

proportion of households in poverty (map 1): the low-income countries are, notably, the countries with high proportions of moderate and extreme poverty.

So why does a vast gulf divide one sixth of humanity today in the richest countries from the one sixth of the world barely able to sustain life? The richest countries were able to achieve two centuries of modern economic growth. The poorest did not even begin their economic growth until decades later, and then often under tremendous obstacles. In some cases, they faced the brutal exploitation of dominant colonial powers. They faced geographical barriers (related to climate, food production, disease, energy resources, topography, proximity to world markets) that had not burdened the early industrial economies like Great Britain and the United States. And they made disastrous choices in their own national policies, often until the past decade. All of this left them without the good fortune of two centuries of rapid economic growth, instead growing only sporadically during a few years.

The key point for these countries is that there are practical solutions to almost all of their problems. Bad policies of the past can be corrected. The colonial era is truly finished. Even the geographical obstacles can be overcome with new technologies, such as those that control malaria or allow for large crop yields in marginal production areas. But as there is no single explanation for why certain parts of the world remain poor, there is also no single remedy. As I shall stress repeatedly in the pages ahead, a good plan of action starts with a good differential diagnosis of the specific factors that have shaped the economic conditions of a nation.

Sachs, Jeffrey D. The End of Poverty.
New York: The Penguin Press, 2005.

Three

WHY SOME COUNTRIES FAIL TO THRIVE

Of the world's population of 6.3 billion, roughly 5 billion people have reached at least the first rung of economic development. Five sixths of the world's population is at least one step above extreme poverty. Moreover, approximately 4.9 billion people live in countries where average income—measured by GDP per person—increased between 1980 and 2000. An even larger number, roughly 5.7 billion people, live in countries where life expectancy increased. Economic development is real and widespread. The extent of extreme poverty is shrinking, both in absolute numbers and as a proportion of the world's population. That fact is why we can realistically envision a world without extreme poverty as soon as 2025.

Precisely because economic development can and does work in so many parts of the world, it is all the more important to understand and solve the problems of the places where economic development is not working, where people are still off the ladder of development, or are stuck on its lowest rungs. To understand why economic growth succeeds or fails, we first need a conceptual framework that can account for changes over time in GDP per person. I have already discussed some of the factors that promote long-term development, but here I address them more systematically, including a discussion of why the process of economic development breaks down in many places, especially the poorest places. Perhaps it would be clearest to begin with a very specific case: a single farm household.

THE GROWTH OF HOUSEHOLD INCOME

Consider a household consisting of a husband, wife, and four children (two daughters and two sons) living on a two-hectare farm. The household grows maize and provides for its own shelter in an adobe hut. Being extremely poor, the family consumes its own maize harvest and earns no other cash income during most years. The children collect fuelwood in the vicinity of the farm for cooking, and fetch drinking water from a nearby spring.

This year the household produces two tons of maize per hectare, or four tons in total. Even though the household eats its own maize, the statisticians in the government will assign this household an income based on the market value of the maize. Suppose that each ton of maize sells in the local market for \$150 per ton. The household's imputed annual income will be \$600 (\$150 per ton times four tons), or \$100 per capita (\$600 divided by six people). The government will add this figure to other household incomes to calculate the country's gross national product.

The family's income per capita can increase in at least four ways the following year.

Saving

The household might decide to consume only three out of the four tons of maize, and take one ton to market. With the \$150, the household invests in livestock (perhaps chickens or sheep or a bull or dairy cow). The livestock generate a new stream of income, whether from improved food yields by using the bull for manure and animal traction, or the cow for sales of milk, or the animals for meat, eggs, or hides. In economic jargon, the saving has led to capital accumulation (in the form of livestock), which in turn has raised household productivity.

Trade

In a different scenario, the household learns from a neighboring farmer that it has the right kind of farmland, climate, and soil to produce vanilla beans, with a much higher income. After some deliberation, the household decides to shift to vanilla as a cash crop. The next year the household earns \$800 in vanilla, and uses \$600 to buy four tons of grain

for food. As more vanilla farmers arise in the region, a new group of trading firms also forms, specializing in shipping and storage of vanilla, food, and farm inputs.

This pattern exemplifies Adam Smith's insight into the two-way link from specialization to expanded markets back to increased specialization. The farm household specializes in high-value vanilla farming because it lives in favorable ecological conditions for vanilla trees. It relies on the market to trade with other households, which instead specialize in producing food. As incomes rise, and the "extent of the market" increases, to use Smith's phrase, there is room for further specialization, in this case in transport services. Later on, economic activities will be further divided among firms specializing in housing construction, clothing manufacturing, road maintenance, plumbing, electricity, water and sanitation systems, and so forth.

Technology

Alternatively, an agricultural extension officer teaches the farm household how to manage the soil nutrients in a new and improved manner by planting special nitrogen-fixing trees that replenish the vital nitrogen nutrients of the soil, and to multiply the benefits by using improved grains. The new cereal varieties are faster maturing and pest resistant, and they flourish with the replenished soil nutrients. As a result, the crop yield rises in a single year to three tons of maize per hectare, or six tons in total. The income per capita therefore rises to \$150 (three tons per hectare times two hectares at \$150 per ton divided by six people).

Resource Boom

The farm household is able to move to a much larger and more fertile farm after the government's success in controlling the breeding of black flies, which spread African river blindness. Suddenly there are thousands of hectares of new farmland and a significant expansion of production capacity as a result. Incomes rise and hunger falls as each household in the newly opened region is able to triple its previous food output.

These four pathways to higher income are the main ways that economies grow, albeit in much more complicated settings than I have just described. In actual economies, a rise in gross domestic product (GDP)

per capita is typically the result of most or all of these four processes simultaneously at work: saving and capital accumulation, increasing specialization and trade, technological advance (and a resulting rise in output for a given amount of inputs), and greater natural resources per person (and a resulting increase in the level of output per person). Although I have illustrated these pathways to rising income at the level of an individual household, in fact each of these processes operates through the interactions of thousands or millions of households linked together by markets and collective actions through public policies and public investments.

What, instead, could lead to a *reduction* of household income per capita? In general, an economy can rewind the clock, moving backward rather than forward. Here are a number of ways that this might happen.

Lack of Saving

Suppose that the household is chronically hungry and, therefore, consumes all of the four tons of maize, leaving nothing to sell to the market and no income to use to purchase a new plow. In fact, during the year, the existing plow breaks down. Next year's crop falls below four tons, and household income per person declines. The broken plow counts as capital depreciation, or a fall in the amount of capital available per worker.

Absence of Trade

In another case, suppose the household hears about the vanilla opportunity, but is unable to make use of it. There may be no road linking the farm and the regional market, so it is not possible for the household to market the vanilla or to use the proceeds to buy food. As a result, the household passes up the opportunity to specialize in a cash crop and stays with the food crop on which it depends to stay alive. Trade can similarly be hampered, or blocked altogether, by violence (which impedes the reliable shipment of goods), monetary chaos (so that money is not a reliable medium of exchange), price controls, and other forms of government intervention that may impede specialization and trade.

Technological Reversal

What if, as often happens in rural Africa, the children lose their mother and father to HIV/AIDS? The oldest child takes charge, but has not yet had time to master proper farming techniques. The next crop fails, and the children must depend on other households in the village. The family income has declined to zero because the level of technological knowledge has actually declined. Technological know-how is not automatically inherited. Each new generation must learn technological expertise.

Natural Resource Decline

To illustrate another possibility, not only is there no additional land, but part of the existing farmland gives way to environmental decline. Specifically, the household has not been able to afford fertilizer and does not know about nitrogen-fixing trees, so the nitrogen in the farmland is seriously depleted. The result is that only one hectare remains in production, and household annual income falls to a devastating \$50 per capita (two tons times \$150 per ton divided by six).

Adverse Productivity Shock

A natural disaster, perhaps a flood, drought, heat wave, frost, pests, or disease in the household (for example, a bout of malaria), or some combination, wipes out household income for the year.

Population Growth

A generation passes. The parents die, and the two hectares are divided between the two sons. Each son now has a wife and four children. Assuming that crop yields of two tons per hectare remain unchanged, household income per capita has declined by half because the size of the population living on the same farm has doubled. This experience has been prevalent in rural Africa's in the most recent generations.

These simple illustrations show the many ways that even a simple one-household "economy" may grow, as well as the many ways that the household economy can decline. The first task of a development specialist looking at the conditions in any particular country is to under-

stand which of these various processes is working and which is not. Knowing that an economy is in decline is not enough. We must know why the economy is failing to achieve economic growth if we are to take steps to establish or reestablish it.

WHY COUNTRIES FAIL TO ACHIEVE ECONOMIC GROWTH

The most common explanation for why countries fail to achieve economic growth often focuses on the faults of the poor: poverty is a result of corrupt leadership and retrograde cultures that impede modern development. However, something as complex as a society's economic system has too many moving parts to presume that only one thing can go wrong. Problems can occur in different parts of the economic machine and can sometimes cascade, bringing the machine to a near halt.

In economic growth, eight major categories of problems can cause an economy to stagnate or decline. I have witnessed these kinds of disasters in many parts of the world. Each has its own different appropriate course of treatment; therefore, a good diagnosis is crucial.

The Poverty Trap: Poverty Itself as a Cause of Economic Stagnation

The key problem for the poorest countries is that poverty itself can be a trap. When poverty is very extreme, the poor do not have the ability—by themselves—to get out of the mess. Here is why: Consider the kind of poverty caused by a lack of capital per person. Poor rural villages lack trucks, paved roads, power generators, irrigation channels. Human capital is very low, with hungry, disease-ridden, and illiterate villagers struggling for survival. Natural capital is depleted: the trees have been cut down and the soil nutrients exhausted. In these conditions the need is for more capital—physical, human, natural—but that requires more saving. When people are poor, but not utterly destitute, they may be able to save. When they are utterly destitute, they need their entire income, or more, just to survive. There is no margin of income above survival that can be invested for the future.

This is the main reason why the poorest of the poor are most prone to becoming trapped with low or negative economic growth rates. They are too poor to save for the future and thereby accumulate the capital

per person that could pull them out of their current misery. Table 1 shows the rate of gross domestic saving as a share of GDP for countries at different income levels. Clearly, the poorest of the poor have the lowest saving rate because they are using their income merely to stay alive.

By Income Level in 2002, in % of GDP	
Upper-Middle-Income Countries	25%
Lower-Middle-Income Countries	28%
Low-Income Countries	19%
Least-Developed Countries	10%

Source: World Bank (2004).

In fact, the standard measures of domestic saving, based on the official national accounts, overstate the saving of the poor because these data do not account for the fact that the poor are depleting their natural capital by cutting down trees, exhausting soils of their nutrients, mining their mineral, energy, and metal deposits, and overfishing. These forms of natural capital are not monitored in the official national accounts data and, as a result, their "depreciation" or depletion is not recognized as a form of negative saving. When a tree is cut down and sold for fuelwood, and not replanted, the earnings to the logger are counted as income, but instead should be counted as a conversion of one capital asset (the tree) into a financial asset (money).

Physical Geography

Even if the poverty trap is the right diagnosis, it still poses the question of why some impoverished countries are trapped and others are not. The answer often lies in the frequently overlooked problems of physical geography. Americans, for example, believe that they earned their wealth all by themselves. They forget that they inherited a vast continent rich in natural resources, with great soils and ample rainfall, immense navigable rivers, and thousands of miles of coastline with dozens of natural ports that provide a wonderful foundation for sea-based trade.

Other countries are not quite so favored. Many of the world's poorest countries are severely hindered by high transport costs because they are landlocked; situated in high mountain ranges; or lack navigable rivers, long coastlines, or good natural harbors. Culture does not ex-

plain the persistence of poverty in Bolivia, Ethiopia, Kyrgyzstan, or Tibet. Look instead to the mountain geography of a landlocked region facing crushing transport costs and economic isolation that stifle almost all forms of modern economic activity. Adam Smith was acutely aware of the role of high transport costs in hindering economic development. He stressed, in particular, the advantages of proximity to low-cost, sea-based trade as critical, noting that remote economies would be the last regions to achieve economic development.

As by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to sub-divide and improve itself, and it is frequently not till a long time after that those improvements extend themselves to the inland part of the country.

Other kinds of geographical distress are also at play. Many countries are trapped in arid conditions with low agricultural productivity or vulnerability to prolonged droughts. Most of the tropics have ecological conditions that favor killer diseases like malaria, schistosomiasis, dengue fever, and dozens of others. Sub-Saharan Africa, in particular, has an ideal rainfall, temperature, and mosquito type that make it the global epicenter of malaria, perhaps the greatest factor in slowing Africa's economic development throughout history. Jared Diamond, in his wonderful book *Guns, Germs, and Steel*, gives a magnificent account of how geography helped shape the early stages of human civilization. He offers scintillating insights into how the Americas, Africa, Europe, and Asia differed in terms of indigenous crop species, animals for domestication, ease of transport, possibilities for the spread of technology, disease ecology, and other geographically related factors in economic development. Some of these factors, of course, became much less or not at all important with the advent of modern transportation and communications and the resulting transfer of crops and animal species across different regions of the world.

Fortunately, none of these conditions is fatal to economic development. It is time to banish the bogeyman of geographical determinism, the false accusation that claims about geographical disadvantage are also claims that geography single-handedly and irrevocably determines the economic outcome of nations. The point is only that these

adversities require countries to undertake additional investments that other, more fortunate, countries did not have to make. Roads can be built from a landlocked country to a port in another country. Tropical diseases can be controlled. Arid climates can be overcome with irrigation. Adverse geography poses problems that can be solved, typically through physical investments and good conservation management. But adverse geography raises the costs of solving the problems of farming, transport, and health, and thereby makes it much more likely that a country will be caught in a poverty trap.

Fiscal Trap

Even when the private economy is not impoverished, the government may lack the resources to pay for the infrastructure on which economic growth depends. Governments are critical to investing in public goods and services like primary health care, roads, power grids, ports, and the like. The government may lack the financial means to provide these public goods, however, for at least three reasons. First, the population itself may be impoverished, so taxation of the population is not feasible. Second, the government may be inept, corrupt, or incapacitated, and thereby unable to collect tax revenues. Third, the government may already be carrying a tremendous load of debt (for example, debt carried forward from an earlier decade), and must use its limited tax revenue to service the debt rather than to finance new investments. This third case is often called a debt overhang. Debt from the past crushes the prospects for growth in the future. In such circumstances, debt cancellation may be the only way to give the country a fresh start on a path of economic development.

Governance Failures

Economic development requires a government oriented toward development. The government has many roles to play. It must identify and finance the high-priority infrastructure projects, and make the needed infrastructure and social services available to the whole population, not just a select few. The government must create an environment conducive to investments by private businesses. Those investors must believe that they will be allowed to operate their business and to keep their future profits. Government must exercise self-restraint in demanding

bribes or side payments. Governments must also maintain internal peace and safety so the safety of persons and property is not unduly threatened, maintain judicial systems that can define property rights and honestly enforce contracts, and defend the national territory to keep it safe from invasion.

When governments fail in any of these tasks—leaving huge gaps in infrastructure, or raising corruption to levels that impair economic activity, or failing to ensure domestic peace—the economy is sure to fail, and often to fail badly. Indeed, in extreme cases, when governments are unable to perform their most basic functions, we talk about “state failures,” which are characterized by wars, revolutions, coups, anarchy, and the like. We will see later on that state failures are often not only the cause of economic disaster, but also the last stage of it. State failure and economic failure can chase each other in a dizzying and terrifying spiral of instability.

Cultural Barriers

Even when governments are trying to advance their countries, the cultural environment may be an obstacle to development. Cultural or religious norms in the society may block the role of women, for example, leaving half of the population without economic or political rights and without education, thereby undermining half of the population in its contribution to overall development. Denying women their rights and education results in cascading problems. Most important, perhaps, the demographic transition from high fertility to low fertility is delayed or blocked altogether. Poor households continue to have six or seven children because the woman's role is seen mainly as child rearing, and her lack of education means that she has few options in the labor force. In these settings women often lack basic economic security and legal rights; when they are widowed, their social circumstances turn even more dreadful, and they are left completely impoverished without hope for improvement.

Similar cultural barriers may apply to religious or ethnic minorities. Social norms may prevent certain groups from gaining access to public services (such as schooling, health facilities, or job training). These minorities may be blocked from entering universities or public sector jobs. They may face harassment in the community, including boycotts of their businesses and physical destruction of property. In extreme cir-

cumstances, as occurred in East Africa with the Indian community, wholesale “ethnic cleansing” may ensue, with many fleeing for their lives.

Geopolitics

It takes two to trade. Trade barriers erected by foreign countries can impede a poor country's economic development. These barriers are sometimes political, as when a powerful country imposes trade sanctions on a regime that it does not like. These sanctions may aim to weaken or topple a despicable regime, but often they simply impoverish the population of the targeted country without toppling the regime. Many factors in addition to trade that may affect a country's development can be manipulated from abroad for geopolitical reasons.

Lack of Innovation

Consider the plight of inventors in an impoverished country. Even if these inventors are able to develop new scientific approaches to meet local economic needs, the chances of recouping investments in research and development through later sales in the local market are very low. The local purchasing power to buy a new product is tiny, and will not provide for sufficient profits if an invention is successfully brought to market, even if the impoverished country has state-of-the-art patent legislation. The problem is not the property rights to the invention, but the size of the market.

There is, therefore, a huge difference between rich and poor countries in their tendency to innovate. Rich countries have a big market, which increases the incentive for innovation, brings new technologies to market, further raises productivity and expands the size of the market, and creates new incentives for innovation. This momentum creates, in effect, a chain reaction, which economists call endogenous growth. Innovation raises the size of the market; a larger market raises the incentives for innovation. Therefore, economic growth and innovation proceed in a mutually reinforcing process.

In the rich countries of North America, Western Europe, and East Asia, the process of massive investment in research and development, leading to sales of patent-protected products to a large market, stands at the core of economic growth. Advanced countries are typically investing 2 percent or more of their gross national product directly into the research and development process, and sometimes more than 3 percent

of GDP. That investment is very sizable, with hundreds of billions of dollars invested each year in research and development activities. Moreover, these investments are not simply left to the market. Governments invest heavily, especially in the early stages of R and D (more in R, research, than in D, development, although government finance is present at both stages).

In most poor countries, especially smaller ones, the innovation process usually never gets started. Inventors do not invent because they know that they will not be able to recoup those large, fixed costs of developing a new product. Impoverished governments cannot afford to back the basic sciences in government labs and in universities. And the scientists do not stay. The result is an inequality of innovative activity that magnifies the inequality of global incomes. Although today's low-income countries have 37 percent of the world's population and 11 percent of the world's GDP (adjusted for differences in purchasing power), these countries accounted for less than 1 percent of all of the U.S.-registered patents taken out by inventors in the year 2000. The top twenty countries in patenting, all high-income countries, account for 98 percent of all patents.

Over the span of two centuries, the innovation gap is certainly one of the most fundamental reasons why the richest and the poorest countries have diverged, and why the poorest of the poor have not been able to get a foothold on growth. The rich move from innovation to greater wealth to further innovation; the poor do not. Fortunately, there are a few opportunities for innovation, although these are not as robust as we would hope.

The first is the diffusion of technology. Even when countries are not inventors of technology, they can still be beneficiaries through the importation of technology. All countries today, without exception, are using personal computers, and cell phones are reaching most parts of the world as well, even very poor places. Innovations can be imported through consumer goods, capital imports by business (in the form of machinery, for example), foreign direct investment (in which a high-tech firm sets up a factory in a poor country), or textbooks, word of mouth, and reverse engineering. History is replete with examples in which new capital goods and blueprints were simply pilfered and brought to a new location.

However, the importation of technology can be frustrated in the poorest of the poor countries. These countries may be too poor to pur-

chase the capital goods, and they may be unattractive as places for foreign investment, given their lack of infrastructure. But there is often a much deeper problem. Many of the key breakthroughs in technology developed in the rich countries are relevant for the particular ecological conditions of the rich countries, and are not especially useful in the tropical, or arid, or mountain environments where so many of the extreme poor live today. The massive investments in biomedical research in the rich countries, more than \$70 billion, largely overlook the challenges of tropical diseases such as malaria. Rich-country funding is, not surprisingly, aimed at rich-country diseases.

Many poor East Asian countries were initially successful in raising technology not so much through home-grown innovation as through their success in attracting foreign investors who brought the technologies with them. As early as the late 1960s, Texas Instruments, National Semiconductor, and Hewlett Packard, among others, set up operations in Singapore, Penang Island (Malaysia), and other parts of East Asia. They saved a lot of money but also introduced what were otherwise very poor economies to sophisticated scientific technology and advanced management processes. If a poor country can become an attractive place for high-technology enterprises to conduct part of their production activities, then they can become a home, even at a low level of development, to quite sophisticated production and management techniques. Under the right circumstances, hosting such activities on the home turf can then lead to a diffusion of knowledge, and participation in modern production, so that those benefits can then be transferred to domestic firms.

The process even works in technologically humbler sectors like apparel. When foreign investors such as Wal-Mart, J. C. Penney, Yves Saint Laurent, and others outsource their production to Dhaka, they bring in the latest fashion designs and integrate the local production unit into a global supply chain. The local production units do the cutting, stitching, labeling, and packaging of the merchandise, which is designed and ultimately destined for the United States and Europe. These factories become important training grounds for climbing the technology ladder, moving from basic technology up to the next steps. A cutting and stitching company may take 100 percent of the fashion design orders from abroad at the beginning, but later on, once it gets the hang of it, it may start hiring its own designers, and start selling not only the labor of the assembly operation, but also the designs. That progression has happened over and over again throughout the world.

What prevents this process from taking hold everywhere in the world? Eventually it can, but in the early stages the process almost always starts right at a port. The accompanying maps, 3 and 4, show the locations of multinational companies in the electronics sector and in textiles and garment manufacturing, illustrating the coastal location of these firms, especially in their operation in the poor countries. Hinterlands have lagged far behind in their ability to attract these kinds of industries.

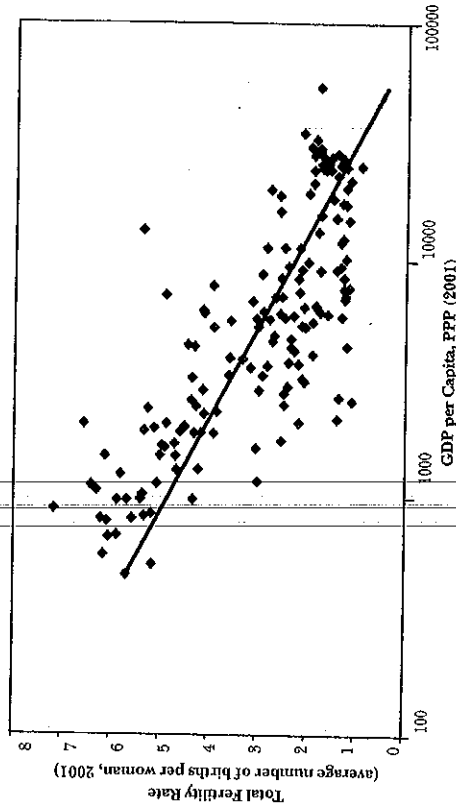
It is no coincidence that booming sites for foreign investment—such as Penang Island (Malaysia), Singapore, Taiwan, Hong Kong, and Mauritius—are all islands on the Asia-Europe trade route. It is no coincidence that China's leading economic city, Shanghai, sits right on the coast at the mouth of the Yangtze River. It is no coincidence that Mexico's assembly sector is right along the Rio Grande River, since Mexico's economically relevant "coast" is its border with the United States. The same geographical advantages are seen in many other places that have received substantial foreign investments in recent years. Wrocław, Poland, and Bratislava, Slovakia, and Lada Bolislav, Czech Republic, and Lubjiana, Slovenia, have all reaped an extra bonus of jobs and technology transfer by virtue of their proximity to Western European markets.

The Demographic Trap

Most countries have experienced a significant decline in fertility rates in recent decades. Half the world, including all of the rich world, is at or near the so-called replacement rate of fertility, in which each mother is raising one daughter on average to "replace" her in the next generation. The replacement rate is two children, one of whom, on average, is a girl. (In fact, the replacement rate is a little bit above two, to take into account the possibility that the daughter will not survive to reproductive age.) The poorest of the poor countries, by contrast, are stuck with fertility rates of five or more. On average, a mother is raising at least two girls, and in some cases three girls or more. In those circumstances, national populations double each generation.

However, the demographic transition has occurred in most parts of the world. Moreover, although Western Europe's demographic transition took a century or more, the transition among developing countries in the twentieth century has occurred over decades or just a few years. In Bangladesh, the total fertility rate fell from 6.6 in 1975 to just 3.1 in 2000, as we saw plainly with the BRAC microfinance group in the village

Figure 1: Fertility and Economic Development



Note: X axis is on a logarithmic scale.
Source: Calculated using data from World Bank (2004).

outside of Dhaka. In Iran following the 1979 Islamic revolution, the transformation was even faster, from 6.7 in 1980 to just 2.6 in 2000. The Iranian revolution, it seems, brought a generation of young girls into the schools, and this boom in girls' literacy has translated rapidly and dramatically into the desire for fewer children.

One reason for a poverty trap is a demographic trap, when impoverished families choose to have lots of children. These choices are understandable, yet the results can be disastrous. When impoverished families have large numbers of children, the families cannot afford to invest in the nutrition, health, and education of each child. They might only afford the education of one child, and may send only one son to school. High fertility rates in one generation, therefore, tend to lead to impoverishment of the children and to high fertility rates in the following generation as well. Rapid population growth also puts enormous stresses on farm sizes and environmental resources, thereby exacerbating the poverty.

As with the other obstacles to economic growth, the demographic trap is avoidable. Girls' education would allow women to more easily join the labor force, increasing their earning power and the "cost" of staying home to bear children. Education, law, and social action can empower women to more easily make fertility choices (instead of having those

choices made solely by husbands or others in the family). Children can be treated for disease to better ensure their survival, meaning that parents can have fewer children, feeling secure that they will survive to take care of their parents in old age. Family planning and reproductive health services can be provided even in very poor communities. All of this requires money, however, and money is lacking in the poorest economies.

Figure 1 shows how the total fertility rate in the year 2001 compares with the country's national income per person. The total fertility rate, and hence the population growth rate, is stunningly high especially in the poorest parts of the world. Here is the demographic trap in vivid perspective: the poorest places, many with the greatest obstacles to modern economic growth, are also the places where families have the most numbers of children, and where the populations continue to soar. High population growth leads to deeper poverty, and deeper poverty contributes to high fertility rates.

WHERE GROWTH HAS FAILED

Map 5 shows all of the countries in the world where per capita GDP declined during the twenty-year period between 1980 and 2000. Notice that not one single rich country in North America, Western Europe, or East Asia failed to achieve economic growth! All of the problems lie in the developing world. Forty-five countries had negative growth in GDP per capita. (Only countries with a population of at least two million people in 1980 were examined in order to avoid the idiosyncrasies of some very small countries.)

It is illuminating to divide the world's economies into the following six categories, depending on their per capita income in 1980:

- All low-income countries
- Middle-income oil exporters
- Middle-income postcommunist countries
- Other middle-income countries
- High-income oil exporters
- All other high-income countries

Table 2: Country Classifications in 1980

	Negative Economic Growth	Positive Economic Growth	Totals
Low-Income Countries	Angola Bolivia Burundi Cameroon Central African Rep. Congo, Dem. Rep. Côte d'Ivoire Ecuador Ethiopia Guatemala Haiti Honduras Jordan Kenya Madagascar Mali Niger Nigeria Peru Philippines Rwanda Sierra Leone Togo Zambia	Bangladesh Benin Burkina Faso Cambodia Chad Chile China Dominican Rep. Egypt El Salvador Ghana Guinea India Indonesia Iran Jamaica Korea, Rep. Lao PDR Malawi Malaysia Morocco Mozambique Nepal Pakistan Papua New Guinea Senegal Sri Lanka Sudan Syria Tanzania Thailand Tunisia Turkey Uganda Vietnam Yemen Zimbabwe	25 37 (-) (+)
Middle-Income Countries	Armenia Belarus Croatia Georgia Kazakhstan Kyrgyz Rep. Lania Lithuania Moldova Romania Russia Tajikistan Turkmenistan Ukraine Uzbekistan Venezuela	Albania Bulgaria Czech Republic Hungary Poland Slovak Rep.	15 6 (-) (+)
High-Income Countries	Algeria Saudi Arabia	Argentina Brazil Colombia Costa Rica Greece Hong Kong Lebanon Mexico Portugal Singapore Spain Uruguay	2 0 (-) (+)
	South Africa Paraguay	Australia Austria Belgium Canada Denmark Finland France Germany Israel Italy Japan Netherlands New Zealand Norway Sweden Switzerland United Kingdom United States	2 12 (-) (+)
	Non-Fuel Exporters		0 18 (-) (+)
	Fuel Exporters		1 0 (-) (+)

Source: Calculated using data from World Bank (2004). Includes only countries with population greater than 2 million in 1980.

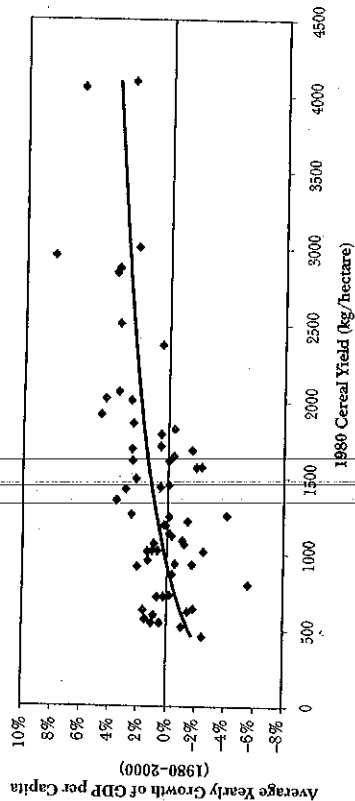
The accompanying table 2 lists the countries in each category, divided into two columns: those that experienced positive economic growth and those that experienced outright economic decline. The numbers of countries in each category are shown in the two columns at the right of the table. There are several key points. First, the biggest problem with economic decline is indeed in the poorest countries, especially but not only in sub-Saharan Africa. The second observation is that except for oil-exporting and ex-Soviet countries, all high-income countries achieved economic growth, as did most middle-income countries. The only growth failure among high-income countries occurred in Saudi Arabia, an oil-exporting country. Among the middle-income countries, the vast proportion of growth failures were in the oil-exporting and postcommunist countries. In the rest of the middle-income countries, twelve out of fourteen countries enjoyed positive economic growth.

The economic declines in the oil-producing and postcommunist countries reflect very unusual circumstances. The oil-rich states are, of course, not impoverished countries, but instead are middle-income and high-income countries where the economic activity depends overwhelmingly on oil exports. These economies rise and fall in line with the "real" price of oil, that is, the price of oil relative to the price of imported goods such as machinery and consumer goods. The real price of oil soared during the 1970s, leading to the massive growth in living standards of these economies, but during the 1980s and 1990s, the oil price fell sharply, leading to a collapse of living standards. If there is a lesson here, it is that an economy dependent on a single product (or a small number of products) for export is bound to experience high volatility as the relative price of the product fluctuates in world markets. Since oil is highly volatile, the real income of the oil economies has similarly been highly volatile.

The economic decline in postcommunist countries is even more of a special case. These countries have experienced a one-time decline in GDP per capita as they changed over from a failed communist system to a market economy. Even in the cases of the strongest of the so-called transition economies—the Czech Republic, Hungary, and Poland—there was a period of sharp reduction in GDP per capita for a few years as old heavy industries linked to the Soviet economy declined or disappeared in bankruptcy and new sectors took time to develop. The result

was what economists called a transition recession. By the late 1990s, the postcommunist countries had resumed economic growth, but from a lower GDP per capita than before the Soviet collapse.

Figure 2: Cereal Yield and Growth
Among Low-Income Countries



Source: Calculated using data from World Bank (2004).

WHY SOME POOR COUNTRIES GREW AND OTHERS DECLINED

Poor countries have a significant chance of falling into a poverty trap. Out of the fifty-eight nonoil countries with per capita incomes below \$3,000, twenty-two (or 38 percent) experienced an outright decline. Yet the thirty-six other countries enjoyed economic growth. How is it that some very poor countries escaped the ravages of a poverty trap while the rest did not? Comparing those countries that made it and those that did not, the success stories show certain characteristics. The most important determinant, it seems, is food productivity. Countries that started with high cereal yields per hectare, and that used high levels of fertilizer input per hectare, are the poor countries that tended to experience economic growth. Countries that began with very low yields in 1980 are the countries that tended to experience economic decline between 1980 and 2000. Figure 2 illustrates this point: among low-income countries, high cereal yields in 1980 (measured on the horizontal axis) are associated with high economic growth rates (measured on the vertical axis).

The poverty trap is mainly a rural phenomenon of peasant farmers caught in a spiral of rising populations and stagnant or falling food production per person.

Table 3: East Asia and Sub-Saharan Africa in 1980

	East Asia	Sub-Saharan Africa
Cereal yield (kg/hectare)	2016	927
Irrigated land (% of cropland)	37	4
Share of crop area planted to modern varieties (%)	43	4
Adult literacy rate (%)	70	38
Infant mortality rate (per 1000 live births)	56	116
Total fertility rate (births per woman)	3.1	6.6

Source: Calculated using data from World Bank (2004).

The biggest difference between Africa and Asia is that Asia has had high and rising food production per capita during recent decades, whereas Africa has low and falling food production per capita. The Asian countryside is densely populated, with a relatively extensive road network that can carry fertilizer to the farms and farm output to the markets. Farmers use fertilizers and irrigation, and food yields are high. Donor agencies gave ample support to the development of new high-yield varieties in Asia. Under these conditions Asian farmers were able to adopt high-yield crop varieties that produced the famous Green Revolution of rising food production per farmer. The African countryside is much less densely populated, with an absence of roads to transport fertilizers and crops. Farmers do not use fertilizer on food crops, and depend on rainfall rather than irrigation. Donors have woefully underfunded the scientific efforts toward improved varieties appropriate for African conditions. Under these much harsher conditions, Africa's farmers were not able to benefit much, if at all, from the Green Revolution development of high-yield varieties of food crops. Although both Asia and Africa were very poor in 1980, Asian agriculture was significantly outperforming African agriculture, as shown in table 3. This performance has provided a platform for Asia's extraordinary growth since then.

There are other tendencies apparent in the data. The Asian countries that experienced growth started in 1980 with better social conditions: higher literacy, lower infant mortality, and lower total fertility rates. They were, therefore, less prone to fall into a demographic trap of

rapidly rising populations pressing on a limited amount of farmland. Once again, the Asian peasants were somewhat better off than their African counterparts. Another tendency is that poor countries with large populations seem to have done better than poor countries with smaller populations. The larger population probably increased the size of the domestic market, making it more appealing to foreign and domestic investors. Perhaps it was easier to introduce key infrastructure such as roads and power supplies in countries with larger populations, since these infrastructure networks are characterized by large initial costs of construction that are more easily financed by larger and more densely populated economies.

WHY LATIN AMERICA'S MIDDLE-INCOME COUNTRIES FAILED TO THRIVE

The poverty trap of the poorest countries is less puzzling, in some ways, than the stagnation that gripped a number of countries in Central and South America during the 1980s and 1990s. Table 2 shows that countries like Ecuador, Guatemala, Paraguay, and Peru experienced outright economic declines. These are not, in general, destitute countries, though they have destitute populations within them. How can we account for their development failures?

I take up that question in more detail later. It will suffice here to note three characteristics of these economies. First, all of these economies face particular geographical difficulties. Ecuador and Peru are Andean countries, with populations divided between a lowland tropical environment and a mountainous highland environment. Transport conditions are hazardous and expensive. Paraguay, of course, is landlocked. Guatemala is a mix of mountains and low-lying tropical rain forests. Second, the Central American and Andean societies suffer from sharp social divisions, typically along ethnic lines. The European-descended population tends to be much richer than the indigenous and mestizo (mixed) populations. Europeans conquered the native populations, repressed them in many ways, and were generally uninterested in investing in their human capital until very recently. Politics have therefore been highly conflict laden and often violent. Third, these countries are all vulnerable to extreme external shocks, both natural and economic. Natural hazards include earthquakes, droughts, floods, and landslides. Economic hazards

include the huge instabilities in international prices for the leading commodity exports of these countries, such as copper, fish meal, coffee, bananas, and other agricultural and mining products.

CONTINUING EXTREME POVERTY IN THE MIDST OF ECONOMIC GROWTH

Even among the poor countries in Asia that experienced marked economic growth, extreme poverty often continues to afflict significant parts of the population. Economic growth is rarely uniformly distributed across a country. China's coastal provinces, linked to world trade and investment, have grown much more rapidly than the hinterland to the west of the country. India's southern states, also deeply integrated in world trade, have experienced much faster economic development than the northern regions in the Ganges valley. Thus, even when average economic growth is high, parts of a country may be bypassed for years or decades.

Another reason for persistent poverty is the failure of government. Growth may enrich households linked to good market opportunities, but it may bypass the poorest of the poor even within the same community. The very poor are often disconnected from market forces because they lack the requisite human capital—good nutrition and health, and an adequate education. It is vital that social expenditures directed at human capital accumulation reach the poorest of the poor, yet governments often fail to make such investments. Economic growth enriches households, but it is not taxed sufficiently to enable governments to increase social spending commensurately. Or even when governments have the revenue, they may neglect the poorest of the poor if the destitute groups are part of ethnic or religious minorities.

A third possible reason for continued poverty in the midst of growth is cultural. In many countries, women face extreme cultural discrimination, whether or not those biases are embedded in the legal and political systems. In South Asia, for example, there are an overwhelming number of case studies and media reports of young women facing extreme undernutrition within the household even when there is enough to go around. The women, often illiterate, are poorly treated by in-laws and lack the social standing and perhaps legal protections to ensure their own basic health and well-being.

In short, there are myriad possibilities for the persistence of poverty even in the midst of economic growth. Only a close diagnosis of particular circumstances will allow an accurate understanding. Policy makers and analysts should be sensitive, however, to geographical, political, and cultural conditions that may each play a role.

THE GREATEST CHALLENGE: OVERCOMING THE POVERTY TRAP

When countries get their foot on the ladder of development, they are generally able to continue the upward climb. All good things tend to move together at each rising rung: higher capital stock, greater specialization, more advanced technology, and lower fertility. If a country is trapped below the ladder, with the first rung too high off the ground, the climb does not even get started. The main objective of economic development for the poorest countries is to help these countries to gain a foothold on the ladder. The rich countries do not have to invest enough in the poorest countries to make them rich; they need to invest enough so that these countries can get their foot on the ladder. After that, the tremendous dynamism of self-sustaining economic growth can take hold.

Economic development works. It can be successful. It tends to build on itself. But it must get started.