

Division



Density and distance, the dimensions of economic geography examined in the two previous chapters, matter for the development of countries and regions. Over the past two centuries, global gross domestic product (GDP) has grown about 2.3 percent a year, an almost 50-fold increase in constant dollars.¹ But growth has not been uniform. Half of global GDP today is produced on just 1.5 percent of the world's land, which would fit comfortably into Algeria. This dense economic mass is home to about a sixth of the world's people.²

High density reflects the self-reinforcing benefits of proximity between economic agents across spatial scales—local, regional, and international. Distance also matters for countries and world regions. For the past 50 years, by far the largest share of global economic activity has been concentrated in North America, Western Europe, and Northeast Asia (see map 3.1). Being near these largest markets for products and supplies opens great opportunities. Indeed, the correlation between access to markets and economic growth is strong.

But it is the persistence of divisions between nation-states that sets the processes of economic geography apart for countries and regions. The latest wave of globalization, which began after World War II, has been associated with a borderless world. In 1990 Kenichi Ohmae famously pronounced that “borders have effectively disappeared.”³ For some world regions and some transactions across borders, this reflects reality. But borders, rather than disappear, have tripled in the past 50 years. There are now about

600 land borders between nations (see figure 3.1).⁴ And their number may continue to increase if federated states split apart, if minorities within nations achieve self-determination, and if some of the remaining 70 dependencies seek independence.⁵

This chapter shows how divisions affect economic development, how geography and cultural history contribute to persistent divisions, and how countries impose barriers to productive interaction with their neighbors and the rest of the world. Economies benefit from gradually lowering barriers, and rich countries tend to have the lowest barriers to trade and factor mobility. Countries that have integrated *regionally* benefit from growth spillovers, larger home markets, and scale economies in production and some types of public services. Some countries within a region may initially prosper more than others, but living standards eventually converge in regions that have integrated. And in a world with economic activity and purchasing power concentrated in a few regions, countries that have integrated *globally* benefit from access to those markets and sources of investment. This chapter makes the case for countries to promote such integration.

The main findings:

- ***Divisions between countries make for thicker borders in the developing world.*** Borders restrict the flow of goods, capital, people, and ideas everywhere. But larger countries with big markets may get by with more restrictive borders. Small countries have to worry more.

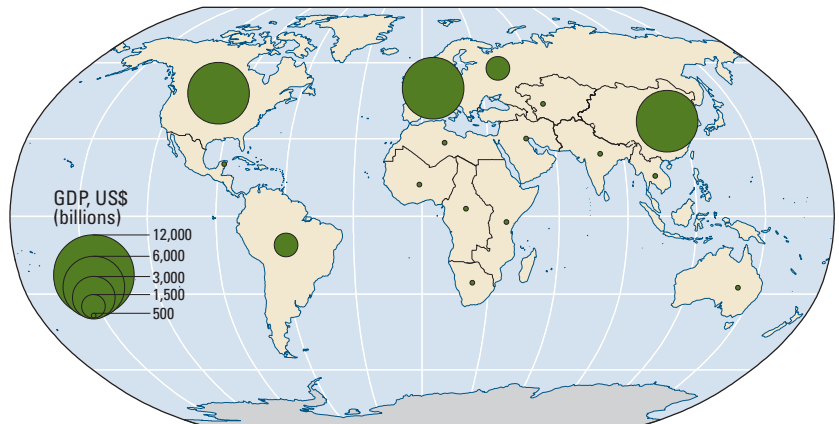
Some types of divisions, like being landlocked, are beyond the control of individual countries. Others are self-imposed. And as countries develop, they gradually lower almost all types of barriers.

- **Economic mass is concentrated in North America, Western Europe, and North-east Asia.** And only East Asia has significantly increased its share of global GDP in recent decades. This global concentration matters greatly for the development prospects of today's lagging world regions, and increasing their access to these large world markets must be a priority for global development policy.
- **Within world regions, economic development tends to be accompanied by an initial divergence in living standards between countries, followed by convergence.** Basic health and education indicators show improvements in almost all world regions, but there is some divergence in incomes between the richest and poorest countries. The increasing inequality between countries within a region reverses as lagging countries benefit from growth spillovers from leading countries.
- **Overcoming divisions between countries regionally and globally is essential for sustained progress.** This points to the importance of facilitating access to global markets and promoting regional integration in all its many forms (see chapters 6 and 9).

Defining division

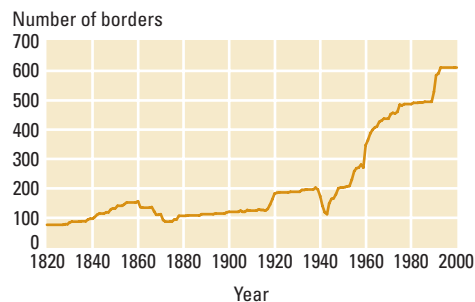
Borders and divisions are not synonyms. National borders enclose people with shared characteristics, providing a sense of place and belonging that contributes to social welfare. They also generate manageable units for governing society. And well defined and settled, they provide security and stability, yielding considerable economic benefits. Divisions, by contrast, arise when borders are poorly managed. They range from moderate restrictions on the flow of goods, capital, people, and ideas to more severe divisions triggered by territorial disputes, civil wars, and conflicts between countries. Borders are not a problem in themselves. But the consequences for economic development are quite different when the countries separated by

Map 3.1 Global GDP is concentrated in a few world regions, 2006



Source: World Bank 2007j.

Figure 3.1 The number of borders between nations tripled in the past 50 years



Source: Stinnett and others 2002.

those borders are integrated in a functional economic community (the Czech Republic and the Slovak Republic) or divided by conflict, reducing the scope for further integration (Eritrea and Ethiopia).

Viewed through an economic lens, some borders are much wider than others (see map 3.2). The width or thickness of each country's borders is proportional to restrictions that each country imposes on the flow of goods, capital, people, and ideas with all other countries.⁶ The wider the border, the more the country limits trade, travel, and the flow of factors of production.

- Economic borders are narrow in North America, Western Europe, Japan, Australia, and New Zealand; are wide in Asia, Africa, and Eastern Europe; and are in between in Latin America. Countries with wide borders include emerging economies in East Asia and countries in Sub-Saharan Africa, which for decades have had low growth.

Map 3.2 Some borders are much wider than others



Source: WDR 2009 team.

Note: The width of borders is proportional to a summary measure of each country's restrictions to the flow of goods, capital, people, and ideas with all other countries. Gray areas = insufficient data.

- Borders of the same width appear narrower around larger countries. This reflects the reality that large countries can often get away with more restrictive policies. Small countries depend more on openness to overcome small markets and production scales.
- Some countries with narrow borders are surrounded by countries with restrictive policies, making it more difficult for them to benefit from openness than for countries in more open neighborhoods.
- This is true more for countries that are open but landlocked, such as Armenia, Uganda, and Zambia, than for those that are open and coastal, such as Chile or Georgia. Some coastal countries, by contrast, have such high restrictions that they might as well be landlocked.

Comparing border widths with economic status confirms that wealthier countries typically have lower border restrictions (see figure 3.2).⁷ As a country develops, it strengthens the institutions that manage its borders and regulate the flow of goods and factors of production. It also becomes more integrated into the global economy and

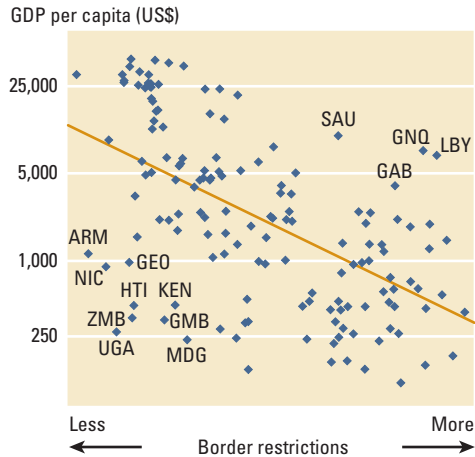
opens its borders to benefit from interactions with other countries, promoting further development. But there are exceptions. Some upper-middle-income countries maintain high restrictions—all of them oil exporters: Equatorial Guinea, Gabon, Libya, and Saudi Arabia (upper right of figure 3.2). And some poorer countries have greatly reduced border restrictions, among them the landlocked countries of Armenia, Uganda, and Zambia, as well as the coastal countries of The Gambia, Georgia, Haiti, Kenya, Madagascar, and Nicaragua (lower left).

How countries maintain divisions

Countries choose how permeable their borders are, affecting the flows of goods, capital, people, and ideas. And the effects of division change as countries become more open to some flows and restrict others.

Goods and services. Borders reduce trade. A study in the mid-1990s found that trade between Canadian provinces is, on average, more than 20 times greater than trade between those provinces and equally distant places in the United States. That implies a “border-width” equivalent to increasing the trade distance by 10,500 miles.⁸ More recent

Figure 3.2 Rich countries tend to have lower border restrictions



Source: WDR 2009 team (see note 6).
 Note: GDP per capita is for 2005 in 2000 U.S. dollars from a series used in later sections of this chapter and based on World Bank (2007) and Maddison (2006). ARM = Armenia; GNQ = Equatorial Guinea; GAB = Gabon; GMB = The Gambia; GEO = Georgia; HTI = Haiti; KEN = Kenya; LBY = Libya; MDG = Madagascar; NIC = Nicaragua; SAU = Saudia Arabia; UGA = Uganda; ZMB = Zambia.

estimates suggest that international borders reduce trade between industrial countries by a still significant 20–50 percent.⁹ The reductions are even larger for developing countries, which tend to have higher trade barriers.

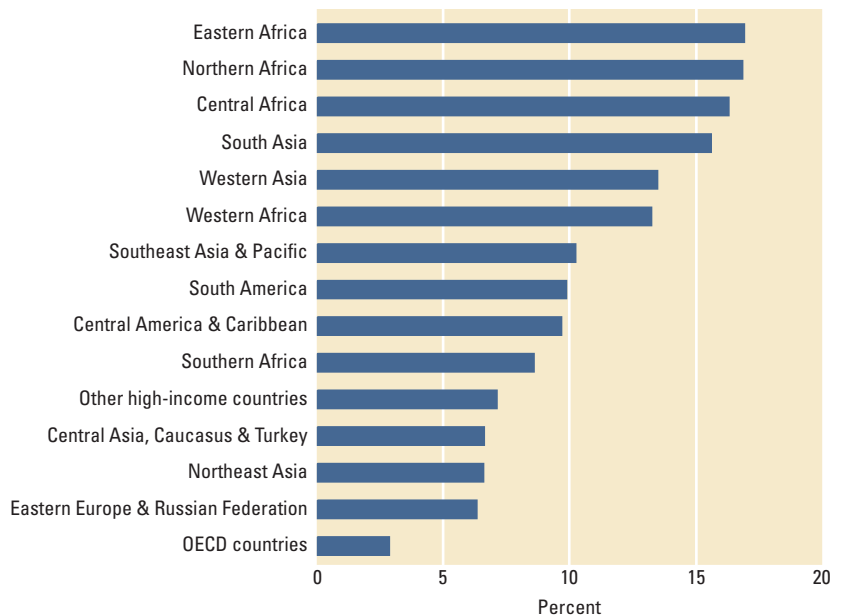
Countries that encourage exports and are open to imports of goods and services grow faster and reduce poverty more than countries that do not encourage exports. When exports are concentrated in labor-intensive manufacturing, trade increases the wages for unskilled workers, benefiting poor people. It also encourages macroeconomic stability, again benefiting the poor, who are more likely to be hurt by inflation. And through innovation and factor accumulation, it enhances productivity and thus growth.¹⁰ There may be some empirical uncertainty about the strength of trade’s relationship with growth.¹¹ But essentially all rich and emerging economies have a strong trade orientation.

A country’s openness to trade is often measured by a country’s sum of exports and imports as a share of GDP. But a more direct measure is the average tariff rate, which fell globally from close to 30 percent in the early 1980s to about 10 percent in 2005.¹² Tariffs are highest in Africa, South Asia, and Western Asia and lowest in member countries of the Organisation for Economic Co-operation and Development

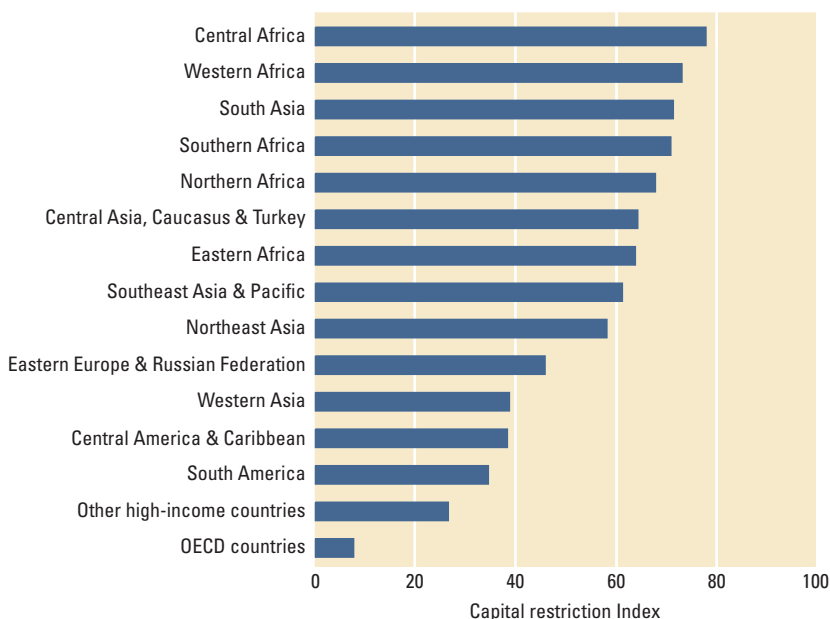
(OECD) (see figure 3.3). Quotas, subsidies, antidumping duties, licensing, and idiosyncratic or confusing regulations affect trade as well.¹³ Using tariff and nontariff barriers, poor countries restrict trade more than rich countries. They also face higher barriers to their exports. Nontariff barriers, on average, represent more than two-thirds of total trade barriers, with higher proportions in rich countries than in poor.

Capital. Restrictions on capital flows in 2005¹⁴ are lower in industrial than in developing countries (see figure 3.4) and are greatest in Africa, Central Asia, and South Asia. Recent empirical work—much prompted by the financial crises of the 1990s—provides qualified evidence that financial globalization benefits developing countries and that greater financial openness does not by itself contribute to more severe economic crises.¹⁵ By reducing the cost of capital in receiving countries, freeing capital account transactions increases the availability of resources for productive investment. It can also promote portfolio diversification, thus mitigating risk, and encourage sound monetary management. From 1955 to 2004, freeing capital accounts had a positive association with growth in both developed and emerging economies.¹⁶ Liberalizing equity markets

Figure 3.3 Tariffs are highest in Africa, South Asia, and Western Asia
 Average tariff, 2005



Source: World Bank 2006f.
 Note: The figure reflects the unweighted mean of country average tariffs.

Figure 3.4 Capital restrictions are highest in Africa, South Asia, and Central Asia

Source: Chinn and Ito 2006.

added 1 percentage point to annual GDP growth.¹⁷ But short-term debt flows, which include portfolio bond flows and commercial bank loans, can be highly volatile. In countries where the financial sector is underdeveloped, governments and financial institutions may increase their exposure to short-term debt and thus their vulnerability to sudden outflows.

The indirect benefits of global integration and free capital flows may be greater than the direct effect of capital accumulation and portfolio diversification. Open markets can enforce monetary discipline, macroeconomic stability, and financial development. They can also strengthen institutions and governance structures. And they can increase integration with the global economy.¹⁸ Where markets and governance are well developed, financial globalization contributes to GDP and productivity growth and reduces financial vulnerability. Where they are not, the impacts on growth are ambiguous, and the risk of a financial crisis is high.

People. Migration flows have increased with globalization, but much less than trade or capital flows. Global estimates suggest that 11 million people move annually for longer-term employment or to settle in another country. About 3.5 million of them are low-skilled workers, many migrating to the Gulf

States or other middle-income countries.¹⁹ Migrants move for higher wages, greater education opportunities, or a better quality life (see chapter 5). Sending countries receive remittances, shed surplus agricultural labor, and benefit from return migration by those who have acquired skills or capital abroad. Receiving countries, many with aging populations or chronic labor shortages, increase their labor pool by admitting unskilled workers and their productivity by attracting highly qualified migrants.

The economic benefits from more migration could be great.²⁰ The pool of potential migrants is likely to remain large given prevailing wage differentials between poor and rich countries, three to four times those triggering the mass migration of Europeans to North America in the late-nineteenth century.²¹ Yet, despite the potential benefits and the ready supply of migrants, most countries restrict in-migration, largely because of perceived negative effects on domestic labor markets.

Comparable information on migration restrictions is not available. But countries also regulate admission of short-term visitors. Each country faces a tradeoff in allowing people from some nations to visit for business or pleasure, while deterring residents of other nations for economic, political, or security reasons. This produces a complex system of “unequal access to foreign spaces”²² that reflects similar restrictions for people seeking to migrate. Residents of richer countries face fewer visa requirements than those from poorer countries (see figure 3.5). But poorer countries also restrict entry by visitors from other nations. Exit can be regulated as well. Many countries make it difficult for their citizens to leave.²³ Passport costs across countries are as high as 125 percent of per capita gross national income (GNI), and higher costs are associated with lower migration rates.

Ideas. Basic labor-intensive manufacturing is a stepping stone for countries to improve their economic fortunes. But to maintain growth that outpaces population and reduces poverty, an economy needs to move from low-margin activities to the development and production of new or improved products, a process associated with moving from low-income to middle-income status.

Endogenous growth theory stresses that new ideas support this transition, generating economic rents that enable the accumulation of private and public capital. China—for the past two decades a producer of low-margin, standardized manufactured goods—now exports more than \$300 billion worth of information and communication technology (ICT) goods a year. So far, most of these exports have been assembled from imported components, with the largest rents captured by foreign firms that develop innovative technologies and control marketing and sales. Of the retail proceeds from an iPod® music player assembled in China, more than half goes to Apple's profits and the retail and distribution costs.²⁴ Assembly and testing account for only about 2 percent of the final sale value.

Freedom of access to all types of information is necessary for an atmosphere that induces innovation and productivity. Ideas and knowledge spread through the research and development (R&D) investments by firms and governments and through the global stock of existing knowledge accessible through publications, patents, and so on.²⁵ Governments do not restrict the flow of purely technical information, although poorer countries have limited access to such information because of cost or language barriers.

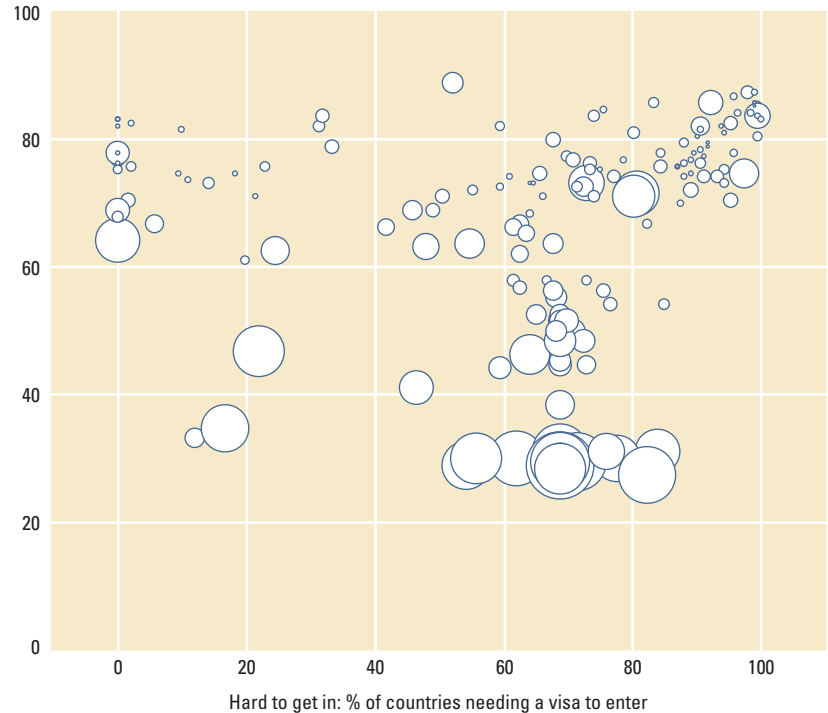
The link between the free flow of ideas and economic development is somewhat ambiguous and not well researched. A free press generally reduces corruption and increases public accountability.²⁶ An indicator of press freedom reported annually since 2002 by Reporters without Borders covers freedom and security in reporting, government control of media, restrictions on Internet providers, and censorship of content.²⁷ Western industrial countries generally have a high degree of freedom. Many low-income countries have high restrictions on the media and Internet traffic. Significant restrictions persist in parts of Africa, East Asia, the Middle East, and the former Soviet Union.

Some divisions are beyond the control of individual countries

Countries for the most part are free to determine their openness to the outside world. But geography and history produce divisions over which countries have little or

Figure 3.5 Residents of richer countries face fewer visa requirements

Hard to get around: % of countries for which a visa is needed



Source: Neumayer 2006.

Note: Circles are proportional to GDP per capita; visas available at the border are not included.

no control. These include being landlocked, being in a remote location (especially if combined with small size), and having a high degree of ethnic or cultural heterogeneity within and across borders.

Landlocked. There are 43 landlocked countries in the world. Being landlocked reduces growth by at least half a percentage point.²⁸ Boxes 3.1 and 3.2 illustrate further the costs of being landlocked. Small surprise then, that many landlocked countries are among the world's poorest. But being landlocked in itself is not a cause of poverty—look at Botswana, Luxembourg, and Switzerland. The problem is being landlocked with poor neighbors or being landlocked far from markets.²⁹ Often the two go together. Africa has the most landlocked countries (15), and Eastern Europe and Central Asia the highest proportion—about half (see map 3.3). Bhutan, Lao People's Democratic Republic, and Nepal in Asia, and Bolivia and Paraguay in South America are other poor landlocked countries.

Country size. A large land area is often associated with abundant natural resources (see box 3.3). A large population

BOX 3.1 *A country's neighborhood matters: regional integration and growth spillovers*

Spillovers of growth from across borders are among the main benefits of regional integration.⁹ In a more integrated economic space, the long-run growth prospects of countries become interlinked as markets of neighboring countries become more accessible. Growth in neighboring countries enhances domestic growth, which benefits neighbors. This spatial multiplier enhances the rewards to good policy and contributes to convergence in living standards.

Quantifying the benefits of growth spillovers

From 1970 to 2000, membership in a common regional trade agreement (RTA) among neighbors was associated with a growth spillover of 13.6 to 15.3 percent, so every percentage point increase in the average growth rate of RTA partners brought a "growth bonus" of 0.14 percent to supplement domestic growth. Associated with this is a spatial multiplier of 1.14 to 1.18, with regional integration increasing the effectiveness of growth-promoting domestic policies by 14 to 18 percent.

In Europe and East Asia, where regional integration has been strongest, the benefits over the past few decades have been even larger. For these countries the

average growth spillover between 1970 and 2000 was 15.3 to 17.0 percent. This contributed to a slow, but steady, convergence in living standards, with the gap in prosperity between the poorest and richest OECD countries closing at an average rate of 1.59 to 1.85 percent a year. Along with this, the effectiveness of growth-promoting domestic policies has been supplemented by 18.1 to 20 percent.

In Sub-Saharan Africa the average growth spillover has been far weaker, signaling the relative lack of regional integration despite a plethora of RTAs. The growth spillover is estimated at only 2.9 to 3.9 percent, implying a spatial multiplier of only 1.01 to 1.04. This finding of virtually no growth spillovers holds when neighbors are defined by contiguity rather than RTA membership. A typical Sub-Saharan country's growth rate was basically independent of the growth rates of its neighbors.

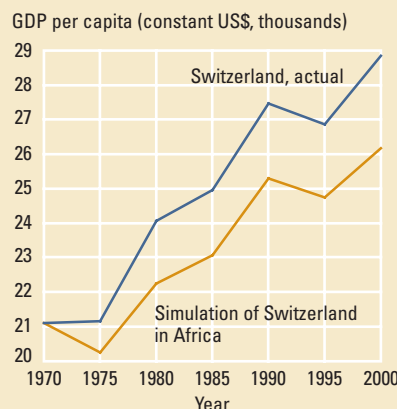
Implications for landlocked and resource-poor countries in Sub-Saharan Africa

Under current conditions, if the Sub-Saharan countries whose natural endowments are most favorable sustained a growth takeoff, the landlocked and

resource-poor countries of Central Africa would be left further behind.

If Switzerland had been subject to the same low spillovers experienced by the Central African Republic between 1970 and 2000, its GDP per capita in 2000 would have been 9.3 percent lower, with a cumulative GDP loss of \$334 billion (2000 constant U.S. dollars), or 162 percent of Swiss GDP (see the figure below).

Putting Switzerland in Africa would have cost it \$334 billion



Source: Roberts and Deichmann 2008. a. Collier and O'Connell forthcoming.

BOX 3.2 *Bolivia and Chile's border—from wide to narrow?*

Bolivia illustrates the economic dependence of a landlocked country on its neighbors and how economic integration could help overcome these divisions. After a war with Chile in the late-nineteenth century, Bolivia lost its access to the Pacific, and Peru, Bolivia's ally, also lost territory to Chile.

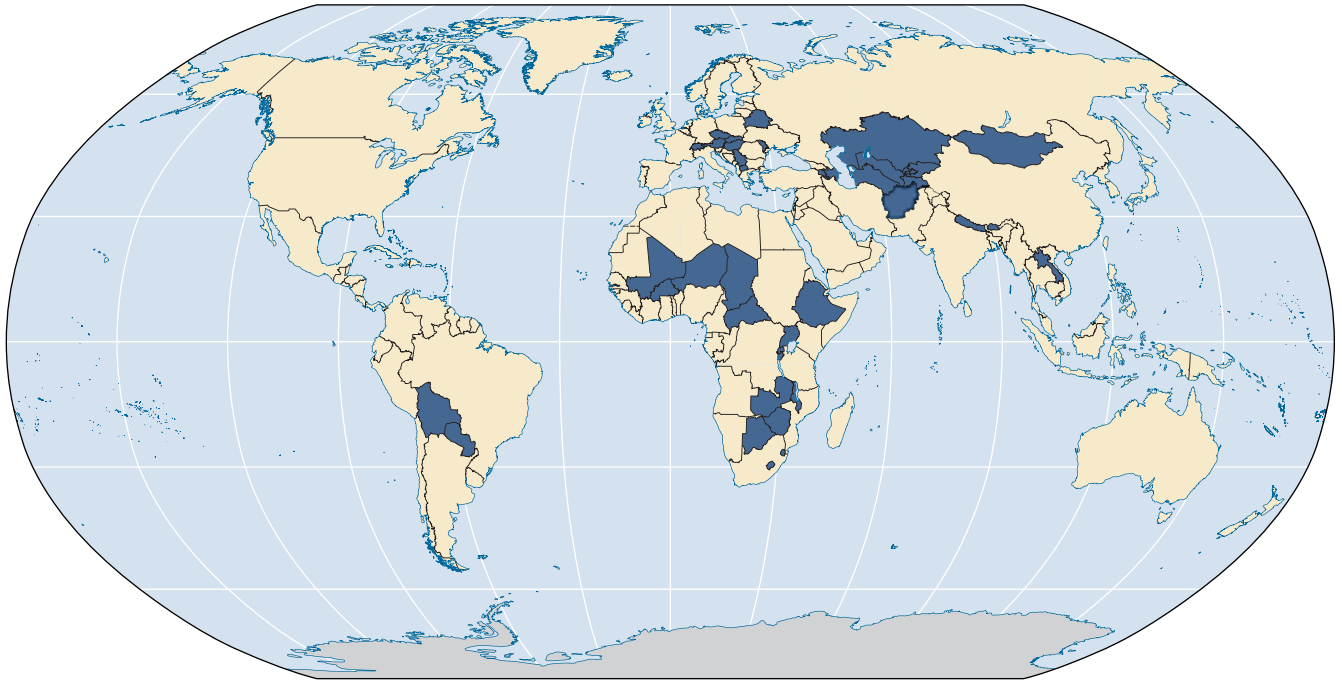
Chile and Bolivia have not had diplomatic relations since 1978, but they are now talking. A motive for Chile is natural gas. Since 1995 it has relied almost exclusively on gas from Argentina, but supplies have been limited by high demand in Argentina.

Bolivia has South America's second-largest natural gas reserves. So economic integration could be an incentive for resolving regional disputes. Chile would gain from energy imports from Bolivia; Bolivia would benefit from better access to ports, which would make it easier to export. Peru would likely be involved in any agreement because it provides an alternative, though less economic, route to the coast for Bolivia and because any corridor through Chile would likely pass through former Peruvian territory in Chile.

Sources: *The Economist* 2007b, Malinowski 2007.

provides a ready market and large labor force. Conversely, small countries lack the scale, capacity, and stock of production factors to achieve high economic growth by themselves. But as with being landlocked, size by itself is not a determining factor. What determines economic prosperity is a country's economic integration with the rest of the world.³⁰ Luxembourg ranks 167th in population but has the world's highest GDP per capita. Fully integrated in the European Union (EU), its highly specialized financial sector operates globally. Small countries should thus favor economic integration, because they will gain most from freer trade and openness.

In world regions that are more highly integrated, parts of a country therefore have less incentive to remain within a nation dominated by another cultural or ethnic group. Devolution in the United Kingdom and separatist movements in Spain confirm this. Similarly, the "re-balkanization" of Southeastern

Map 3.3 Forty-three countries do not have direct access to the coast

Source: WDR 2009 team.

Europe with the disintegration of the former Yugoslavia was in part facilitated by the prospect of EU accession for the newly independent countries. Noneconomic considerations can dominate, however. Eritrea and Timor-Leste have seceded from their larger neighbors (Ethiopia and Indonesia) without the benefit of integration with a larger economic association.

Sea-locked countries. Being landlocked can generate an island effect, preventing a country from benefiting from neighboring suppliers and markets. Small islands in remote locations suffer similar isolation; they are essentially “sea-locked.” They face high transport costs for exports and imports, higher costs for energy and intermediate inputs, and typically higher wage costs and rents. The problems are acute for the small island nations of the Pacific.³¹ Trade preferences to support them until they become competitive in world markets have generated large and unsustainable inefficiencies in production. And large per capita aid flows have had only limited impact on their competitiveness. Closely linking up with wealthier “patron” countries and increasing labor mobility may be the only strategies.³² Small island states in the Caribbean, by

contrast, have more diversified economies and, being closer to rich markets, benefit more from tourism and trade.

Mauritius shows that good policy can overcome small size and remote location. It now has the second highest GDP per capita in Africa despite being more than 900 kilometers from the nearest mainland. Its location among the Middle East, South Africa, and India allows it to capture offshoring activi-

BOX 3.3 *The benefits of size*

Five benefits of being a large country:

- Smaller per capita cost of providing many public goods, such as a judicial system or embassies.
- Larger home market, which can increase productivity and thus benefit economic growth.
- Stronger buffer to regional economic shocks—if a region that specializes in, say, agriculture suffers a recession, the impacts can be reduced through transfers from other regions, and workers can seek employment elsewhere in the country.

- More effective redistributive schemes to reduce gaps in after-tax incomes between rich and poor regions.
- Better ability to provide security, as the per capita cost of defense declines.

A possible disadvantage is the greater heterogeneity of preferences and thus the larger coordination costs in large democracies. Diversity also makes it harder to overcome collective action problems.

Source: Alesina and Spolaore 2003.

ties in manufacturing and banking, as well as a thriving stopover tourism industry.

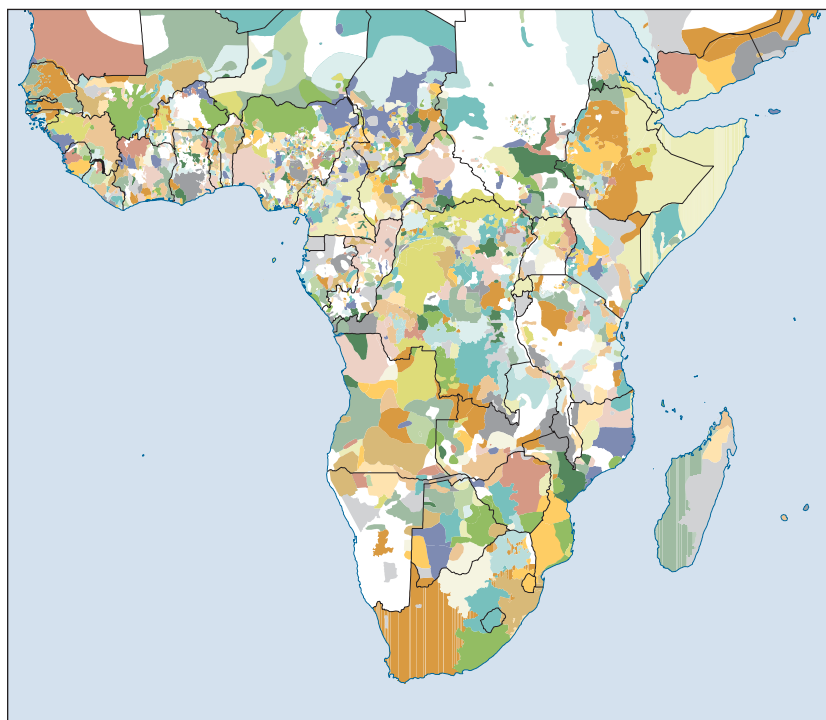
Ethnic and cultural divisions. Ethnolinguistic heterogeneity imposes a coordination cost on countries, because it often reflects differences in attitudes or interests that need to be reconciled by national governments. Consider the differences in opinion about joining the EU among the French- and German-speaking parts of Switzerland. This heterogeneity also has implications for labor mobility. For instance, the Euro zone may be a less resilient common currency area than the United States, because its higher cultural heterogeneity hinders adjustments to shocks through internal migration. Ethnic heterogeneity is often associated with civil conflict and with high costs for economic growth.

Empirical evidence for the impact of cultural diversity is mixed (see also box 3.4). Ethnic fragmentation is negatively associated with the quality of government and with economic growth.³³ The relationship between ethnic heterogeneity and conflict

is statistically significant only in countries where one group is in the majority but the minority groups are still powerful—for example, Burundi and Iraq.³⁴ In most cases ethnic or cultural differences are unlikely to be the cause of conflict. But ethnic differences are exploited to achieve other objectives, such as gaining political power or control over resources. Ethnicity also interacts in complex ways with other facets of society. Autocracy, for example, reduces growth in ethnically diverse countries more than in ethnically homogenous ones.

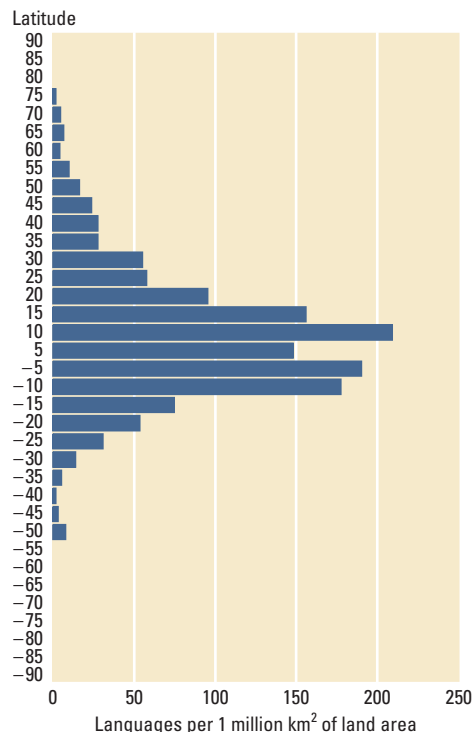
Linguistic diversity varies greatly between world regions. The *Ethnologue* database includes information on almost 7,000 languages, including their location. The heterogeneity of language groups is very high in Africa and generally increases with proximity to the Equator (see map 3.4 and figure 3.6). Although empirical cross-country studies suggest that linguistic fractionalization hurts economic performance, a regional trading language has traditionally helped overcome the divisions: Hindi and Urdu in a large part of South Asia,

Map 3.4 Language diversity is very high in Africa



Source: World Language Mapping System, *Ethnologue* 2004.

Figure 3.6 Globally, language diversity is highest near the equator



Source: World Language Mapping System, *Ethnologue* 2004.

Indonesian and Filipino in Southeast Asia, Arabic and Persian in the Middle East, Swahili in Eastern Africa, and Hausa in Western Africa. English, French, and Spanish have done the same, but in many countries they are used predominantly by an educated minority.

Economic costs of conflict and territorial disputes

Impermeable borders tend to reduce economic growth. But full political unification between countries would not necessarily improve economic performance.³⁵ A full merger of two countries has a positive country size effect but an overall slightly negative impact on growth due to reduced trade with the rest of the world. Only in a few instances would both partners benefit from full political and economic integration. But integration of neighboring markets without political integration, on average, would increase growth across countries significantly.

Borders further reduce economic benefits where divisions are aggravated by conflict within or between countries. Even when conflict does not involve military action, the cost can be significant. Territorial disputes impose high international economic transaction costs because of insecure property rights and jurisdictional and policy uncertainty. Economic models suggest that the territorial dispute between Argentina and Chile reduced trade between the two countries by \$33 billion between 1950 and 1995.³⁶ The competing claims between Japan and Russia over the Kurile Islands lowered trade by \$535 billion between 1952 and 1995. And those between Indonesia and Malaysia cost \$11.5 billion between 1980 and 1995. Similar disputes exist over maritime boundaries, only about one-third of which are settled by treaty.³⁷

When disputes turn to military confrontation, the costs are considerably higher—not only in loss of life, but also in economic terms. The cost of a “typical” civil war is about \$64 billion, and an average annual worldwide cost of about \$100 billion far exceeds global aid flows.³⁸ A civil war in a neighboring country is estimated to reduce a country’s annual growth by about half a

BOX 3.4 *Artificial states?*

Gathered in Berlin in 1884–85, the colonial powers determined Africa’s borders with little concern for social or economic divisions. Many borders in the Middle East were similarly drawn at the end of World War I.^a Alesina, Easterly, and Matuszeski identify “artificial states” with a measure of how straight a country’s border is and whether these borders partition ethnic groups into two or more countries.^b Northern Africa, Northeast Asia, and South Africa have the most artificial (straight) borders, while South Asia and Western Africa are the most partitioned. Eastern and Central Africa are among the top four regions in both categories.

Empirical analysis suggests that artificial borders hurt economic and social outcomes. But this link is less significant after controlling for colo-

nial origin or location in Africa. Artificial borders are not associated with a higher probability of war, reflecting similar results on ethnic diversity and conflict found by Paul Collier.^c

So, avoiding economic and political problems associated with ethnic diversity would require cultural homogeneity within countries. In Africa this would imply a far larger number of countries. Yet the already small size of many African countries is perhaps a more severe problem—it prevents countries from reaching sustainable economic scale. As argued in this Report, the appropriate response to small size and ethnic diversity is closer integration and more permeable boundaries.

Source: WDR 2009 team.

a. MacMillan 2003.

b. Alesina, Easterly, and Matuszeski 2006.

c. Collier 2004.

percentage point. It causes neighbors to increase their military spending by 2 percent. Other costs include refugee flows and disruption of preferred trade routes. The civil war in the Democratic Republic of Congo closed river access to the sea for timber exports from the Central African Republic.

Economic concentration

Economic output is spatially concentrated—by any measure and across geographic scales. Looking at grid cells, a quarter of the world’s GDP is produced on just 0.3 percent of the land area (about the size of Cameroon), half on 1.5 percent, and nine-tenths on 16 percent.³⁹ China, Japan, and the United States produced about half of global GDP in 2006, and the 15 largest economies produced about 80 percent.

Early in the Industrial Revolution, at the beginning of the nineteenth century, GDP per capita in today’s industrialized countries was about twice that of today’s developing and emerging countries (see table 3.1). But total GDP in China and India, which had far larger populations, was more than twice that in today’s G7 countries. By

Table 3.1 The concentration of GDP and population growth shifted between 1820 and 1998

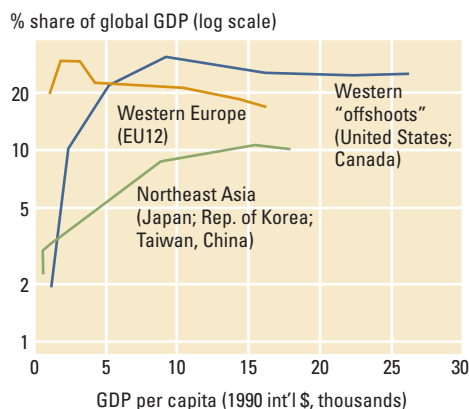
	Share of world GDP (%)			Share of world population (%)			Average annual GDP growth rate (%)	Average annual population growth rate (%)	Excess growth rate (GDP per capita growth)
	1820	1950	1998	1820	1950	1998	1820–1998	1820–1998	
G7	22.7	50.9	45.5	13.4	18.1	11.6	2.6	0.9	1.7
China and India	49.0	8.7	16.5	56.7	35.9	37.5	1.6	0.7	0.8
Rest of Asia	7.3	6.8	13.0	8.6	15.5	19.8	2.5	1.4	1.1
Latin America	2.0	7.9	8.7	2.0	6.6	8.6	3.0	1.8	1.2
Africa	4.5	3.6	3.1	7.1	9.0	12.9	2.0	1.3	0.7
Eastern Europe and the former Soviet Union	8.8	13.0	5.3	8.8	10.6	7.0	1.9	0.8	1.1

Source: Maddison 2006.

Note: The rest of Western Europe, Australia, and New Zealand are not included.

Figure 3.7 Concentration increases at the global level, then a leveling off

Shares of world GDP at different levels of GDP per capita, 1820–1998



Source: Maddison 2006.

the middle of the twentieth century, the G7 countries accounted for more than half of global output (about 60 percent if the other western industrial countries are included). North America and Japan grew the fastest at 3.5 and 2.8 percent a year between 1820 and 1998.⁴⁰ The four largest European economies grew at an annual average of about 2 percent, not very different from growth rates in Africa, Eastern Europe, and the smaller Asian developing countries. But while GDP growth exceeded population growth by 1.7 points in the G7, it did so by only 0.8 points in China and India and by 0.7 points in Africa. Over the 180 years to the end of the twentieth century, these different growth rates moved the concentration of economic production more toward the northern industrialized countries.

How did this concentration come about?

The concentration of economic mass in today's western industrialized countries and Japan has its roots in eighteenth-century economic and technological innovation. Europe's economic growth accelerated greatly during the Industrial Revolution, with modern manufacturing starting in Great Britain in the mid-eighteenth century and gradually spreading across the continent. At the beginning of this process, Western Europe had less than 20 percent of global GDP.⁴¹ By the end of the nineteenth century, it had more than 30 percent, three-quarters of it in the four largest economies—France, Germany, Italy, and the United Kingdom (see also figure 3.7).

This growth occurred against a backdrop of frequent conflict between neighboring countries, constant changes of alliances, and mergers and disintegrations of countries. At the beginning of the nineteenth century, Germany included about 300 individual states. It had 1,800 customs borders, with Prussia alone having 67 local tariff zones.⁴² Only in the 1870s did Germany fully integrate domestically. Even with a patchwork of economic regions in Europe, trade flows had always been large, thanks to local or regional agreements. These expanding trade links inspired the work of David Ricardo, who in 1817 famously described the exchange of textiles and port wine between Great Britain and Portugal in his theory of comparative advantage. Ricardo's work motivated further trade liberalization by governments, most of all Britain's.

Formal economic integration did not begin until the middle of the twentieth

century. Motivated by political as much as economic objectives, six European countries, accounting for about a quarter of world GDP, joined in a treaty liberalizing trade in coal and steel. Annual GDP growth accelerated in subsequent years to around 4.5 percent, up from only around 1 percent in the 35 years after World War I. Although the relative shares of European countries in world GDP dropped somewhat, the combined EU economy maintains a share of 25 percent, largely through enlargement to its current 27 member countries.

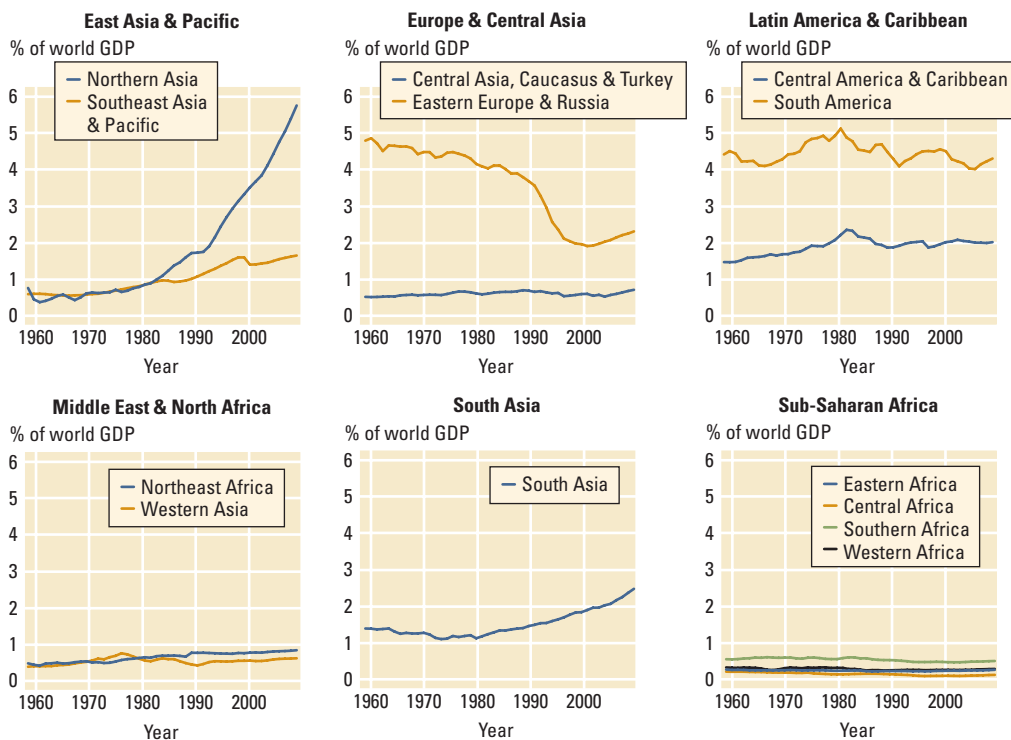
Europe’s economic progress was exported to English-speaking “offshoots” in Australia, New Zealand, and North America. Between 1820 and the late-twentieth century, their economies grew by about 3.6 percent, almost twice the population growth of 1.9 percent, driven by massive migration mostly from Europe and Asia. Their share of global GDP increased from 2 percent to 25 percent during that time, the lion’s share by the United States (22 percent). Cultural proximity and close trade ties meant that innovations crossed the Atlantic quickly in both directions.

Japan started to industrialize fairly late. In 1820 its GDP per capita was half that in North America and Western Europe, a ratio that did not change until the twentieth century. GDP growth between 1820 and 1870 was 0.4 percent a year. Industrialization began to accelerate after the Meiji Restoration in the 1860s. The fastest growth rates were in the second half of the twentieth century. Between 1950 and 1973, as the country opened to the world economy, Japan’s economy grew at a rate of almost 9 percent a year. By the late 1980s, its GDP per capita was higher than Western Europe’s.

How did the rest of the world do?

The share of the largest industrial economies in world GDP has fallen slightly, from 51 percent in 1950 to 46 percent in 1998.⁴³ Among emerging economies, Eastern Europe and Russia reduced their share from almost 5 percent to 2.4 percent in the late 1980s and early 1990s. The smaller shares of industrial countries and Eastern Europe are largely due to increases in Asia (see figure 3.8). Southeast Asia and the Pacific doubled its share

Figure 3.8 Only Asia’s share in world GDP has risen noticeably since 1980
 Shares of world GDP of developing and emerging economies, 2000 constant dollars



Sources: World Bank 2007j; Maddison 2006.

to about 1.8 percent, and South Asia’s share of global GDP rose from 1.4 to 2.4 percent. The largest increase has occurred in North-east Asia since the mid-1980s, essentially in China, where the share of global GDP rose from less than 1 percent to about 5.5 percent. Shares in the remaining *World Development Report 2009* regions remained essentially unchanged despite considerably higher population growth.⁴⁴

Why does this matter? The importance of market access

The distribution of economic production globally matters greatly for the development prospects of countries because of the interaction of *density* and *distance* at a global scale. This is demonstrated by the close empirical relationship between trade as a driver of growth and two variables that define the well-known gravity model of trade: (1) the distance between trading partners, and (2) their economic size as measured by GDP

(see box 3.5). Trade decreases with distance and increases with GDP, so any country will trade more with nearby countries and with countries that have a larger GDP. Despite reductions in transport and communication costs, the trade-reducing impact of distance increased until about a half century ago, remaining “puzzlingly” high since then (see, for example, for Brazil in figure 3.9).⁴⁵

This empirical evidence may be at odds with the rapidly increasing long-distance trade between, say, China and the United States or between Japan and Europe. But this increase in trade may not be so much due to trade cost reductions. It is largely driven by the other factor in the gravity trade relationship: economic output.⁴⁶ China’s GDP has increased, providing the economic mass to export goods to international markets and to import consumer goods, capital equipment, and intermediate inputs. Increasing trade, in a self-reinforcing process, generates scale economies in

BOX 3.5 Market access and per capita incomes

Quantifying market access (sometimes called “market potential”) is not just of theoretical interest. Empirical studies have shown that market and supplier access have a significant impact on growth and income. For instance, halving a country’s distance from its trading partners is associated with a 25 percent increase in per capita income—more than the combined effect of a coastal location and open trade policies.^a Trade benefits a country by raising factor incomes (wages) through expenditures by trading partners for goods produced in that country. The level of expenditures is in large part determined by the size of the trading partner’s economy (*density*) and by physical market access, largely determined by proximity to trading partners (*distance*) and the effect of borders (*division*).^b

Between 1970 and 2003, the distribution of per capita income spread out, reflecting greater global inequality among countries—the poorest countries now have smaller incomes relative to the United States (see the figures at the right). The distribution also moves to the right, implying that market potential is increasing almost everywhere as a result of global GDP growth. And its slope is getting steeper, so

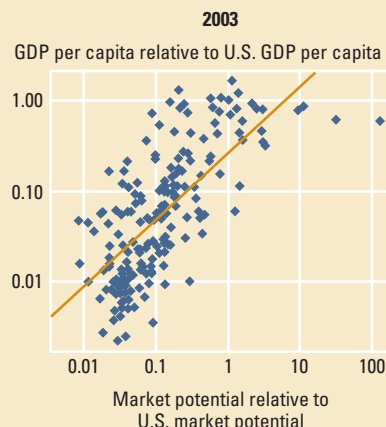
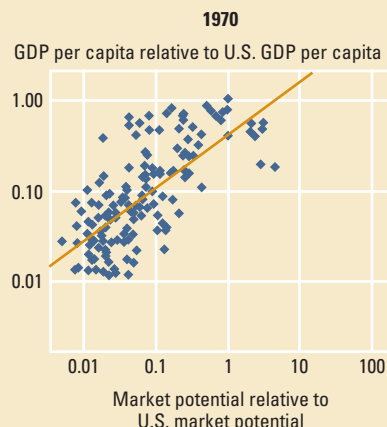
the returns to market potential are increasing—the same amount of market potential buys more per capita income—at least for some countries.

There continues to be a large variance of GDP per capita at any given market potential. Haiti’s market potential is higher than New Zealand’s. Its proximity to the United States raises its market potential, reflecting the interaction between economic size

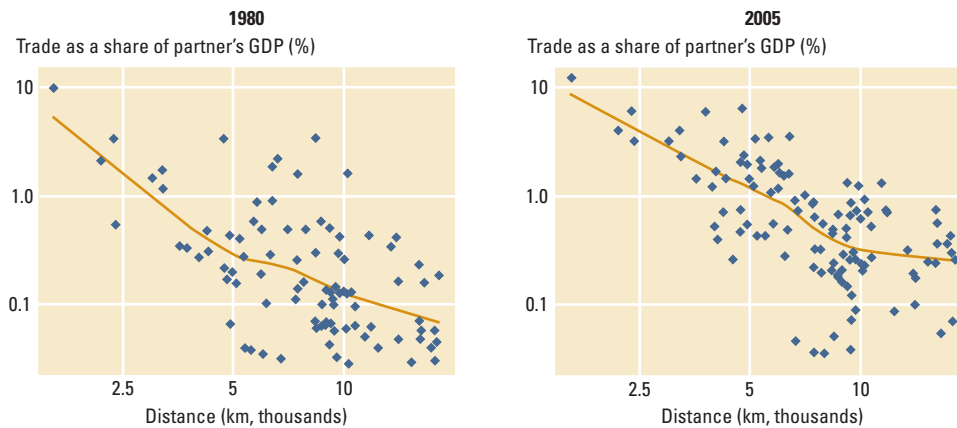
and distance from markets. For any given level, the size of the economy determines how well a country can take advantage of market access. Rich countries like Australia and New Zealand can compensate for a remote location by offering a fairly large market and supply capacity.

a. Redding and Venables 2004.
b. See Mayer 2008.

Market potential for countries has become more unequal



Source: Mayer 2008 for this Report.

Figure 3.9 The effect of distance between Brazil and its trading partners has remained considerable

Source: IMF 2007.

the trade infrastructure and services, such as efficient ports and frequent container shipping links (see chapter 6). Larger economies and richer countries can thus overcome the friction of long trade distances with higher economic density.

Divergence, then convergence

The changing geographic distribution of world economic output reflects the concentration of economic mass initially in Western Europe and later in North America. More recently, some deconcentration has occurred as first Japan and then other economies in the East Asia region have grown. China and India are reclaiming their position among the countries and regions with the highest shares of global GDP. Country access to input and output markets influence the geographic distribution of absolute levels

of economic output. As these distributions change, so too do the prospects of national economies. These, in turn, influence development outcomes at the regional and country levels, reflected in levels and changes in income, health, and human capital. This human capital, most often considered an input contributing to human development, is also a development outcome that raises the quality of life for individuals.

Three broad trends:

- A general increase in income and basic living standards globally, but with some big exceptions.
- Considerable divergence of incomes between the richest and the poorest countries, but some global convergence in health and education.
- Some convergence within the faster growing regions.

Table 3.2 GDP per capita increased tenfold, 1500–1998
1990 international dollars

	1500	1820	1870	1913	1950	1973	1998	1998:1500
Western Europe	774	1,232	1,974	3,473	4,594	11,534	17,921	23.2
Western offshoots	400	1,201	2,431	5,257	9,288	16,172	26,146	65.4
Japan	500	669	737	1,387	1,926	11,439	20,413	40.8
Asia (excluding Japan)	572	575	543	640	635	1,231	2,936	5.1
Latin America	416	665	698	1,511	2,554	4,531	5,795	13.9
Eastern Europe and the former Soviet Union	483	667	917	1,501	2,601	5,729	4,354	9.0
Africa	400	418	444	585	852	1,365	1,368	3.4
World	565	667	867	1,510	2,114	4,104	5,709	10.1
Interregional spreads	2:1	3:1	5:1	9:1	15:1	13:1	19:1	

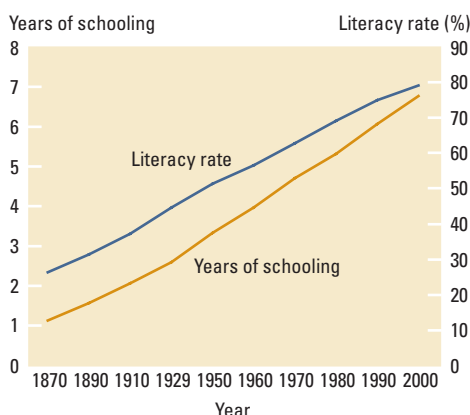
Source: Maddison 2006.

General improvements

Today’s generation, by almost any global summary measure of income and welfare, is better off than any previous generation in human history. GDP per capita in 1990 international dollars increased tenfold from \$565 to \$5,700 over the last 500 years, while population grew from 400 million to more than 6 billion (table 3.2). Since 1820 output growth has been about 2.2 percent a year, bringing with it a considerable rise in living standards. Life expectancy at birth rose from

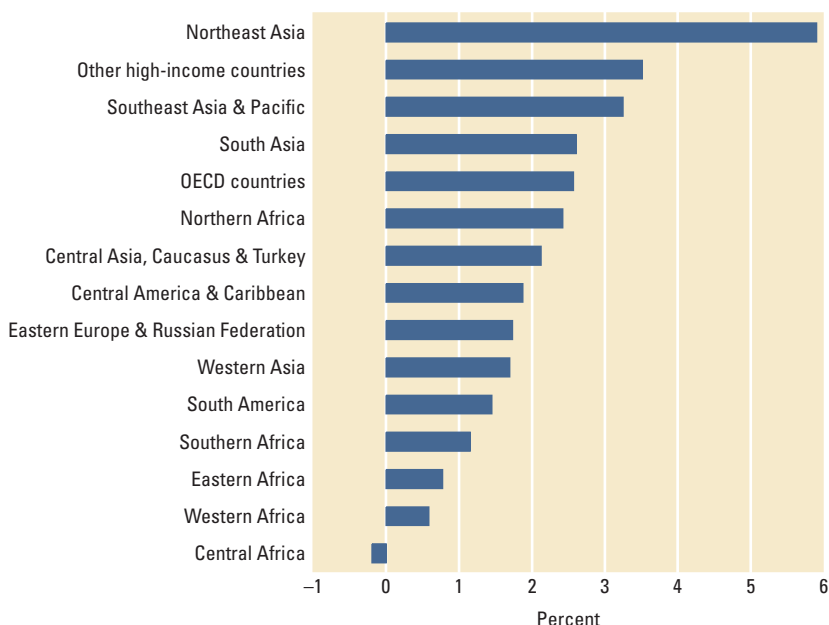
26.5 years in 1820 to 32.8 years in 1910 to about 68 years in 2005.⁴⁷ In the last 35 years alone, average global life expectancy grew by about 10 years. And a much larger share of the world’s population now has access to basic education. In 1870 the mean years of schooling was 1.1 years, and the adult literacy rate 25.5 percent.⁴⁸ By 1929, schooling had increased to 2.5 years, and by 2000, to 6.7 years, and literacy to 43.8 percent and then to 78.3 percent (see figure 3.10).

Figure 3.10 Education outcomes have improved
Global average, 1870–2000



Source: Morisson and Murtin 2005.

Figure 3.11 East and South Asia have been the only regions catching up
Average annual growth rate of GDP per capita, 1960–2006



Source: World Bank 2007.

Considerable income divergence between the richest and poorest countries, but improvements in health and education

Over the past 500 years, per capita output increased 40-fold in Japan and 65-fold in Australia, Canada, New Zealand, and the United States (see table 3.2).⁴⁹ In Africa it increased only threefold, and in Asia (not including Japan), fivefold. Spreads between the poorest and the richest regions increased from a factor of 2 in 1500 and 5 in 1870 to almost 20 by the end of the twentieth century. During the past two centuries, the Gini coefficient of inequality increased by 30 percent. Per capita income inequality among world citizens increased by 60 percent, as measured by the Theil index, largely because of income divergence between countries rather than within countries.⁵⁰

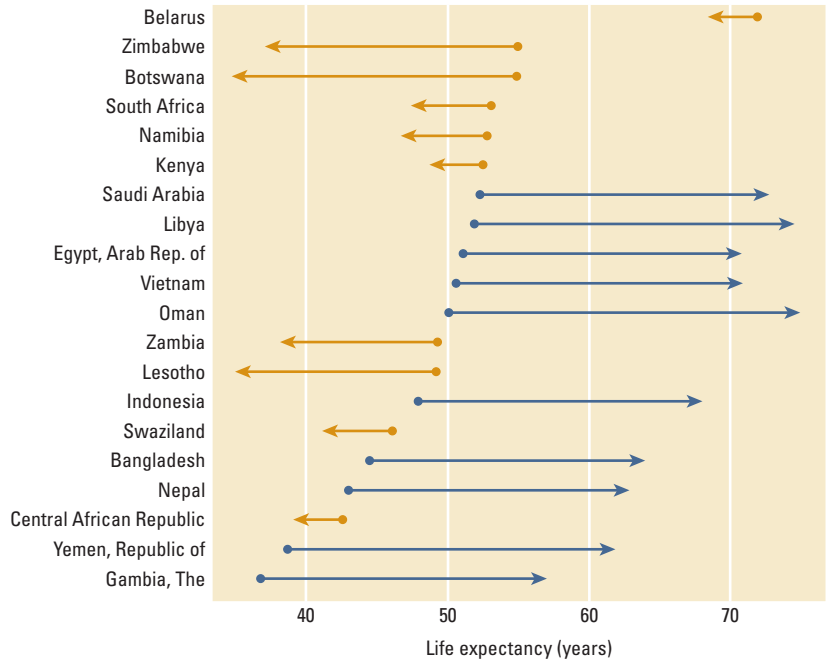
The main story is one of an enormous increase in per capita incomes in Europe and its offshoots. More recently this has happened in East Asia, with Japan, whose GDP per capita has increased tenfold since 1950, and was followed by the Republic of Korea; Taiwan, China; and countries in South Asia. GDP per capita in China, though still low in absolute terms, grew at 8.4 percent a year between 1990 and 2005. At the low end of the income distribution, total GDP in the Central Africa region increased threefold between 1960 and 2006, compared with Northeast Asia’s 30-fold increase (see figure 3.11). With population growth outpacing economic growth, per capita incomes in Central Africa fell by 8 percent in constant prices. Incomes in the poorest countries in the world—mostly landlocked and many in Africa, home to the “bottom billion” of the world’s population—declined by 5 percent during the 1990s.⁵¹

Between 1960 and the late 1980s, almost every country in the world showed continual increases in life expectancy at birth.⁵² In South Asia it increased from 42 years to 60, and in Northern Africa from 47 years to 65. The exception was in Sub-Saharan Africa. Until the late 1980s, life expectancy increased slowly in Western, Central, and Eastern Africa and slightly faster in Southern Africa, where it rose from 46 years to about 60. Since then, however, the HIV/AIDS epidemic has caused a large increase in mortality, bringing life expectancy in Southern Africa below its level in 1960. In Central and Eastern Africa, life expectancy is down less dramatically, and Western Africa contained the epidemic and saw only a slight decline in the rate of improvement. Nine of the 10 countries showing the worst trends are in Sub-Saharan Africa, and most of these are in Southern or Southeastern Africa (see figure 3.12).

Similar to life expectancy, global inequality in access to education fell sharply from a Gini coefficient for years of schooling of 0.79 in 1870 to 0.39 in 2000.⁵³ The high Gini coefficient in the nineteenth century was largely due to near-universal primary education in Western Europe and its offshoots. Other world regions started expanding education much later, and inequality dropped

Figure 3.12 Life expectancy decreased significantly in many African countries

Countries with largest increase/decrease in life expectancy, 1970–2005

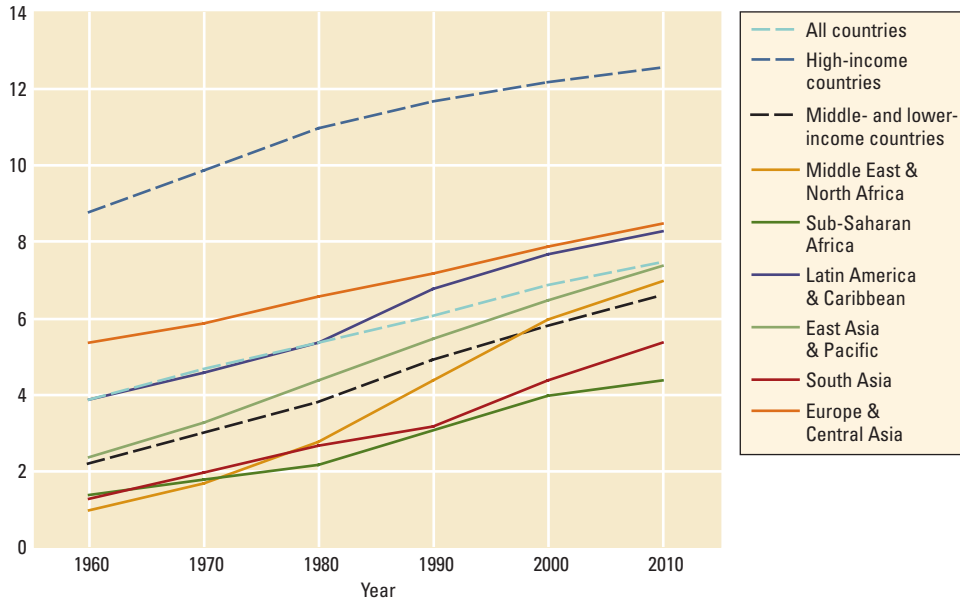


Source: World Bank 2007j.

considerably after 1930, when primary education was expanded in many developing countries.⁵⁴ Between 1960 and 2000, the years of schooling among the working-age population increased across all world regions and income

Figure 3.13 Education has become more equal since the 1980s

Years of schooling for 15–46-year-olds (population-weighted averages)



Source: Cohen and Soto 2007.

groups (see figure 3.13).⁵⁵ The ratio of highest to lowest population-weighted average education dropped from 9.7 years to 3.1.⁵⁶ These improvements have been fairly uniform across regions, so the difference between the highest and lowest region has remained essentially constant. Because poorer countries start from a far lower level, however, their percentage improvements are much higher, suggesting eventual convergence.

Some income convergence within faster-growing regions

Neighboring countries can provide mutually beneficial economic linkages, spillovers, and complementarities that allow whole groups of countries to increase their incomes. If this increases growth rates in poorer countries,

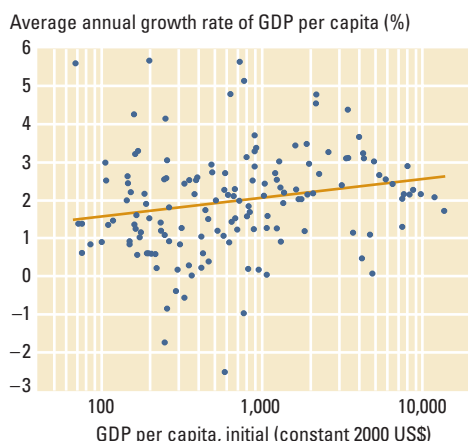
economies should converge over time. Will poor countries eventually catch up with the rich? The question received considerable attention among growth economists in the late 1980s and 1990s.⁵⁷ They produced tools and techniques to analyze convergence, relating growth to initial income, with the expectation that lower initial status is associated with higher growth rates. But there has been little, if any, convergence between countries globally over the past five decades (see figure 3.14). There is even some indication of divergence, though the trend is weak. Within world regions, the evidence is much more differentiated.

Regional integration and temporal dynamics make the study of convergence important. First, economic fortunes are shaped by what neighboring countries do, and successful economic integration—overcoming divisions—can pull weaker countries toward incomes that they cannot achieve in isolation. Higher convergence would be expected in regions that have integrated. Second, in fast-growing regions, there initially is divergence as the leading regional economies pull away, but later there is convergence as poor countries benefit from growth spillovers and begin to catch up over time.

In East Asia, the fastest-growing world region in recent years, convergence followed initial divergence. From 1950 to 1970, incomes diverged sharply as first Japan; and later Hong Kong, China; and then Singapore grew at very high rates (see figures 3.15 and 3.16a). In the 1970s other countries joined the fast-growth club, notably the Republic of

Figure 3.14 Slight global divergence in per capita incomes, 1950–2006

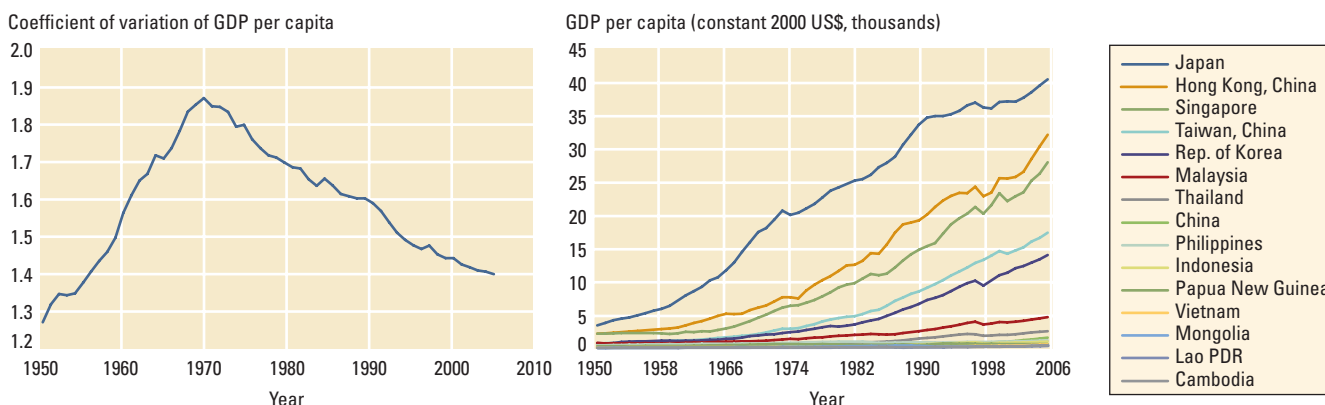
Countries with populations greater than 1 million



Source: World Bank 2007j, Maddison 2006.

Figure 3.15 Divergence, then convergence in East Asia, 1950–2006

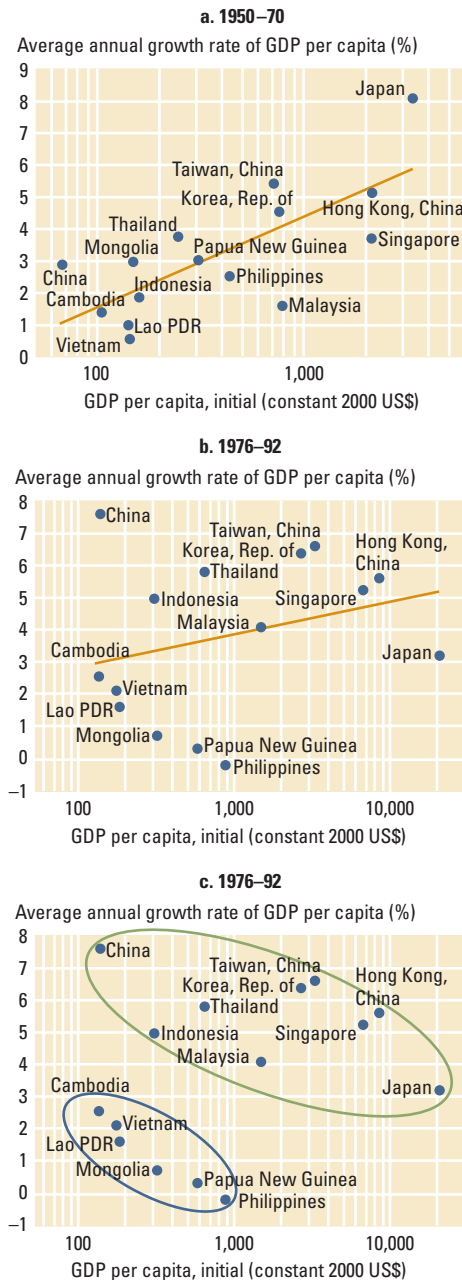
Countries with populations greater than 1 million, coefficient of variation and GDP per capita growth



Source: World Bank 2007j, Maddison 2006.

Figure 3.16 The East Asian growth experience had two distinct phases

Countries with populations greater than 1 million, in 1950–70 versus 1976–92



Source: World Bank 2007j; Maddison 2006.

Korea and Taiwan, China. Between 1976 and 1992, what looked like moderate divergence (see figure 3.16b) actually represented two groups of countries on separate but closely linked convergence paths (see figure 3.16c). Overall, this led to a strong regional convergence as the variation among country GDPs per capita—while still large—dropped to

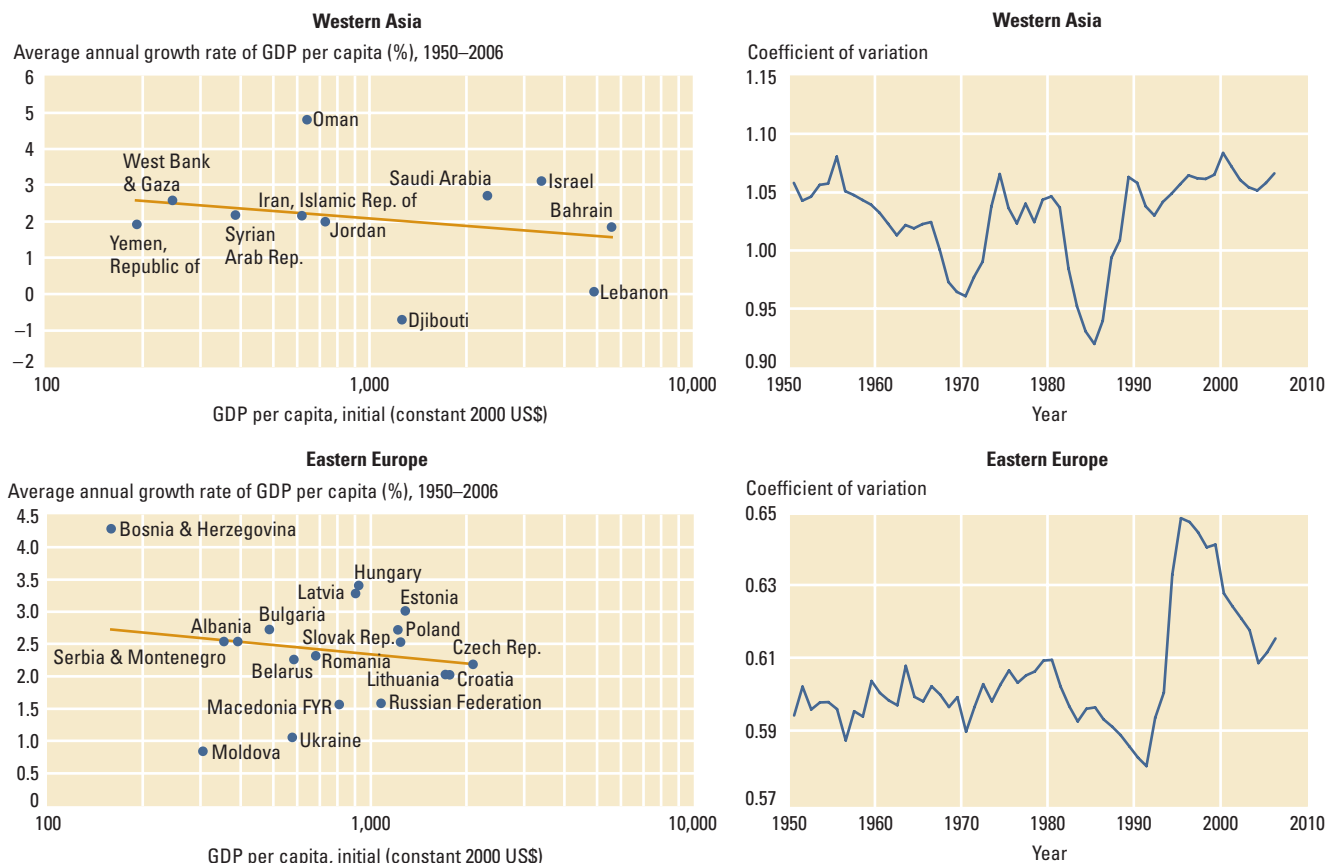
levels last seen in 1960. This convergence has much to do with market policies in China and Vietnam as well as with a special blend of regional economic integration against a backdrop of globalization.

There are few signs of convergence where growth has been sluggish and regional integration limited, as in Western Asia and Eastern Europe (see figure 3.17). Western Asia includes resource-rich countries, with low and high populations, as well as resource-poor countries, such as Jordan. Low levels of intraregional trade indicate low levels of integration. Eastern Europe shows low variation in per capita income until about 1990.⁵⁸ After the disintegration of the Soviet Union and the fall of the Berlin Wall, per capita incomes dropped drastically in some countries and moderately in others. This divergence was reinforced as the western-most countries reoriented their economic linkages toward Western Europe, eventually joining the EU. Belarus and initially Ukraine, by contrast, maintained close links to the Russian Federation, which only recently began benefiting from natural resource-driven economic growth.

The southernmost economies in the Latin America and Caribbean region experienced relatively low growth and limited convergence (see box 3.6). At the northern end of the region, in 1994, Mexico entered the first major regional free trade pact that includes both industrial and developing countries. The North American Free Trade Agreement (NAFTA) eliminated tariffs on most products traded between the United States, Canada, and Mexico. The evidence since then illustrates three points about formal regional integration processes:⁵⁹

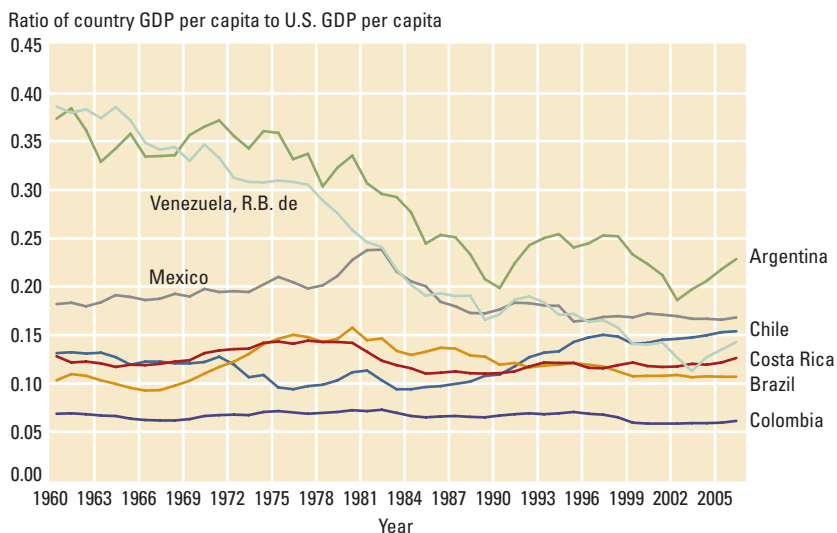
- Formal integration followed many years of preparation, gradual informal integration, and domestic policy changes. Mexico unilaterally reduced trade barriers and implemented regulatory changes long before the agreement took effect.
- The agreement led to large increases in trade and foreign direct investment (FDI) flows. Economic analysis suggests that without NAFTA, Mexico’s global exports would have been about 50 percent lower and its FDI 40 percent lower. This likely contributed to significant poverty reduc-

Figure 3.17 Western Asia and Eastern Europe have had little integration—and little convergence



Source: World Bank 2007; Maddison 2006.

Figure 3.18 Mexico and other LAC countries have not been catching up with the United States
GDP per capita in the largest LAC economies relative to U.S. levels



Source: World Bank 2007; Maddison 2006.
Note: LAC = Latin America and the Caribbean.

tion and income growth. GDP per capita in 2002 may have been as much as 4 percent lower without NAFTA.

- Despite these positive impacts on the Mexican economy, the agreement has not produced rapid convergence in incomes (see figure 3.18). Mexico has avoided major economic crises, suggesting greater stability that can have significant welfare effects.⁶⁰ But its performance relative to the U.S. economy has not differed much from that of several other Latin American economies.

The large differences in economic output will likely remain significant for some time. In fact, steady-state convergence estimates suggest that Mexican incomes will reach only about half of U.S. incomes. Among the main reasons are significant differences in the quality of domestic institutions, in the innovation dynamics of firms, and in the skills of the labor force. These will all

BOX 3.6 *Neighborhoods matter: Southern Cone versus Southern Europe*

Half a century ago the countries in the southern cone of South America—Argentina, Brazil, Chile, and Uruguay—had per capita incomes similar to or higher than the three Southern European countries with which they had strong cultural bonds—Italy, Portugal, and Spain. The two groups have since followed different growth trajectories. For most of this period, the Southern Cone countries, except Chile, followed similar protectionist policies. Between 1950 and 2006 the

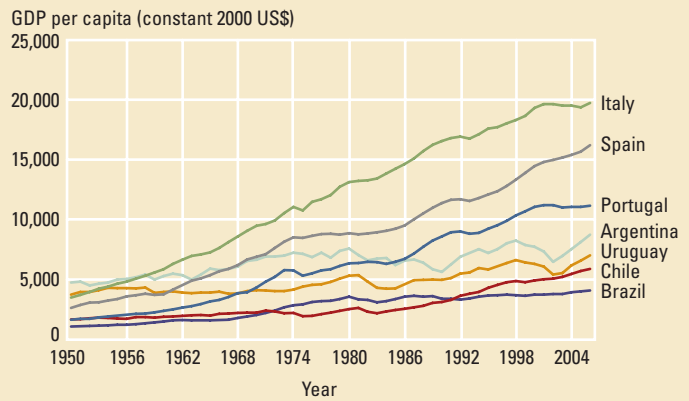
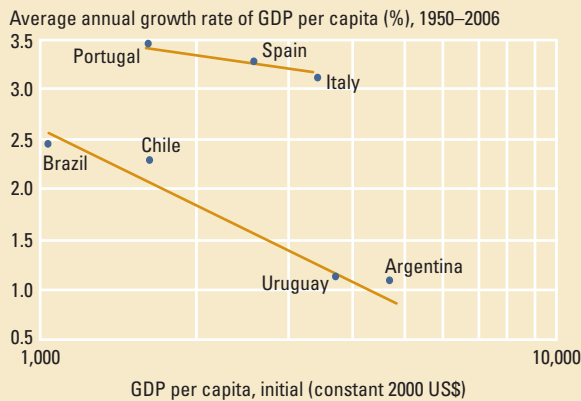
four countries' GDP per capita grew by an average 1.7 percent a year.

Economic dynamics in Southern Europe unfolded differently. Italy was one of the founding members of the European Community, and Portugal and Spain joined in 1986 after emerging from a long period under authoritarian regimes. From lower levels, they grew at more than 3 percent a year, far outpacing Latin America. While incomes converged in both regions, they did so faster in Western

Europe at around 1 percent a year than in South America at 0.3 percent. Italy, Portugal, and Spain benefited from regional growth spillovers, proximity to large markets, and cohesion policies within a single integrated Western European market. In the Southern Cone, regional integration was slow, and integration with wealthy markets in the Western Hemisphere was neglected for long periods.

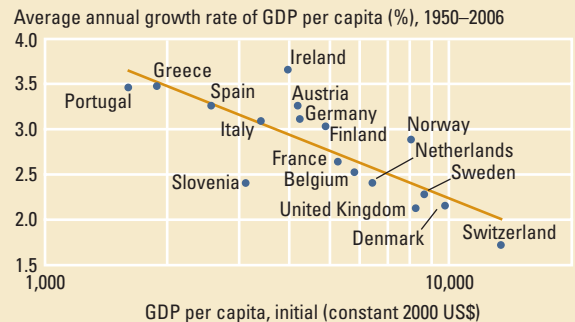
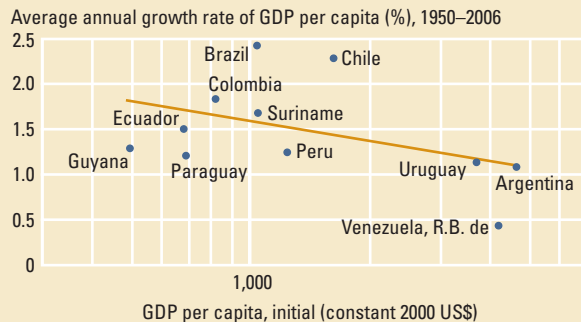
Source: WDR 2009 team. a. Lucas Jr. 2007;

The economic fortunes of Latin America and "Latin Europe" have diverged



Source: World Bank 2007; Maddison 2006.

Convergence in South America has been moderate; in Europe strong



Source: World Bank 2007; Maddison 2006.

benefit from closer integration with Mexico's northern neighbors, but the process will take considerable time.

Geography, globalization, and development

Four main aspects explain the persistent regional concentration of economic wealth over the past few centuries, with

new countries or regions only occasionally breaking into the ranks of the rich. First, physical geography has helped some countries become rich initially but continues to hold back others. Second, the forces of economic geography—starting from an initial advantage, such as technical innovation during the Industrial Revolution—facilitated agglomeration economies and

reinforced the concentration of economic activity. Third, regional spillovers increased economic activity in other countries within a region, further increasing the scale and scope of economic production. Fourth, entirely new regions of economic concentration emerged—as a response to congestion and a shift in established regions from manufacturing to services, “freeing up” manufacturing opportunities elsewhere. What does this imply for the prospects in today’s lagging world regions?

How much does geography matter today?

First-nature geography. Physical endowments influence the development prospects of countries. For instance, agricultural intensification in areas of good agroecological endowments generates surpluses that can be shifted to more productive uses. But these assets are not distributed uniformly. As Landes (1998) puts it: “Nature like life is unfair, unequal in its favors.” Researchers have found a strong correlation between economic output and geographic characteristics. A simple regression of output density (GDP per square kilometer) on geographic variables—mean annual temperature, mean annual precipitation, mean elevation, terrain “roughness,” soil categories, and distance from coastline—captures 91 percent of the variability in the density of economic production.⁶¹ A similar analysis explains 20 percent of the difference in per capita output between tropical Africa and industrial regions, and 12 percent of the difference between tropical Africa and other tropical regions. Climate also interacts with other factors, such as disease. Vector-borne diseases strike disproportionately in tropical countries, reducing productivity. Malaria is estimated to cause approximately 1 million deaths and more than 200 million clinical events among Africans each year.⁶² Other purely geographic factors—such as being landlocked, which shaves half a percentage point off annual GDP growth, or a remote location—were discussed earlier.

Does this mean that geography dictates the destiny of countries? No. Physical geography helps explain initial growth

differences and some of the variation in economic outcomes. But most of these constraints can be overcome with enough resources. They are thus a proximate rather than an ultimate cause of underdevelopment. High levels of malaria, for instance, may be as much a symptom of persistent poverty as a cause (see box 3.7). They are a grave concern for development interventions but insufficient to explain global patterns of economic wealth or to predict future growth potential by themselves.

Second-nature geography. An alternative but complementary explanation for global development patterns shows how small initial differences between countries and regions (for instance, natural endowments) can, over time, generate large disparities. A central question in economic development is how much growth is due to differences in human and physical capital accumulation, and how much to the efficiency of using these factors.⁶³ Evidence from a growing number of studies confirms that levels of capital accumulation alone are insufficient to explain cross-country differences in growth and income. Instead, total factor productivity (TFP)—how efficiently factors of production are combined—tends to better explain differences in growth and income between countries.⁶⁴

TFP is, however, a vague concept that subsumes several aspects of economic production. Most generally, it relates to better technology for combining inputs to generate products or services. This leads to cost reductions and thus increased competitiveness. Complementarities, spillovers, and economies of scale also explain differences in TFP. Geographically, these externalities imply benefits for producers to locate close to each other. Combined with scale economies that favor larger production units, the concentration of economic activities increases across geographic scales. European economic growth during the modern era was initiated by the industrial revolution, which generated major technological advances. Improved technology and population growth reinforced scale economies leading to concentrated centers of industrialization. These centers attracted workers

BOX 3.7 *The influence of first-nature geography: is it possible to eradicate malaria?*

The species of *Plasmodia* that cause human malaria most likely reached their maximum global extent in 1900. Since that time the affected area has been progressively reduced by a regionally variable mixture of improving human conditions and deliberate control. The map below shows the difference between the widest hypothesized extent of the distribution of all types of human malaria around 1900^a and the contemporary limits of *Plasmodium falciparum*,^b the most clinically severe and epidemiologically important form of human malaria, in 2007. The formerly malarious areas are concentrated in the temperature latitude extremes of the parasite's ancestral distribution, in both the Northern and Southern Hemispheres.

Researchers have documented the strong inverse correlation between the economic prosperity of nations and their contemporary malaria burden.^c Richer countries have less malaria, poorer countries more. This work also documents the many mechanisms, from individual to macroeconomic, for malaria to contribute to poverty. What if the constraint of malaria were lifted? Is it possible to eradi-

cate malaria? The question has never been satisfactorily answered at the global scale.^d

But it is possible to start addressing the problem. In the map below, risk is classified as stable if more than 0.1 case is recorded per 1,000 population each year, unstable if below this figure, and zero if no cases have been recorded within the three most recent years of records. When overlaid on a population map for 2007,^e 2.37 billion people were found to live in areas with any risk of *P. falciparum* transmission. Globally, almost 1 billion people lived under unstable, or extremely low, malaria risk. Conditions of low risk are typical in the Americas and in South and East Asia but are also common in Africa.

For 1 billion people at risk of unstable malaria transmission, malaria elimination is epidemiologically feasible. Epidemiological feasibility was determined by reference to historical experience during the global malaria eradication program and by inferring, through modeling, that transmission could be interrupted by taking insecticide-treated bednets to scale.^f There are many reasons in many regions why elimination may not be a simple mat-

ter of epidemiological feasibility. Political instability and geographic accessibility are obvious examples, but these are operational and not technical obstacles.

What can be achieved with the 1.37 billion people suffering stable risk? Initial evidence suggests that a substantial fraction of those affected will be living in areas of very low prevalence.^g A detailed investigation with mathematical models could estimate the impact from the existing toolkit of interventions. When this estimate combined with a detailed analysis of the data on the efficiency of historical interventions, considerable insight could follow. These approaches will help determine whether malaria is eradicable and, if so, under what time frame and with what resources.

Contributed by Simon Hay, David L. Smith, and Robert W. Snow.

a. Hay and others 2004; Lysenko and Semashko 1968.

b. Guerra and others 2008.

c. Sachs and Malaney 2002.

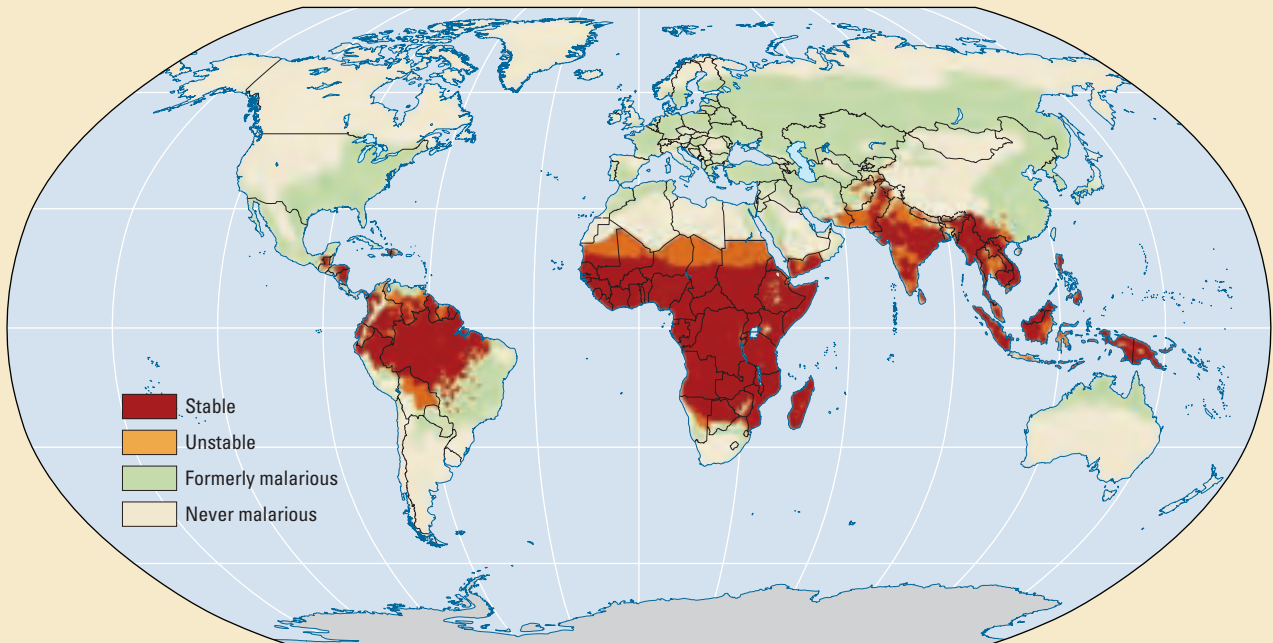
d. Roberts and Enserink 2007.

e. Balk, Deichmann and others 2006.

f. Hay, Smith, and Snow, forthcoming.

g. Guerra 2008.

Currently prosperous parts of the world were formerly malarious



Source: Malaria Atlas Project (MAP), Kenyan Medical Research Institute, and University of Oxford.

and new firms, instigating a virtuous, self-reinforcing process that led to even greater concentration.

Development is contagious, tending to spread across regions. Although growth centers may start within specific areas in a country—the industrial belt in the northwest of England or the mill towns in New England—dynamic centers tend to spread out. At the international level, growth spreads to neighboring states, giving rise to regional growth centers. With enough openness and interaction between countries, the mechanisms for spreading growth are technological spillovers and increasing specialization, breaking up production processes. This makes it more likely that some of the demand for intermediate products will be satisfied from neighboring countries. This can greatly expand trade, which produces scale economies and steep increases in economic productivity. The larger labor and capital pools and the greater market size that emerge due to gradual improvement of transport links can lead to the rapid takeoff of a regional economy.⁶⁵

New regions of growth and wealth can emerge. This happens when growth in a core region has reached a point at which congestion and rising wages encourage entrepreneurs to seek new locations for production in nearby regions. This happened in Western Europe, when firms relocated manufacturing capacity to Central and Eastern European countries, and in North America, when Mexico attracted investment in manufacturing capacity for the U.S. and Canadian markets. This contagion model of region building would suggest that all economic activity remains within an expanding contiguous zone—but it does not.

Under some conditions, economic growth may leap to an entirely new region.⁶⁶ The location of this new center of global manufacturing depends on many factors, including market size, trade and transaction costs, initial human and physical capital endowments, and competition from other potential growth regions. This leapfrogging model matches the emergence of East Asia as a global hub initially for labor-intensive production and later for technologically more advanced production. Half a century

ago, Japan would have seemed an unlikely source of inexpensive electronics and consumer goods for the U.S. market given the distance between the two countries. But the emergence of containerized shipping allowed Japanese producers to be competitive in North American markets and later in the European markets.⁶⁷ The Republic of Korea and Taiwan, China, followed in Japan's footsteps. Manufacturing investments spread from there to South Asia, particularly Malaysia and Thailand, and then, after economic liberalization, to China.

What do we learn from this?

Size matters a lot. To generate scale economies, a certain population and an economic mass need to be in place. In Europe during the Industrial Revolution, a relatively large and concentrated population provided both the labor that produced manufactures and the market that consumed them. North America, when it shifted from natural resources to industry, had a large population along its eastern seaboard, which grew quickly with immigration from Europe and elsewhere. East Asia has a vast population, with first Japan and later China serving as engines of manufacturing growth in the region. Each region benefited from a large home market, but much of the production was soon destined for export both within the region and to the rest of the world.

Few countries have lifted their economic fortunes based only on exports of primary commodities. Botswana, a sparsely populated country with large mineral wealth and good policies, is one exception. Well-managed mineral resources can help generate capital that can be invested in other sectors, but few countries have done this successfully. Agriculture—important for subsistence, for rural income generation, and for specific regions in a country—cannot by itself lift poor countries to middle- or high-income status. Rural activities are either too small in scale to provide sufficient surplus for export—or, in cases in which agricultural production has sufficient scale, it often benefits only a few large landowners or agribusinesses. The verdict on services is still out. But it is unlikely that poor countries have enough

skilled white-collar workers to generate broad-based growth spillovers. India has a large export-oriented service sector, but it employs only about 560,000 of its more than 1 billion inhabitants, most in jobs in constant-return customer support and back-office tasks.⁶⁸

Manufacturing remains important. Each successful world region has, at some point, made significant and broad-based gains with basic labor-intensive manufacturing. This process initially led to a diversification of production as countries grew richer and consumers demanded more varieties. As economies in these regions expanded, production and employment in individual countries started to specialize in what they were best at, giving rise to interlinked networks of production trading intermediate goods among countries within the region. This is the point at which China and some of the other “second-wave” economies in East Asia have arrived. In Europe and other regions that industrialized earlier, the share of manufacturing in the economy has fallen quite rapidly, with only highly specialized manufacturing remaining, such as machine tools or information technology (IT) equipment. In these countries, the service sector, including the research and design of products that will be manufactured elsewhere, now accounts for the largest share, by far, of employment and economic output.

Openness helps a lot—but it has to be introduced with care. Each of today’s successful regions initially developed its manufacturing sector behind a fairly substantive wall of tariffs and other protections. Only as their economies matured and became more dependent on foreign inputs and markets for their products did they gradually open their borders and integrate regionally and globally. The rise of interlinked production networks that cross international borders within each region required more coordination and cooperation among countries, not just for trade in goods and services, but also to settle on common standards and regulations.

The process proceeded somewhat differently in each region, most formally within Europe, where the EU’s political and economic integration superseded a patchwork

BOX 3.8 *Integration takes a long time, and its benefits do not come overnight*

In Europe, after the diffusion of modern industrial technology and the expansion of trade links in the early nineteenth century, it took more than 100 years before formal integration processes began in the 1950s. Even then, the efforts were limited to agreements on narrowly focused economic issues between six countries. Gradually they expanded into additional areas of cooperation such as customs and nuclear energy. It took 16 years before these agreements were consolidated in the European Community in 1967. Membership expanded slowly, with three countries joining each decade between 1970 and 2000, and finally the addition of 12 Eastern and Central European countries by 2007. Just as the initial Coal and Steel Community formalized long-established economic and cultural ties between the member countries, each subsequent expansion followed a long period of ever-closer interaction between members and accession countries.

Formal, *de jure*, integration thus followed *de facto* integration, providing a framework and structure for deepening already close relations. This gradual process allowed institutions to develop and gave labor, financial, and product markets time to prepare for possibly harsh adjustments, particularly for recently joining countries with much smaller economies. Bulgaria and Romania, which joined in 2007, added 8.6 percent to the EU’s land area and 6.3 percent to its population but only 1 percent to its GDP.^a So the convergence of social and economic outcomes across member countries will also take longer. Assessing the benefits from integration thus requires a long time horizon, as increased labor mobility, investment in private and public capital, and other structural changes accelerate growth in lagging member countries.

Source: WDR 2009 team.
a. European Union 2007.

of bilateral agreements among a fairly large number of countries (see box 3.8). East Asia, by contrast, has created tightly linked entrepreneurial production networks with relatively little formal protocol. Initial integration in North America was facilitated by a shared language and cultural background between Canada and the United States. The relatively recent addition of Mexico has removed some divisions between economies of greatly different per capita incomes.

Openness and integration are most beneficial for smaller or landlocked countries whose access to world markets depends on neighboring countries. Luxembourg’s small size does not matter, because it is tightly integrated in the European economy and thus operates more like a specialized city in a large country. Switzerland’s being landlocked has not constrained the development of highly specialized manufacturing and service sectors. It can connect to world markets by air or through neighboring countries, and its neighbors are significant destinations for

its outputs. Integration has enabled the two countries to benefit from specialization and scale economies that would otherwise be achievable only in far larger countries.

To facilitate integration, industrial regions invested heavily in physical infrastructure that promotes intraregional trade. Initially, sea and river transport was most important for exporting manufactured products, requiring good coastal and river ports. More recently, interrelated production processes require more timely availability of intermediate products, which has moved a larger proportion of trade to road, rail, and air links.

What's different for today's developers?

Are the conditions today different, or is this just a continuing or recurring phase of globalization similar to that of a hundred years ago? In fact, goods and factor markets may be no more closely linked today than they were a century ago. They may be somewhat more integrated for trade, no more integrated for capital, and less integrated for labor.⁶⁹ So how can lagging regions and countries join the group of leading world regions? Do they need to wait their turn, or are there ways for them to break out of a geographic determinism?

Some clear differences in the current phase of globalization and economic development relate to the dynamics of economic geography and the persisting divisions between countries. First, the scale and speed of economic integration in recent decades have been unprecedented. The economic liberalization in China and India, as well as in Russia and South America, adds huge numbers of unskilled workers to global production capacity.⁷⁰ In many ways this is a reemergence of those regions (Asia accounted for almost 60 percent of world GDP as recently as the early nineteenth century).

China and India, because of the enormous size of their home markets, are essentially world regions of their own. With no formal internal divisions, they benefit from scale economies and provide the incentive for investors and trading partners to

overcome their significant external barriers—the thick borders in the map that opened this chapter (see map 3.2). Smaller countries do not have this luxury. They must learn to manage their borders more rapidly to achieve economic integration with their neighbors to attain competitive production scale and to access world markets. Countries and regions that do this faster will have an advantage, but it will not be easy. By providing a vast unskilled labor pool—and relatively little human or physical capital—countries like China and India can absorb new manufacturing capacity for a long time. These are precisely the types of activities that might provide a path to middle income for the poorest countries. China also demonstrates the benefits of its economic rise for its neighbors. Almost all East Asian countries have sometimes significant trade surpluses with China in most manufacturing sectors.⁷¹

Second, there has been an unprecedented fragmentation of production processes. This includes not only the intrafirm division of manufacturing steps across several places, but more important the intraindustry trade of increasingly specialized components and services, sometimes over long distances. Advances in communications technology facilitate these complex buyer-supplier networks. Although integrated in global markets, production tends to be regionally concentrated. For smaller countries, this may be both a threat and an opportunity. The threat is that smaller countries with poor infrastructure and low skills will remain outside global trading networks. The opportunity is that, while spatial concentration remains beneficial for production, increasing specialization allows concentration and scale economies within subsectors in which even small players can carve out a niche.

In 1999 India's then-prime minister, Atal Behari Vajpayee, remarked on some of the same issues that have been discussed in this chapter: "We can change history but not geography. We can change our friends but not our neighbors."⁷² Is he correct? On one level, certainly. Countries cannot just pack up and move to a better neighborhood the

way individuals can. But in an economic and political sense, countries can change their neighborhoods. Japan and the United States overcame deep divisions of history and geography to become close neighbors by developing extensive transport links and increasing economic interdependence. Mexico and Turkey may be changing neighborhoods by reorienting economic ties from their traditional cultural backyards to more prosperous countries in another part of their neighborhood. European integration ended centuries of division and war. Since December 2007, travel from the Portuguese Algarve to Estonia is possible without once showing identification.

Many world regions continue to face the impacts of significant division. But this Report shows that countries can improve their economic fortunes by changing their neighborhoods virtually and practically. For this, they must do two things. First, they must overcome the limitations and barriers of geography by developing close trade and transport links with markets and sources of investment in rich and emerging regions of the world (see chapter 6). And second, they need to seek strength in numbers by “thinning” their borders and integrating their economies with their physical neighborhood (see chapter 9).