), the urban population could even be

described as overhoused, even if administrative rationing systems caused severe misallocations.

Analysis of the problems involved with these problems led to a growing body of research, for example, Struyk (2000), Hegedüs and Várhegyi (2000), Lux (2002), and Lowe and Tsenkova (2004), and to the discovery of one of the first new forms of market failure observed in the past 50 years. The failure was identified by Heller (1998) in an analysis of the factors constraining the privatization of real estate in Moscow. He argues that the way transition governments transferred property rights—by not endowing anyone with a bundle of rights representing full ownership—prevented effective resource use. In other words, in Russia the transition produced a contractual situation that in many ways is the opposite of the traditional “commons problem” in which no one has clear ownership rights to a shared good. In the Russian case too many people were given some form of claim on a particular piece of property. Just as too little control leads to overuse of a resource in the commons situation, too much control in an anticommons situation leads to underuse and undermaintenance. Heller's work was subsequently formalized in an economic model by Buchanan and Yoon (2000) and applied to other industries, such as the pharmaceutical industry (see Heller and Eisenberg 1998).<sup>8</sup>

Looking at the continuing problems with privatizing the \$1 trillion worth of residential real estate estimated by the World Bank (2001) to be in the transition countries during the 1990s, an anticommons problem would certainly seem to be at work. In most transition economies the government privatized individual apartment units under essentially giveaway terms, but the fabric of the buildings—the roofs, elevators, and general energy efficiency—remained unmanaged. Congested and ambiguous ownership rights to common property areas continue to constrain effective property management throughout the region, giving the sense (but not yet the evidence) that Heller's argument has considerable force. Given the scale of the resources involved, this would appear to be a fruitful area for future research.

### *Is Capitalism So Mysterious?*

*The Mystery of Capital*, Hernando de Soto's (2000) most recent book, makes a widely cited claim that ensuring secure property rights to land is in fact the answer to the mystery of why capitalism is such a productive economic system. A corollary to this argument is that the absence of secure tenure explains the failure of capitalism to take hold in developing economies. On first reading, de Soto makes a compelling case that property rights as embodied in titles are an essential mechanism for converting assets to usable wealth. Titles, he argues, “capture and organize all the relevant information required to conceptualize the potential value of an asset and so allows us to control it” (p. 47). He estimates that if developing countries provided secure property rights to residential property, they would effectively “unlock” \$9.3 trillion

worth of what he calls "dead capital." He blames the absence of such well-defined property rights for the failure of capitalism in developing economies, and as noted earlier, his views in this regard echo and appear to confirm early research on the topic.

But on closer study the strength of de Soto's claims is more problematic (see Gilbert 2002; Woodruff 2001). Though there is reason to agree that improving property rights should be an essential part of reform, a growing body of analysis reviewed by Woodruff (2001) finds a range of practical problems that reduce the seemingly large gains. First, titling is often a costly process. It is not just a matter of formalizing informal arrangements that already exist. Very often contradictory claims of ownership succeed the announcements of titling programs. As Woodruff (2001) shows, the costs of adjudicating these claims may abrogate the gains from titling. Second, an apparent paradox accompanies any titling program for informal residents. Much of the land on which informal houses are built is obtained through illegal squatting on private property without any compensation to existing owners. Therefore, any titling program has to consider providing amnesty for those who benefit from invasions. Whether such a process will result in greater respect for property rights is open to debate. Third, as Lee-Smith's (1997) analysis of property contracts in Kenya shows, this sort of contract's value depends in large part on other existing and often unwritten contracts, such as women's degree of access to property. The broader web of societal contracts and constraints may reduce the value given to property titles in isolation.

There is also less value to a title if it cannot offer value as collateral. This occurs in most of Sub-Saharan Africa—and in many other developing areas—because no effective formal financial system exists to help realize the value of the collateral. Moreover, even when a formal financial sector is functioning, many who live in informal housing are often self-employed or work in the informal sector, so it is difficult for them to show proof of income, which is a necessary condition to obtain credit from formal financial institutions. The result is that the collateral value of property title in most developing economies remains low.

Finally, the articles cited by Payne (2002) persuasively argue that in most developing countries what might be called the anthropological perspective on *tenure*—that is, the existence of a continuum of tenure categories that have different levels of security of tenure—applies. Across this spectrum some may value titles much more than others, and no simple policy reform will change the situation.

The problems with title reform do not mean that housing policy should not include reforms to improve tenure and the legal framework for individual ownership. But promoting formal titling programs as the sole solution to the problems of urban poor people will rarely be sufficient. Undoubtedly, formal titles will often be a necessary condition for a fully functional housing market to develop—particularly a housing finance system—but they are not a sufficient condition to unlock the trillions

of dollars that are allegedly locked up in dead assets. A set of interlocking, complementary reforms is also necessary. In short, poor people are not impoverished because a simple housing market panacea has been ignored or simply misunderstood.

### *Housing Finance*

The need to develop a sustainable supply of finance to fund housing investments continues to be an important part of any set of policy measures to improve housing affordability. However, the change in the opportunities and problems confronting financial sector policymakers has changed the focus of research. In the 1980s the central mortgage finance problems had to do with contracting problems and the risks posed by high inflation rates. Based on arguments by Friedman (1974) and Modigliani and Lessard (1975), as well as the period's high inflation rates, a considerable amount of work focused on ways to change mortgage contracts to accommodate higher inflation, for example, Alm and Follain (1984) and Fishlow (1974).

By contrast, in the lower-inflation world economy of more recent years, globalization and the ability of the financial sector to withstand economic shocks have emerged as more important concerns. Indeed, as mortgage markets liberalized and became increasingly integrated into the broader financial markets, the supply of mortgage credit expanded, and new financial instruments, such as securitization, are being increasingly used to provide broader access to mortgage credit (see Chiquier and others 2004 for a review of recent innovations).<sup>9</sup> Research in this more expansionary but perhaps more cautionary period has focused on new ways to allocate the risks of mortgage lending to those with comparative advantages in such risk-bearing (see Case and Shiller 1996). It has also focused on the macroeconomic implications of the links between financial and housing market policies (see MacLennan and others 1998).<sup>10</sup>

Nevertheless, Mitlin (1996) shows that housing finance for poor people has developed on the scale conjectured in the 1986 review in only a few cases. This does not mean that housing finance is not emerging in developing area, though. In fact, because many of the countries where housing finance has developed in recent years are so populous—such as China, India, the Republic of Korea, Malaysia, Mexico, and Poland—a majority of people in developing countries, if not a majority of the countries, now have access to market-based mortgage credit. But the real promise for assisting low-income families with housing finance is emerging slowly through one of the most promising financial innovations of recent years: the success of microfinance institutions, which offer the possibility of finance for poor people and are increasingly being used to improve the housing conditions of poor people (see Ferguson and Navarette 2003). For instance, such housing loans account for the largest single asset in the portfolio of one of the largest and most successful microfinance institutions, Grameen Bank of Bangladesh.<sup>11</sup>

This financial innovation offers the possibility of sustainable, leveraged finance in ways not possible even a decade ago. But just as local housing market supply conditions are highly idiosyncratic, microfinance operations are even more so: they have been successful only when built on locally developed methods that have ensured that repayment incentives are grounded in local mores (see Christen and others 1995). This is not to say that microfinance is the sole solution to the housing finance problems of poor people. Microfinance institutions are only beginning to enter the housing finance arena, and there is still no clear verdict on their success. Furthermore, whether housing microfinance will be a tool to address the scale of the problem also remains to be seen. The Grameen experience has shown that in at least some instances microfinance tools can successfully finance shelter improvements of poor people.

### *Rent Control*

Recent work on rent control by Arnott (1995) and Basu and Emerson (2000, 2003) has moved the analysis of this widely used and even more widely disparaged public policy in two new directions. First, Arnott (1995) calls for a revision of the rent control consensus, distinguishing between highly distortive rent control regimes and what he calls second-generation controls (p 102). Unlike binding rent ceilings, second-generation controls attempt to limit rents by allowing landlords to choose a nominal rent when taking on a new tenant but not allowing rent increases (above a predetermined level) for sitting tenants. He argues that these second-generation controls often arise as a way to respond to the unavailability of a market for insurance against unanticipated sharp rent increases. In other words, the controls can often be seen as the public sector's fulfilling a failure of private markets rather than as simply the binding control mechanism seen by earlier analyses. He concludes that the welfare effects of these policies should be evaluated on a case-by-case basis, that is, whether the rent control regime improves welfare by more than the absence of insurance reduces it.

Although taking a very different approach, Basu and Emerson share Arnott's view that economists' traditional disdain for rent control should be reconsidered. Based on an asymmetric information perspective, they argue that many of the problems associated with rent control arise from the lack of perfect information and the costs of acquiring information. Second-generation rent controls lead landlords to prefer short-tenure tenants, a preference that results in an asymmetric information problem because tenants know more about their likely length of tenure than does the landlord. Accordingly, in Basu and Emerson's view rent control reform should focus on alternative contractual possibilities rather than outright elimination of the controls. In sum, long-held unambiguous views on the evils of rent control as one of the prime examples of unfettered and highly inefficient public sector interventions

have become more qualified. Both the likely welfare effects of this policy and the approaches taken to reform it have become considerably more nuanced.

## Conclusion

The main argument of much of the early research, and particularly the economics research, on developing country housing markets was that distortions of markets, often well intended, created many of the shelter-related problems faced by poor people. The literature argued that with such a long-lived, spatially specific, socially freighted good it was important to clarify whether the public or private sector had a comparative advantage in carrying out specific functions. The public sector, according to this view, was unlikely to be a good producer, owner, or financier of housing. Nor would it be an effective designer of subdivisions or developer of land.

The research reviewed here indicates that recent empirical evidence has been accumulated largely (but not completely) to support these views. Indeed, some of the earlier, most strongly held conjectures about the efficacy of various public policies, such as rent control and the importance of secure titles, have been at least substantially revised, if not refuted. This is not to say that the shelter problems faced by low-income families in poor countries can be completely addressed by simply adopting more market-oriented housing and land market policies. Rather, as the research on the effect of regulations on housing supply and on urban spatial patterns shows, many interventions do indeed exacerbate rather than improve the shelter situation of poor people, as suggested, for example, by Bertaud and Brueckner (2005), and improved policies by themselves, without additional resources, can often improve poor people's situation, as shown by Glaser and Gyourko (2003).

Finally, and unfortunately, the research has also shown that there is no mysterious, straightforward capitalist panacea that can address all the shelter problems faced by low-income families in developing economies. Circumstances vary widely, and policy must be designed to exploit local conditions. Just providing titles, for instance, will not magically transform the housing situation of poor people, although in the right circumstances it can be very important. Instead of just providing titles it is necessary to incorporate the views of poor people on how to effectively address their concerns. Increased community involvement not only improves projects, it can also, in Appadurai's (2004) words, give poor people "the capacity to aspire" (p. 59).

Ultimately, however, the relationship between research findings and policy outcomes is never straightforward. Examples abound of research demonstrating the beneficial effects of a particular reform but not leading to reform implementation (see, for example, Raghuran and Zingales 2000). The important role that luck, crises, and political economy can play in determining what kinds of policies are pursued—or in the kind of scientific paradigm adopted—has long been known and is

difficult to exaggerate. Nevertheless, the question of whether anyone uses research for policy design remains an important measure of the usefulness of the research. That is, is there any evidence of a shared consensus by policymakers on the main elements of effective housing policy, and are they derived from research findings?

For housing policy, the answer appears to be that policymakers have indeed adjusted policies in a manner that is consistent with both what the research has suggested and the earlier conjectures about the efficacy of adopting more market-oriented housing policy. To highlight some examples:

- When the Soviet Union fell, President Mikhail Gorbachev's main advisers argued that the public sector's extensive control over housing—its production, ownership, design, and allocation—caused the sector to be the least efficient one in the economy and that market-oriented reforms were essential to change this situation." Certainly the housing sector reforms enacted in almost all of the more than 25 transition economies, though not always successful, can be described as a refutation of a public sector that replaces and extensively controls private incentives.
- Similarly, in 2002 the government of India began urban real estate reforms supported by a fund to reward states that eliminate the regulatory constraints, such as binding rent control, and severe urban land market ownership restrictions that had long been the hallmarks of a deeply interventionist policy. This new approach, like the broader reforms in the Indian economy, is extremely different from the perspective of the public role that characterized India's shelter policies for more than 30 years.
- In addition, China, Chile, Colombia, Malaysia, and Mexico all appear to have adopted a much more market-friendly public housing policy. In all these countries much more attention is now being paid to enabling consumers to borrow or use public resources to shop for the kind of housing they want. Similarly, housing vouchers, a market-oriented subsidy instrument, have been widely adopted as the central vehicle to provide housing subsidies across almost all developed economies (see Boelhouwer 1997). This implies broad recognition of the superiority of transfer mechanisms that use incentives to complement markets over public ownership and production of social housing that attempt to replace them.
- Finally, slum dwellers themselves, who by force of circumstances have always been among the most market-oriented of all consumers because they have no other options, have recently established an organization to share experiences and approaches across the more than 20 member countries of the Slum Dwellers International (SDI) Federation. Policymakers in developing areas are increasingly seeking their views and perspectives on how to address low-income shelter problems.<sup>13</sup>

Thus, a consensus about the appropriate shelter policy does indeed appear to have evolved over recent years, and it is certainly consistent with the findings of recent research, which supports most (but certainly not all) of the conjectures made about the use of market-friendly policies. This improved empirical understanding of how housing markets work, along with the more widespread commitment to a reliance on private markets, should enable governments to shape policy that more effectively addresses the shelter needs of the urban poor.

## Notes

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1. There is of course, a much longer history of analyses of housing policy. See, for example, the work of Grebler (1955), Abrams and Koenisberger (1957), Abrams (1964), Currie (1966), and Turner (1968), among others. But this work rarely had an empirical orientation.

2. Freedom House (2003) measures indicate that 46 percent of the countries were "not free" in 1973. This figure fell to 25 percent in 2003. At the other end of the spectrum, only 29 percent were free in 1973, which increased to 46 percent in 2003. Between 1986 and 2002 the number of democracies in the world doubled to just over 120. As for decentralization, World Bank (1999) reports that 95 percent of democracies had initiated some form of decentralization by 2000. With respect to macrostability, 23 countries had inflation rates over 30 percent in 1985 or 1986, compared with 14 countries in 1999 or 2000, and the median inflation rate fell from 7 percent to 3 percent over the same time period. By contrast, shocks like those in Mexico, East Asia, and Russia in 1986 had not been experienced since World War II, nor had the Great Depression levels of recession experienced by the transition Countries in the 1990s affected such a large portion of population (Buckley and Mini 2001).

3. Although there has been rapid growth in financial sectors across the world, many remain small. In 1973 more than half of developing economies had financial systems smaller than the World Bank employees' credit union. By 2001 less than one-third did. In recent years new housing finance systems have been established in Chile, China, Estonia, India, Malaysia, Mexico, Singapore, Jordan, Kazakhstan, the Republic of Korea, Latvia, Lithuania, and Poland, among others. In the 1980s of all developing economies, only Colombia had a functioning system. Thus, the situation has changed from one where few residents of developing areas have access to market-based mortgage finance to one where most do.

4. There is debate on this finding. Because few censuses are available for recent years, the data used in many studies on the topic are projections of urban population growth from the 1970s and 1980s and therefore might exaggerate urbanization rates. For a more detailed discussion of these issues, see Satterthwaite (2004). Even with this qualification, though, in many large African countries, including Ethiopia, Kenya, and Nigeria, increased urbanization accompanied declining incomes.

5. "As recently as 1975 there were few countries willing to contemplate the types of projects that the World Bank was sponsoring. [In 1980] the Bank has helped finance more than 32 projects in 26 countries and has projects in preparation in 11 additional countries" (Churchill and Lycette 1980, p. 16).

6. The most comprehensive source is the Web site <http://alain-bertaud.com>, which provides similar treatments of a variety of cities in Asia, Africa, and Latin America, as well as Europe and North America.

7. As both articles discuss, the monocentric city modeling approach is a simple way of attempting to gain a sense of the costs of regulations rather than empirical estimates of the costs, which are not available, although progress is being made on such data collection (see, for example, Baker and others 2004).

8. Though the formalization of Heller's work by a Nobel Prize-winning public choice theoretician and its application to another industry suggest that his anticommons problem is an interesting one, most of the same arguments were raised more than 50 years earlier by von Mises (1949).

9. In the newly liberalized European financial systems of the 1990s the supply of mortgage credit grew more than twice as rapidly as GDP, after not having expanded as a share of GDP in the prior decade (see Mercer 2003). On the increased integration of mortgage finance and financial markets, see Hendershott and Van Order (1989).

10. The links between housing finance and restrictive land use regulations were identified by the U.K. government as one of the major risks in joining the European Monetary Union, and house price volatility concerns led to a study of structural conditions in the housing markets of 15 countries by the European Central Bank (2003).

11. See [www.grameen-info.org/annualreport/2003/loanactivities.html](http://www.grameen-info.org/annualreport/2003/loanactivities.html).

12. This report was prepared by Grigory Yavlinsky and Stanislav Shatalin for Gorbachev as part of the early efforts to focus on what reforms should be undertaken in the first 500 days (see Kosareva and Struyc 1993 for discussion).

13. See [www.sdinnet.org](http://www.sdinnet.org) for examples of their work with various state governments and municipalities in India and across many countries in Africa.

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# Public Debt Management and Macroeconomic Stability: An Overview

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*Recent research suggests that management of the public sector's debt can have important effects on a country's macroeconomic performance. This article provides an overview of the factors that the recent literature has identified as important in determining the optimal composition of the public debt. Based on this analysis, it attempts to establish general guidelines for public debt management in emerging economies. To retain market access and promote domestic financial market development, governments should generally finance themselves at market rates using a wide variety of securities. Beyond this general principle, the optimal composition of the public debt involves a tradeoff between enhancing the government's anti-inflationary credibility and reducing the vulnerability of its budget to macroeconomic shocks. Consequently, the optimal composition of the debt depends on a country's circumstances. Debt should be heavily weighted toward long-term nominal securities for governments that have anti-inflationary credibility and toward long-term indexed debt for those that do not.*

Macroeconomists have long been concerned with the economic effects of changes in the allocation of the public sector's balance sheet between monetary and nonmonetary liabilities. This is the traditional domain of monetary policy. Analysis of the macroeconomic effects of changes in the structure of the government's nonmonetary liabilities—the composition of the public debt—has received much less attention.<sup>1</sup> This situation has recently begun to change, however, as issues such as fiscal credibility and the role of balance sheet effects in triggering macroeconomic fluctuations have gained prominence in policy discussions. As a result, macroeconomists have increasingly been attracted to investigation of the potential macroeconomic effects of public sector debt management.

This article provides an overview of the ways the structure of public debt can affect macroeconomic performance in emerging economies. Thus the article focuses

on the liability rather than the asset side of the public sector's comprehensive balance sheet. Asset composition is taken as given. The article considers the factors that the recent macroeconomics literature has identified as relevant for determining the optimal composition of the public debt and synthesizes them into some general guidelines for public debt management in emerging economies.

The first section evaluates the view that the objective of debt management should be to minimize the cost of debt service. Although reasonable from a normative perspective, and an objective in the debt management practices of many countries, it is too narrow in scope. Debt management should seek instead to achieve an optimal tradeoff among multiple and competing social objectives. The next section examines the conflict between the objective of minimizing debt servicing costs and the structural objective of promoting domestic financial development. It concludes that promoting financial development requires the government to eschew financial repression—a policy motivated by fiscal considerations—and instead to finance itself by selling securities on market terms, even if that raises debt servicing costs. This leads naturally to the issue of the optimal composition of such securities. The next three sections consider the choices between indexed and nominal debt, short-term and long-term debt, and domestic and foreign-currency debt. In all of these cases the government faces a similar fundamental tradeoff: between anti-inflationary credibility and robustness of the government's budget in the face of shocks.

The final section examines how the optimal choice among these tradeoffs is likely to be affected by country circumstances, thereby extracting some simple guidelines for debt management in emerging economies.

## Minimizing Debt Servicing Costs as an Objective of Public Debt Management

A naive view of the optimal determination of the public sector's debt structure is that the composition of the government's liabilities should be chosen so as to minimize the costs of debt servicing. Although this objective may be naive, it is clearly not arbitrary, because it can readily be justified on welfare grounds.

To see how, consider a government whose objective is to maximize social welfare. A useful benchmark is the case in which the government has access to costless lump-sum taxation and all public debt is held domestically. In this case, servicing the existing stock of debt simply represents a nondistortionary transfer within the domestic economy from taxpayers to holders of government debt. A welfare-maximizing government would have no incentive to seek to minimize debt servicing costs.

However, if taxes are distortionary or costly to collect, raising the revenue required to service the debt imposes an "excess burden" on the economy (in the form of collection costs and deadweight losses associated with distortionary resource allocation effects) that can be reduced if debt servicing costs are minimized.<sup>2</sup> A reduction in debt service costs would increase social welfare, and minimizing such costs becomes a reasonable government objective.<sup>3</sup> Under the assumption of full debt repayment, the incentive to reduce debt servicing costs in this case is further strengthened when at least some of the debt is held by foreigners. In that event the costs imposed by distortionary taxation are even less fully compensated by payments to domestic agents than when all debt is domestically held.

However, the single-minded pursuit of this criterion may have harmful consequences for the other social objectives that a welfare-maximizing government would tend to value. To see this most simply, note that the most direct way to minimize debt service costs is just to repudiate the entire stock of interest-bearing debt. Debt repudiation is, at least to some extent, (by definition) the only recourse for an insolvent government. But even a solvent government may have an incentive to repudiate. For example, the welfare-maximizing government described above could minimize the excess burden associated with distortionary taxes simply by opting not to pay its debt service obligations. Because creditors are aware of this incentive, sustaining an equilibrium with positive levels of debt means that repudiation must entail a cost that induces the government to continue to service its debt. For a welfare-maximizing government, this cost must take the form of a sacrifice of other welfare-enhancing objectives.

What might such other objectives be? The costs associated with debt repudiation are both direct and indirect. An obvious source of direct costs is the actions of creditors, who will appeal to the legal system to enforce their debt contracts and may be able to penalize the government for renegeing on its obligations. Moreover, creditors' ability to impose such costs may leave the status of the repudiated debt uncertain, creating a "debt overhang" problem that potentially distorts intertemporal relative prices in the domestic economy, to the detriment of macroeconomic performance.

Indirect costs of repudiation may arise through reputation effects. If governments that repudiate are subsequently unable to borrow, the cost of repudiation is the loss of market access. This implies the necessity to rely on tax and money finance. Full tax financing of government expenditures may increase the present value of the excess burden associated with the financing of a given program of exhaustive government spending (government spending on goods and services) if the excess burden associated with each dollar of tax revenue is an increasing function of the tax ratio (Barro 1979). Full tax financing, by causing tax rates to vary intertemporally with government expenditures, may also distort the intertemporal allocation decisions of economic agents by inducing them to redistribute their production and spending decisions over time. Moreover, it would involve raising tax rates during cyclical downturns and lowering them during booms, thus causing fiscal policies to

behave procyclically. Finally, full tax funding forces the current generation to bear the burden of public sector capital expenditures that will benefit future generations, thus violating the benefit principle of public finance.

Full tax funding thus involves unacceptable sacrifices of other valuable social objectives of efficiency, stability, and equity. The alternative of financing deficits by printing money runs the risk of subjecting the economy to high and unstable inflation. The increased transaction costs, and the instability of intratemporal and intertemporal relative prices that this entails, have adverse consequences for efficiency and equity that have always rendered pure money financing unacceptable.

In short, one reason that debt is not repudiated is that although it is costly to service debt, it may be even more costly not to do so. Welfare-maximizing governments do not routinely repudiate debt, despite the excess burdens associated with servicing it, because doing so entails an unacceptable sacrifice of the important economic objective of retaining market access. But nonrepudiation implies that governments will typically find themselves with a stock of financial liabilities that includes some interest-bearing debt. They then face the debt management problem of determining the composition of those liabilities so as to achieve desirable outcomes on a set of multiple—and possibly conflicting—social objectives.

## Debt Management and Financial Development

With debt repudiation likely to be prohibitively costly under normal circumstances, governments typically seek to solve their debt management problem subject to the constraint that debt be serviced on schedule. This does not prevent the government from adopting the objective of minimizing public sector borrowing costs as the overriding consideration guiding its debt management policies, *subject to that constraint*. This would suggest choosing the composition of the debt to reduce its carrying cost to the greatest extent possible, leaving all other considerations aside. The incentive for a welfare-maximizing government to do so is the same as the incentive to repudiate debt: to minimize tax collection costs and the resource misallocations associated with distortionary taxation.

One obvious way to minimize debt servicing costs is to issue debt at below-market interest rates. The question, of course, is why anyone would choose to hold such debt, and the answer is that (by definition!) no one would. Thus the government would have to compel private agents to hold it. Strictly speaking, this is more akin to a form of taxation than to partial repudiation, because creditors know *ex ante* that they will be receiving below-market returns.

Various policies associated with financial repression have precisely this effect, including ceilings on deposit and lending rates, controls on capital outflows, public ownership and management of commercial banks, and reserve and liquidity requirements imposed

on private commercial banks.<sup>4</sup> The effect of such policies is to create artificial demand for government securities, enabling the public sector to borrow at rates below those that would prevail if creditors had more choice in the assets they could hold.

However, although such policies may carry the benefit of reducing the government's financing costs, they also carry the important social costs of distorting resource allocation and impeding financial development. Distortions in the allocation of resources arise because the portfolio restrictions that policies of this type place on financial institutions compromise their ability to perform the financial intermediation function efficiently, preventing financial institutions from allocating the funds that the government absorbs to activities that offer higher returns. Moreover, the implicit tax that these restrictions place on the financial sector reduces the incentives for investment in formal financial intermediation, potentially favoring less efficient types of intermediation.

Financial development is impaired not only through this form of taxation but also because government financing through these means, as opposed to selling government securities in an open primary market, deprives the market of a benchmark for pricing risk in the domestic economy (in the form of a market-determined interest rate on relatively safe government securities) as well as of other means to aggregate and disseminate information through the pricing of securities (through the term structure, return differentials on nonindexed and indexed bonds, and so on).

These observations suggest that reducing debt servicing costs through financial repression is socially costly, and given the important role that recent research suggests that financial development can play in promoting economic growth, these costs may be quite large (Levine 1997).<sup>5</sup> The message is that governments that place high value on promoting economic growth are likely to find it optimal to issue liabilities that promote financial development even though that increases their borrowing costs. From the standpoint of promoting the development of an efficient domestic financial system, it is preferable for the government to sell its securities in undistorted primary markets and to issue securities with diverse characteristics, to facilitate market processing of financially relevant information, than to place government obligations with financial institutions that are provided with artificial incentives to hold those obligations.

However, this prescription hardly begins to solve the problem of optimal debt management, because it leaves the government with many choices to make. For example, the government can issue securities that are denominated in nominal terms or that are indexed to the domestic price level, that are of short or long maturity, and that are paid in domestic or foreign currency. These choices are examined in turn.

## Credibility and Hedging: Indexed or Nominal Debt

Assuming that government interest-bearing liabilities consist of securities that are issued in open markets and that are expected to be serviced on contractual terms,

should the government issue nominal debt (denominated in the domestic currency) or issue at least some share of its debt indexed to the domestic price level? The following section considers the role of optimal debt maturity; for now, all debt is assumed to be long-term debt.

Recent research has emphasized that the existence of a large stock of long-term nominal debt may have important macroeconomic consequences, even if the government's solvency can be taken for granted. These consequences help us understand the conditions that affect the optimal share of the government debt that should be indexed to the price level. The key issue concerns a tradeoff between credibility and robustness: between the government's anti-inflationary credibility and the avoidance of risks to the government's solvency or to the economy's welfare that can be caused by fluctuations in the government's financing needs.

### *Time Inconsistency*

A potential consequence of a large stock of long-term nominal debt is that it may aggravate the time-inconsistency problems associated with monetary policy when the central bank lacks a precommitment mechanism. Time inconsistency arises when the sequence of policy choices that a government would make over some time horizon when it exercises discretion in each period are different from those that it would make over the same horizon if it could fully precommit its future behavior at the beginning.

Consider the simple framework pioneered by Barro and Gordon (1983). In this framework, if unanticipated inflation tends to increase the level of output and distortions in the economy make the "natural" level of output suboptimally high, a welfare-maximizing government that cannot precommit its future behavior (and thus that retains policy discretion in every period) may be tempted to generate "surprise" inflation in each period to move real output closer to its optimal level. That temptation is assumed to be restrained by social costs of inflation that increase nonlinearly.

The Barro-Gordon analysis shows that under these circumstances the equilibrium rate of inflation turns out to be suboptimally high and the level of social welfare suboptimally low compared with the case where the government could precommit its actions. The reason is that the government's attempt to generate surprise inflation must fail in a rational-expectations equilibrium in which the public understands the government's motivation.

Even so, the equilibrium rate of inflation must nonetheless be positive in this case, determined such that the marginal social benefits of inflation (which are constant) are equalized to the marginal social costs (which increase nonlinearly from an initial value of zero). Welfare must be lower in the discretionary equilibrium than in the nondiscretionary equilibrium in which the government can precommit itself to producing zero inflation, because the level of real output must be the same in both

equilibria, whereas the rate of inflation is higher in the discretionary case. The key point here, however, is that in the discretionary case the equilibrium rate of inflation is higher — and thus the loss of social welfare is greater — the greater the social benefit from inflationary surprises and the smaller the social cost of inflation.

The presence of long-term nominal debt affects this outcome by reducing the net social costs associated with inflation. Because the contractual interest rate on such debt is fixed, an increase in the rate of inflation that was unanticipated at the time the debt was incurred acts like a capital levy, reducing the real value of such debt. Thus, the existence of long-term nominal debt effectively increases the base of the inflation tax. This creates social gains arising from the fact that the reduced real value of the debt permits the government to reduce the level of taxation, decreasing tax collection costs as well as the resource misallocations associated with distortionary taxation. These gains partly offset the social costs of inflation. But because the net social costs of inflation are thus reduced, the government's incentive to act in a discretionary manner and to engineer an inflationary surprise is magnified. That in turn reduces the government's anti-inflationary credibility and increases the economy's equilibrium rate of inflation. Thus, the effect of a large stock of long-term nominal debt is to increase the magnitude of the social loss associated with the discretionary equilibrium (see Calvo 1991).

It is worth reiterating that this problem arises only when the government is not prevented from acting in a discretionary fashion by reputational considerations or by institutional mechanisms that prevent it from attempting to generate surprise inflation, such as participation in a currency board or currency union (see Alesina and Barro 2000). In addition, when such restraints are not present, the mechanism suggests that the loss of anti-inflationary credibility arising from the presence of nominal debt should be larger not just the larger the stock of nominal debt but also the greater the tax collection and distortion costs that the government has to incur to raise an additional unit of revenue, because the larger such costs, the greater the gain in social welfare from an inflationary erosion of the real value of nominal debt. In turn, the convexity of the tax collection cost function implies that these costs will be larger the larger the level of government spending to be financed. All of these considerations suggest that the magnitude of this credibility effect depends on a specific set of country circumstances.

How can this problem be alleviated? Taking as given the absence of institutional constraints on government discretion, the properties of its revenue system, the size of the expenditures to be financed, and the total stock of outstanding debt, debt management policies provide one solution. Calvo (1988), for example, suggests that the loss of credibility can be ameliorated by increasing the share of long-term debt that is indexed to the domestic price level, because the government's credibility problem is aggravated by the existence of long-term nominal debt. Indeed, the role of debt in aggravating time-inconsistency problems can be eliminated entirely by full indexation

of the debt. Notice that a government that is more likely to resist inflation than the public gives it credit for would find the issuance of indexed debt particularly attractive, because in addition to the credibility gains, issuing indexed debt would also reduce its debt servicing costs by lowering the real interest rates it would have to pay. (This assumes, of course, that the government has better information about its future intentions than the private sector does.) Thus, the objectives of increasing the government's anti-inflationary credibility and reducing its debt servicing costs both suggest that governments lacking anti-inflationary credibility should replace nominal debt with indexed debt.

These arguments suggest that the optimal share of long-term nominal debt in the portfolio of a government that retains discretion and lacks anti-inflationary credibility should be zero. Since reliance on indexed debt would eliminate the possibility of a "bad" (high inflation) equilibrium for such governments, the question that arises is whether governments in these conditions should ever choose to issue nominal debt at all.

### *Stabilization of Tax Rates across States of Nature*

Bohn (1988) offers one reason why governments might still wish to issue nominal debt. Consider a world of uncertainty in which the government's budget is subject to random shocks. Suppose that markets are incomplete, in the sense that the government cannot structure its debt as state-contingent contracts with payoffs conditioned on the effects of shocks on the government's budget (such contracts would promise larger payoffs to creditors when shocks are favorable and smaller ones when they are unfavorable). Shocks to the government's budget would then require offsetting discretionary changes in tax revenues—either in the present or in the future.

If, as assumed earlier, raising tax revenue by altering tax rates is subject to convex costs (the marginal cost of raising tax revenue increases with the tax rate), then the variability of tax rates across states of nature associated with these shocks would tend to increase the expected burden of distortionary taxes and thus reduce economic welfare, just as varying tax rates across time would. (Indeed, if the government's budget is sufficiently vulnerable to shocks, and the variability of potential shocks is sufficiently large, the social costs of raising the required revenue in the face of an adverse shock may be large enough to trigger an optimal default.) Thus organizing the government's finances so as to equalize expected tax rates across states of nature is a desirable goal.

What does this have to do with the structure of the government's debt? Suppose that in an attempt to minimize time-inconsistency problems, all debt is indexed to the price level, as suggested. Although this might reduce the government's incentive to try to engineer inflationary surprises, in a world of uncertainty it does not guarantee

that unexpected inflation will not occur (for example, as a result of shocks to the demand for money). Suppose that unanticipated inflationary shocks give rise to positive correlations between the price level and the government's real financing needs. This might happen because the shocks reduce income levels and thus tax revenues, because taxes are defined in nominal terms or paid with a lag so that as the price level rises their real value declines (known as the Olivera-Tanzi effect). Or it might happen because the shocks represent unexpected changes in government spending, as in the case of wars or natural disasters.<sup>6</sup> If the shocks do give rise to positive correlations between the price level and the government's real financing needs, the additional revenue that would have to be raised through distortionary taxation would be greater the greater the extent to which the government's debt is indexed to the domestic price level. Indeed, under such shocks, fully indexed debt would have the effect of maximizing the variability in the government's financing needs and thus of increasing the average distortionary effects of taxation, relative to a situation in which some portion of the debt is nominal.

Bohn's (1988) observation is therefore that with uncertainty and incomplete markets, nominal debt can provide the government with a valuable hedge and be welfare improving by reducing the excess burden of higher tax revenues required to finance a given plan of exhaustive public spending. If changes in the price level are positively correlated with changes in the government's financing needs, an increase in the price level would reduce the real costs of servicing the debt just when the government's financing needs are increasing, whereas a reduction in the price level would increase the real burden of servicing nominal debt just when the government can most afford it. Thus, having some nominal debt helps stabilize tax rates across states of nature, which is welfare improving. Of course, this benefit would need to be offset against the adverse credibility effects described previously, but because such effects would tend to disappear when the stock of nominal debt is zero, in general this argument would justify at least some positive level of nominal debt, even for governments with imperfect anti-inflationary credibility.

### *The Optimality of Nominal Debt*

These arguments indicate the tradeoffs that the government faces in choosing the optimal composition of debt between indexed and nonindexed liabilities. It can enhance its anti-inflationary credibility by opting for a larger share of indexed debt, but only at the expense of greater budget vulnerability to certain types of shocks, thus making the economy more susceptible to the distortions associated with variability in tax rates across states of nature and possibly increasing the likelihood of default. In short, the tradeoff is between anti-inflationary credibility and the robustness

of the government's budget in the face of shocks. What considerations should govern this choice?

First, as already argued, a critically important factor is the extent to which the government can independently precommit its future actions. The greater the amount of precommitment possible, the greater the hedging benefit of nominal debt relative to its credibility cost. Thus, a greater ability to precommit (say, because of participation in a currency board or monetary union) suggests a lower optimal degree of indexation and therefore a larger optimal share of nominal debt. In the limit, if the government can fully precommit, there is no credibility benefit to indexation. In this case if positive inflation shocks have adverse effects on the budget, hedging considerations favor the issuance of nominal debt.

Second, the choice depends on the magnitude of the social costs of inflation. The higher the social costs of inflation, the more important it is to avoid the discretionary outcome and thus the larger the optimal share of indexed debt.

Third, given an incomplete ability to precommit, the costs associated with a larger share of nominal debt (a lower degree of indexation) depend on the additional incentives that a larger share creates at the margin for the government to turn to inflation. Thus the optimal degree of indexation should increase with the level of debt, because a given increment to inflation has a larger positive budgetary impact the larger the stock of nominal debt.

Fourth, as mentioned, the tradeoff depends on the relative empirical importance of shocks that give rise to a positive correlation between the government's financing needs and the price level, compared with those that do not.<sup>7</sup>

Fifth, it depends on the variability of the shocks just described. The correlation between the government's financing needs and the price level depends both on the frequency with which such shocks arise relative to other types of shocks and on their magnitude when they do arise. The greater the variance of shocks, the greater the excess burden associated with raising a given expected level of taxation, and the more valuable the hedge provided by nominal debt.

Finally, the severity of the excess burden associated with higher tax rates has an ambiguous theoretical effect on the choice between nominal and indexed debt. The greater the excess burden associated with higher tax rates, the greater the incentive for the government to rely on the inflation tax and the smaller the government's anti-inflationary credibility, implying larger credibility gains from the use of indexed debt. However, a more distortionary tax system also magnifies the costs associated with variations in tax rates across states of nature, which tends to increase the hedging benefit associated with nominal debt.

The upshot is that the tradeoff between credibility and robustness that the government faces in choosing between nominal and indexed debt depends on characteristics of the domestic economy. Theory can pin down what these are, but it does not suggest that either type of debt is superior to the other under all circumstances.

## Short-Term versus Long-Term Nominal Debt

The previous section considered the tradeoff between nominal and indexed debt, holding the maturity of the debt constant. Leaving aside for now the possibility of indexing the debt, and thus taking all debt as nominal, this section turns to the choice between short-term and long-term nominal debt.

As will become clear, the choice between short-term and long-term debt involves a tradeoff between the government's anti-inflationary credibility and the robustness of its budget, just as is true in choosing between nominal and indexed debt. Short-term nominal debt may not be as effective as long-term indexed debt in projecting credibility, and it leaves the government vulnerable to different types of risk than does indexed debt. In particular, although short-term nominal debt may protect the government's finances from the inflation shocks to which indexed debt makes it vulnerable, it exposes the government to real interest rate and rollover risks.<sup>8</sup> In addition, the existence of a large stock of short-term debt may constrain monetary policy when the government's solvency is perceived to be precarious. Through that channel it may also render an economy that operates with an officially determined exchange rate vulnerable to self-fulfilling currency crises.

### *Anti-Inflationary Credibility versus Robustness*

Why do governments borrow in the short term? In a world of asymmetric information and moral hazard, creditors lend at short maturities to monitor and control borrowers. Creditors see the recurrent capacity to repay loan principal as a sign of continued solvency, and they use the threat of withdrawing funds or renegotiating at much higher interest rates as disincentives for borrowers to behave in ways that undermine the creditors' interests. Thus when information and moral hazard problems are acute, short-term loans will be relatively cheap compared with long-term loans. Under these circumstances, the objective of minimizing borrowing costs will tempt governments to opt for short-term financing.

The second reason governments may choose to borrow in the short term is to enhance their anti-inflationary credibility. Unlike the case with long-term debt, with short-term debt the interest rate is continuously renegotiated, so creditors can adjust the contractual interest rate to compensate for the effects of anticipated inflation in reducing the real values of their claims. This means that, unlike with money and long-term nominal debt, the government may not be able to regard its short-term liabilities as part of the inflation tax base, and this would tend to reduce the incentive to renege on inflationary commitments that gives rise to the time-inconsistency problem. Thus, governments may issue short-term debt to "tie their hands" and remove the temptation to inflate that arises from a large inflation tax base. In this way, governments can enhance the credibility of their anti-inflationary commitments.

Short-Term Debt and Time Inconsistency. Just how effective is short-term debt in enhancing credibility? At least two reasons have been proposed for doubting its effectiveness. The first is that government may be able to tax short-term debt with inflation, even if the public can anticipate it. The second is that the existence of short-term debt can make the economy vulnerable to multiple equilibria, with the "bad" equilibrium characterized by low credibility and high inflation.

Concerning the first argument, the key point is that the government can use an increase in anticipated inflation to "tax" short-term debt if the increase is associated with a reduction in the equilibrium value of the real interest rate—if the nominal interest rate on such debt does not fully adjust to an increase in expected inflation. In a financially open economy, under officially determined exchange rates, Calvo (1989) notes that the central bank may be able to use monetary policy to engineer an increase in the inflation rate that exceeds its preannounced rate of exchange rate depreciation, causing the real exchange rate to appreciate and the real interest rate to fall. The government would thus be able to erode the real value of short-term debt by increasing the rate of inflation.

Turning to the second argument, Calvo (1988) posits that the existence of nominal debt with an interest rate that is responsive to expected inflation (as would be true of short-term debt) makes the government vulnerable to "confidence crises" that can result in high-inflation equilibria. The mechanism is as follows. The government's incentive to inflate in the absence of precommitment depends on the extent to which it can reduce other forms of distortionary taxation by doing so. That is influenced by the size not only of the inflation tax base (which determines the revenue from inflation) but also of the budget gap, which will determine the benefits from inflationary taxation (recall that if the distortionary costs of tax revenues are a convex function of the size of revenues, these costs will increase with the size of the budgetary gap to be filled). Thus the temptation to inflate is an increasing function of the debt service payments to which the government is obligated. That means that it depends both on the interest rate and on the size of the nominal debt.

But if creditors believe that some of the real value of short-term debt may be eliminated through inflation, they will demand a yield premium that compensates them for expected inflation and the attendant risk. This will itself increase the government's debt service obligations and thus its incentive to inflate. The positive dependence of the incentive to inflate on the value of the nominal interest rate and of the nominal interest rate on the perceived incentives for the government to inflate create the possibility of multiple, self-fulfilling equilibria. That is, the high nominal interest rates caused by a lack of confidence may induce the government to inflate the debt away. Thus two equilibria could arise: a good equilibrium with low inflation and low nominal interest rates and a bad equilibrium with high inflation and high nominal interest rates. The implication is that short-term debt maturities may make a high-inflation equilibrium more rather than less likely.

*Risk Exposures with Short-Term Debt.* The credibility problems just examined arise from the government's actual or perceived ability to generate endogenously an increase in the rate of inflation without a commensurate increase in the interest rate that it has to pay on its short-term debt—or, put differently, from its actual or perceived ability to reduce the real interest rate on such debt. But real interest rates on short-term debt may also fluctuate for exogenous reasons (such as from changes in country risk premia associated with international contagion), and such real interest rate movements, like price-level shocks in the case of indexed debt, may induce sub-optimal variability in tax rates. Thus short-term debt may (or may not, as shown) enhance the government's anti-inflationary credibility. But to the extent that it does so, this benefit comes at the cost of exposing the budget to a new type of risk: the risk associated with market fluctuations in real interest rates.

However, matters may be worse than that. Alesina and others (1992) note that a large stock of short-term debt can create vulnerability to self-fulfilling confidence crises in which otherwise solvent governments default on their debt obligations. To see how this can happen, recall that what creates the possibility of a bad equilibrium in the Calvo framework is the government's reluctance to make the fiscal adjustment required to meet a crisis-driven increase in debt service requirements because of the social costs associated with raising the requisite tax revenue. The Alesina and colleagues model relies on a similar mechanism: the convexity of tax collection costs. That convexity means that the cost of raising an incremental amount of public revenues rises as with the amount of revenues the public sector has to raise.

Consider how this affects government decisions on the servicing of short-term debt. As long as creditors are willing to roll over any short-term debt coming due on the same terms, the government does not have to raise additional revenue to service the debt. But if creditors increase the real interest rate on debt they agree to roll over, or if they refuse to roll over the debt, the government can continue to service the debt only by increasing tax revenues, either in the future (if creditors increase the interest rates that they demand to roll over the debt), or in the present (if creditors refuse to roll over any debt). The key question is whether the government will continue to service the debt on schedule when it has to raise more of its own resources to do so.

The answer depends on the impact that higher real interest rates or a refusal to roll over would have on the incremental revenues that the government has to raise. Because interest rates are free to adjust and principal payments are higher, the shorter and more bunched debt maturities are, the more sensitive the need for incremental revenues will be to any increases in rollover costs or to a refusal of new lending. Thus the shorter and more bunched debt maturities are, the more likely the government is to refuse to raise the revenues required to service the debt in the event of an increase in interest rates required to roll over the debt or a refusal of new lending.

Of course, if the government is perceived as unlikely to honor its debt obligations, creditors will be reluctant to take on its short-term liabilities. That means that a

reluctance by creditors to roll over debt for fear of default can be self-fulfilling: when creditors become unwilling to roll over short-term debt the government is more likely to default, because it would then be called on to make payments out of resources that would be too costly for it to raise. Thus a short maturity structure of the public debt may increase the likelihood of a confidence crisis on the debt: the shorter and more concentrated the debt maturities, the greater the government's vulnerability to confidence crises. In this case, such crises take the form of debt runs. The well-known case of Mexico's tesobono obligations in the first quarter of 1995 provides a dramatic example of such a debt run (see Sachs and others 1996).

Giavazzi and Pagano (1990) summarize these results by noting that the likelihood of a Calvo-style bad equilibrium depends on three things: the size of the public debt, its maturity structure, and the time pattern of maturing debt. The logic, as already explained, is that if a substantial amount of debt has to be serviced at a point in time, and if a confidence crisis breaks out at that moment (say, fear of a repudiation or a devaluation), the treasury would have to refinance a large portion of its debt on unfavorable terms. The welfare cost of doing so would be high, and thus the likelihood that the government will repudiate is greater. This makes the confidence crisis more likely to happen. Giavazzi and Pagano argue that under these circumstances, good debt management calls for the issuance of long-term indexed debt to push the economy to a good equilibrium because such debt cannot be monetized away and does not create large short-run amortization obligations.<sup>9</sup>

### *Short-Term Debt and Monetary Policy*

When the government maintains a large stock of short-term debt, the sensitivity of the government's budget to changes in interest rates can affect macroeconomic stability in indirect ways as well as by increasing vulnerability to debt runs. When the stock of interest-sensitive short-term debt is large and the government's solvency is precarious, the adoption of tight monetary policy carries the risk of triggering fiscal insolvency by increasing the government's debt servicing costs. The central bank will thus be constrained from adopting policies that it might otherwise have found necessary to stabilize the economy in response to shocks.

This is bad enough under floating exchange rates, because one of the virtues of floating is to allow scope for an independent monetary policy in response to shocks that are asymmetric with those of a country's trading partners. This constraint essentially renders such scope asymmetric, permitting monetary policy to act when expansionary policies are called for, but not (or at least only to a limited extent) when contraction is indicated.

But under officially determined exchange rates, this constraint can be a recipe for severe macroeconomic instability by making the economy vulnerable to self-fulfilling currency crises. The logic of second-generation models of currency crises suggests

that in assessing the sustainability of an exchange rate peg, speculators evaluate the benefits and costs to the central bank of sustaining a high interest rate defense of the peg. When speculators perceive that the costs to the central bank of sustaining a high interest rate defense exceed the benefits of sustaining the peg, they will judge the prospects for a successful attack to be good, and that will make an attack more likely. Because the vulnerability of the public sector's solvency to high interest rates is precisely the type of factor that would be perceived by the central bank as making the costs of sustaining a high interest rate defense unbearably high, the combination of a large stock of short-term debt with a precarious fiscal position greatly increases a country's vulnerability to a successful speculative attack.

This issue is of more than academic interest. Observers judge it to have played a key role in some of the more important currency crises of the 1990s. In the 1999 Brazilian crisis, for example, fiscal vulnerabilities associated with short-term government debt seem to have played an important role in inducing the government to float the real, despite the key role that the exchange rate peg had played in the Real Plan's exchange rate-based inflation stabilization since 1994 (Razin and Sadka 2004).

## Domestic-Currency versus Foreign-Currency Debt

Choices between nominal and indexed debt and between short-term and long-term nominal debt imply tradeoffs between anti-inflationary credibility and the robustness of the government's budget. In the case of short-term debt, macroeconomic stability is also affected by the potential constraints imposed on an independent stabilization instrument, monetary policy.

This section turns to the choice between domestic-currency (nominal) debt and foreign-currency debt. As in the previous cases the choice involves a tradeoff between anti-inflationary credibility and budget robustness. As in the other cases, the type of vulnerability created in the government's budget is specific to the type of debt instrument adopted to increase anti-inflationary credibility. As in the case of short-term debt, the existence of a large stock of foreign-currency debt may impose constraints on the actions of the central bank when the government's solvency is at risk. But in this case the constraint is on exchange rate policy rather than on monetary policy. Finally, there is an interesting interaction between the analysis of the implications of short-term debt and those of foreign-currency debt. This section takes up each of these issues in turn. Because the basic analysis is now familiar, the discussion will be brief.

### *Credibility versus Robustness*

As is true of indexed and short-term debt, the government can use the issuance of debt denominated in foreign currency as a tool for gaining credibility, on the

assumption that such debt cannot be inflated away. But as with short-term debt, this assumption is questionable. With short-term debt, the government could in effect tax away some of the real value of the debt through inflation if its actions succeeded in reducing the real interest rate. Similarly, inflationary erosion of the real value of foreign-currency debt is possible if nominal shocks succeed in appreciating the real exchange rate. Under officially determined exchange rates, one-time shocks to the domestic price level can indeed succeed in doing so, at least temporarily until the real exchange rate returns to its equilibrium value. But this opportunity to reduce the real value of foreign-currency debt through domestic inflation may not undermine the government's anti-inflationary credibility if the public believes that the government will be unwilling to countenance the associated real exchange rate appreciation. Under these circumstances denominating debt in foreign exchange may enhance the government's anti-inflationary credibility.

However, any such gain in credibility comes at a cost: the assumption by the government of exchange rate risk. A real exchange rate depreciation triggered by independent events will increase the government's debt servicing costs and thus potentially subject the economy to undesirable fluctuations in distortionary taxes or, in the extreme, to the consequences of a government default, as in Argentina in 2002 (Mussa 2002; Servén and Perry 2004). The story, then, is the same as before. What changes in this case is the type of risk exposure undertaken by the government in its attempt to gain credibility.

It is worth noting that as in the case of indexed and short-term debt, foreign-currency debt is likely to be cheaper than domestic-currency debt, precisely because the government, and not its creditors, takes on the foreign-currency exposure and attendant risk. This is particularly important when the government lacks nominal credibility, causing creditors to assess the risk of future exchange rate changes as being high. This situation tends to increase the government's relative cost of borrowing in domestic currency. The supply price of domestic-currency funding is particularly high from creditors with substantial foreign currency exposure, such as external creditors. In the limit, such creditors may demand such a high price for domestic currency lending that no such lending would be forthcoming from them. (Eichengreen and Hausmann 1999 dub this situation "original sin" and consider it a structural characteristic of external borrowing by developing countries.) The net effect is to increase the relative cost of domestic-currency borrowing, because such funds would be forthcoming only from domestic creditors. Other things being equal, this would tend to shift the optimal composition of the government's liabilities toward foreign-currency debt. Thus, the objective of minimizing borrowing costs is likely to once again align itself with that of enhancing anti-inflationary credibility to induce reliance on foreign-currency debt.<sup>10</sup>

But how large is the particular type of risk exposure induced by foreign-currency debt likely to be for the government? It is easy to see that the answer would tend to

depend on the currency composition of the government's finances, on the probabilities associated with exchange rate changes, and on the expected magnitude of such changes if they occur. Clearly, if the government holds a large stock of foreign-currency assets (such as foreign exchange reserves) or if a large component of its revenues is indexed to the exchange rate (say, if the government derives substantial revenues from the country's export earnings), the government can sustain a correspondingly large stock of foreign-currency debt without exposing itself to exchange rate risk. Similarly, the risk exposure associated with foreign currency debt may not be inordinately high if the risk of exchange rate movements is slight (because the government maintains a credible hard peg, for example, or because the possible conditions that would render a self-fulfilling speculative attack more likely to succeed—such as a high degree of capital mobility<sup>40</sup> not hold).

### Foreign-Currency Debt and Exchange Rate Policy

As mentioned, the presence of a large stock of foreign-currency debt is also likely to affect macroeconomic stability indirectly, through its effects on the central bank. Under floating exchange rates, this creates an asymmetry in the conduct of monetary policy, because the central bank has an incentive to resist currency depreciation but not appreciation. The constraints imposed on exchange rate flexibility in developing economies by the existence of a large stock of foreign currency-denominated debt have been emphasized in the "fear of floating" literature (Calvo and Reinhart 2002).

Blanchard (2004) describes a more complicated mechanism through which a large stock of foreign-currency debt can impede the use of monetary policy for inflation targeting. This mechanism relies on the interaction between short-term (or variable-interest) debt and foreign-currency debt. When government debt is short-term or variable-interest, a change in domestic interest rates will affect the government budget, as discussed. An increase in domestic interest rates in response to an anticipated increase in inflation by an inflation-targeting central bank may thus increase default probabilities for government debt. In turn, this requires an exchange rate depreciation to maintain balance of payments equilibrium. However, when the government's stock of foreign-currency debt is high, this depreciation further increases the default probability, which magnifies the required exchange rate depreciation. This depreciation has the effect of increasing expected inflation, rendering tight money an ineffective means to control inflation. The suggestion is that controlling inflation under these conditions calls for a fiscal response.

Under "soft" exchange rate pegs, on the other hand, what is constrained when the stock of foreign-currency debt is high and the government's solvency is precarious is the central bank's exchange rate policy, rather than its monetary policy. Under these conditions, the central bank will have a strong incentive to avoid a devaluation or a regime switch that would result in a substantial depreciation of the currency.

Again, the issues discussed in this section have been of tremendous practical importance among emerging economies. Not only did fiscal vulnerability to exchange rate movements as a result of large stocks of foreign currency debt contribute to the government insolvencies associated with the Latin American debt crisis of the 1980s, but some observers have also blamed a large stock of contingent government liabilities that were essentially indexed to the exchange rate for triggering the Asian financial crisis of 1997 (Burnside and others 1998). Less dramatically, Blanchard (2004) provides evidence that the mechanism described in the previous paragraph was operative in constraining the Brazilian Central Bank from raising real interest rates in the face of an increase in expected inflation in late 2002.

### *Short-Term Foreign-Currency Debt*

It is worth noting an important potential interaction between short-term debt and foreign-currency debt: the debt run outcome as a potential risk incurred by a government carrying large amounts of short-term debt may actually be much more likely when this debt is denominated in foreign currency. To see why, notice that the government may always avoid defaulting on short-term debt denominated in domestic currency in the event of a run simply by printing money, as long as it is willing to live with the resulting inflation. In other words, when short-term debt is denominated in domestic currency, the government at least has a choice between default and inflation. No such choice is available when short-term debt is denominated in foreign currency. Because the government cannot print foreign currency, if its liquid reserves are insufficient to pay off the creditors who "run," it faces only the choice of resorting to distortionary taxation or defaulting.

## Guidelines for Public Sector Debt Management

What do we learn from all of this about management of public debt in emerging economies? This section draws out some general principles suggested by the preceding analysis.

The appropriate conduct of fiscal policy implies that there will be times when for tax-smoothing, countercyclical, or intergenerational equity reasons, it will be optimal for the government to borrow. Preserving this option means that the debt can be repudiated only when such an action does not permanently impair the government's capacity to borrow—in other words, only under exceptional circumstances that are clearly outside the government's control or in the context of a clearly identified and credible regime change. This means that debt service payments will inevitably exert a claim on the resources of most emerging economy governments.

Because raising the resources to service debt is costly, and the marginal cost of doing so is likely to increase the larger is the volume of resources that have to be raised, managing the composition of the debt to minimize debt service costs is justifiable from the perspective of a welfare-maximizing government. However, single-minded pursuit of this objective could be socially harmful if it imperils other, equally worthy social objectives. Reliance on financial repression to reduce debt servicing costs is a clear example. The static and dynamic efficiency gains that are sacrificed when financial repression stunts the development of the domestic financial system suggest that this is a socially extremely harmful way for the government to seek to reduce the costs of meeting its financing needs. The implication is that the government should finance itself by issuing securities that are sold on market terms. The objective of promoting financial development suggests that the government should issue a diverse set of securities in order to facilitate information aggregation and dissemination in financial markets.

These broad principles, however, leave the optimal composition of this diverse set of securities unspecified. In principle, such securities could be of varying maturities and could be denominated in domestic currency or indexed to the domestic price level or to the exchange rate (denominated in foreign currency). An important consideration in making these choices concerns their impacts on the government's anti-inflationary credibility. A government that lacks the ability to precommit its future actions (or those of its successors) will face a time-inconsistency problem that could be aggravated by the issuance of long-term nominal debt, because debt issued in that form essentially increases the base of the inflation tax.

Under these conditions, the government may therefore find it advantageous to issue debt in a form that is less susceptible to taxation through inflation—indexed debt, nominal debt with short maturities, or debt denominated in foreign currency. Because these types of debt provide creditors with more information and control (in the case of short-term debt) or protect them from the risks of inflation or devaluation (indexed debt and foreign-currency debt), it is likely to be cheaper than long-term nominal debt. Thus, the objective of enhancing credibility is likely to dovetail with that of reducing the government's borrowing costs. (Indeed, as shown earlier, when nominal credibility problems are extreme, the implications for the cost of domestic-currency borrowing may even preclude such borrowing entirely, in practice leaving some developing economies no choice but to borrow in foreign currency or not at all.)

However, the enhancement of credibility and reduction in borrowing costs associated with eschewing long-term domestic-currency borrowing come at a price: that of increasing the government's vulnerability to price level increases, real interest rate shocks, or exchange rate shocks. Moreover, when the government's solvency is at issue, excessive reliance on short-term debt or foreign-currency debt may severely constrain the actions of the central bank. Thus, the question becomes how to optimize these tradeoffs.

The answer, of course, requires a careful calculation of the benefits and costs associated with each option under a country's particular circumstances. For example, the credibility gains to the government from avoiding the issuance of long-term nominal debt may be significant only when the government otherwise lacks the ability to commit itself credibly not to inflate such debt away. Such anti-inflationary credibility will be lacking when the government actually retains the discretion to use the inflation tax (under a soft exchange rate peg or a float), when it lacks credibility on other grounds (as when it has not previously invested in a reputation for resisting incentives to act in a discretionary fashion), and when its revenue needs are high and conventional taxation is highly distortionary. In combination with a large stock of nominal long-term debt these factors would make a high-inflation discretionary outcome likely. Thus, a government with these characteristics that wants to achieve a low-inflation outcome in the future would have a strong incentive not to issue long-term nominal debt.<sup>11</sup>

In other words the existence of long-term nominal debt is only one factor in the government's decision to devalue or inflate. Creditors can rationally expect the government to forgo the option to inflate away the real value of their assets if the government is institutionally unable to do so (through participation in a currency board or currency union, for example), if it is perceived as placing a high value on the credibility of its policy announcements, or if inflating creates few net benefits from the government's perspective, because the conventional taxes that are avoided by using the inflation tax are not highly distortionary.

Thus, a government can expect to achieve few credibility benefits from avoiding long-term nominal debt if it has previously created institutions that limit its inflationary discretion (for example, by creating an independent central bank that is explicitly committed to an inflation target), if it has established a reputation for nondiscretionary behavior, and if it has chosen levels of expenditure and has mobilized sources of taxation that tend to minimize distortions. Because the additional credibility gains achievable by forgoing long-term nominal debt would tend to be small under these circumstances, avoiding vulnerability becomes relatively more important. Thus, optimal debt management would suggest heavy reliance on long-term nominal debt.

If these conditions do not hold, then optimal debt composition shifts toward indexed, short-term, or foreign-currency debt. How should governments choose among these as credibility-enhancing devices?

The arguments presented herein suggest that short-term debt may have important deficiencies because it may be vulnerable to the inflation tax, may give rise to multiple equilibria, and makes the government vulnerable to real interest rate and rollover risk. Thus, it is hard to make a strong case for short-term debt as a credibility-enhancing device when other means to enhance credibility are available. But short-term debt is preferred by creditors who face informational asymmetry and moral hazard problems, so the best case for incorporating short-term debt into the government's liability portfolio is to enable the domestic financial market to accumulate and

disseminate information about the risk-free interest rate. In this role, however, the stock of short-term debt should be small enough not to jeopardize the government's solvency should interest rates spike and not to expose the government to excessive rollover risk. Solvency will obviously depend on the strength of the government's finances, whereas rollover risk will depend on its ability to avoid bunching in short-term debt maturities, its capacity to repay the principal on short-term debt out of liquid assets or current revenues, and its access to quickly disbursing nonmarket sources of short-term finance in adequate amounts.

These arguments suggest that the brunt of the credibility-enhancing burden (if one exists) should fall on long-term indexed and foreign-currency debt. Assuming them to be equally effective in enhancing credibility, the question becomes which one minimizes vulnerability to unexpected shocks. The currency composition of the government's financial assets, contingent liabilities, and budget plays an important role. If the government has minimal foreign-currency assets, large contingent liabilities in foreign currency, and its revenues are not particularly sensitive to exchange rate changes, then incurring a substantial amount of foreign-currency debt would create a currency mismatch in the government's comprehensive balance sheet that would leave it heavily exposed to exchange rate risk.<sup>12</sup> Coupled with the likelihood that nominal exchange rates will fluctuate more than the average price level, particularly in emerging economies maintaining a floating exchange rate, the possibility of such mismatches is likely to make the government's net worth substantially more sensitive to changes in the exchange rate than to changes in the price level.

Thus, the use of foreign currency–denominated debt instead of indexed debt as a credibility-enhancing device is likely to have relatively larger impacts on the government's vulnerability to shocks. If so, then for governments that lack anti-inflationary credibility, long-term indexed debt would appear to dominate foreign-currency debt as a credibility-enhancing device.

In short, the optimal composition of the government's debt depends on a country's circumstances. Although governments should generally finance themselves at market rates using a variety of securities, the optimal composition of those securities should be heavily weighted toward long-term nominal debt for governments that have anti-inflationary credibility and toward long-term indexed debt for those that do not.

## Notes

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1. Prominent exceptions are a number of papers written several decades ago by Tobin (1971) and Brunner and Meltzer (1976).

2. Debt servicing can obviously be financed by reducing spending or raising tax revenues. Following the literature, this article takes the level of spending as given and focuses on taxation. As long as public

spending is productive and subject to diminishing marginal returns, the welfare arguments in the text would be unchanged if the government responded to changes in its debt servicing needs by adjusting spending rather than revenues.

3. This is essentially the basis for the "tax smoothing" argument that underlies the neoclassical perspective on optimal debt management (see Barro 1979).

4. The classic descriptions of financial repression are by McKinnon (1973) and Shaw (1973). For some empirical estimates of the implicit taxes that governments have collected through these means see, for example, Giovannini and De Melo (1993).

5. For recent reaffirmations of the empirical strength of the finance–growth link despite the econometric challenges in establishing it, see the surveys by Wachtel (2003) and Levine (2004).

6. It is easy to see that the importance of such shocks depends in part on the structure of the government's budget as well as on that of the economy, because the structure of expenditures and revenues and the other macroeconomic effects of the shock will jointly determine the sensitivity of the government's primary balance to shocks that give rise to changes in the domestic price level.

7. Not all shocks have this effect. For example, as Bohn (1988) points out, monetary shocks would tend to cause unanticipated changes in interest rates and the price level to be negatively correlated. Nominal debt in that case would tend to increase the variability of tax rates across states of nature, because opposite movements in interest rates and price levels would tend to reinforce their effects on the real value of debt service payments.

8. The role of long-maturity variable-interest debt (long-maturity debt with flexible interest rates indexed to market rates) is not considered here. Such debt exposes the government to interest rate risk but not rollover risk. In the case of variable-interest debt, exposure to interest rate risk depends on duration (how frequently the interest rate on the debt is adjusted to market rates) rather than maturity.

9. As shown, however, such a debt management strategy would leave the government vulnerable to inflationary shocks that are associated with increases in the government's financing needs.

10. In the limit, if the government's nominal credibility problems or the degree of development of domestic financial markets is such that the government is unable to issue domestic-currency debt to either domestic or foreign creditors, "original sin" would remove the currency composition dimension of the debt management problem: if the government seeks to borrow at all, it must do so in foreign currency.

11. The international evidence suggests that governments are indeed reluctant to issue long-term nominal debt when they lack credibility, presumably reflecting the combined effects of a desire to enhance credibility and to reduce debt-servicing costs. For an application in the context of inflation stabilization, see Missale and others (1997).

12. For a discussion of the use of public debt management to hedge the risk associated with contingent public sector liabilities, see Becler (1999).

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