

# PART ONE

## SEEING DEVELOPMENT IN 3-D



As the world's economy grows, people and production are concentrating, pulled as if by gravity to prosperous places—growing cities, leading areas, and connected countries. As it did decades ago in today's high-income countries, the drive to density in low- and middle-income countries can increase the sense of deprivation as the economic distance between prosperous areas and those left behind widens. And although rapid advances in transport and communication increasingly bind together geographically distant communities around the world and open new opportunities for exchange, political divisions that obstruct the flow of people, capital, and goods remain. Part one of this Report defines the spatial dimensions—density, distance, and division—and describes their evolution with economic development. Chapters 1, 2, and 3 show how the economic geography at the local, national, and international scales is changing, and how the scope and pace of these changes compare with transformations in the economic geography of North America, Europe, and Japan when they were at similar stages of development. This broad sweep of stylized facts informs the analysis in part two and the policy discussions in part three of the Report.

# Density



Mostly off the world's radar, on a dusty plain in West Africa, is a city of 1.6 million people. Bisected by the River Niger, its two halves—with about 800,000 people each—are linked by only two bridges. The pressure of movement is so strong that every morning one of these bridges is dedicated to incoming traffic: minibuses, bicycles, motorbikes, pedestrians, and occasionally private cars. In the evenings, to leave the center means joining an exodus of people toward the minibus depots. Green vans loaded with passengers file out to residential neighborhoods as far as 20 kilometers away. This is Bamako, Mali. It contracts into its center every morning and breathes out again in the evening.

With each breath Bamako grows bigger. It happens to be one of the fastest-growing cities in the world. Natural demographic growth is supplemented by migration from the countryside and other Malian cities. Its population in 2008 is 50 percent larger than 10 years ago, making it the same size as Budapest, Dubai, or Warsaw. It has 10 times more inhabitants than the next biggest Malian city and accommodates 70 percent of the country's industrial establishments.<sup>1</sup> New neighborhoods—*quartiers*—formerly villages, become consolidated with the rest of the city, toward the south, east, and west. Some of Bamako's people are now moving out into surrounding neighborhoods in search of cheaper land and some tranquility, but they remain within reach of the city because it provides their livelihoods.

Despite its industriousness, Bamako is one of the sleepier cities in West Africa. Many of the manufactured staples come 1,184 kilometers by road from one of the region's metropolises, Abidjan, which has more than twice Bamako's population. Abidjan seems small beside Lagos, where activity is so concentrated that its residents speak of living in a pressure-cooker. Some families rent rooms to sleep for six hours and then turn them over to another family that takes their place. Shopping does not necessarily require travel: goods are brought on foot and cart to drivers stuck in Lagos's interminable traffic jams. To some, like the authors of Lagos's 1980 master plan written when the city had just 2.5 million residents, the continuing growth of the city is "undisciplined."<sup>2</sup> What can possibly be so attractive about living in Lagos that, despite its congestion and crime, it continues to draw migrants?

The short answer: economic density. Lagos is not the most economically dense city in the world, nor even the most densely populated. Those distinctions belong to Central London and Mumbai, respectively. Even so, Nigeria's economic future and Lagos's growth are as inextricably tied as Britain's economy is with London's growth. No country has developed without the growth of its cities. As countries become richer, economic activity becomes more densely packed into towns, cities, and metropolises. This geographic transformation of economies seems so natural

that—at an impersonal aggregate level—it is taken for granted. But moving to economic density is a pathway out of poverty both for those who travel on it and, ultimately, for those left behind. Jane Jacobs, the noted urbanist, did not have Bamako and Lagos in mind when she wrote, “A metropolitan economy, if it’s working well, is constantly transforming many poor people into middle-class people, many illiterates into skilled people, many greenhorns into competent citizens. Cities don’t lure the middle class. They create it.”<sup>3</sup> She might as well have written: as Lagos and Bamako grow, they will fill in West Africa’s missing middle.

This chapter introduces density, the first of the geographic dimensions of development, defined as the economic mass or output generated on a unit of land. Surveying the evolution of density with development, the chapter presents stylized facts about how density in a country rises with urbanization, rapidly at first, and then more slowly. These changes are associated initially with a divergence of living standards between places with economic density and those without, later with a convergence. Living standards thus eventually converge between areas of different density, such as urban and rural. Even within cities, densely populated slums amid formal settlements, the differences slowly disappear with development. But this convergence does not happen by itself. It requires the institutions to manage land markets, investments in infrastructure, and well-timed and executed interventions.

The main findings:

- ***The concentration of economic activity rises with development.*** The world’s densest areas or settlements are in developed countries. But the path to these levels, “urbanization” in this Report, is not linear. The share of a country’s population settled in towns and cities rises rapidly during its transformation from an agrarian to an industrial economy, which generally coincides with its development from low to middle income. The pace of urbanization slows after that, but economic density continues to increase in a postindustrial economy because services are even more densely packed than industry.
- ***Rural-urban and within-urban disparities in welfare narrow with development.*** In the early stages of development, geographic disparities in welfare are large. With development, these gaps may increase initially. Rural-urban gaps in income, poverty, and living standards begin to converge as economies grow, faster for access to social services, and faster in areas of more vibrant growth. Within-city gaps in welfare and housing—most obvious in informal settlements or slums—persist for much longer, and narrow only at later stages of development.
- ***Neither the pace of urbanization nor its association with economic growth is unprecedented.*** Today’s developing countries are sailing in waters charted by developed nations, which experienced a similar rush to towns and cities. The speed is similar, and the routes are the same. What is different today is the size of the ship: the absolute numbers of people being added every year to the urban populations of today’s developing countries are much larger than for even the most recent industrializers such as the Republic of Korea and Taiwan, China. Later chapters of this report investigate the policy implications of these similarities and differences.

## Defining density

Density refers to the economic mass per unit of land area, or the geographic compactness of economic activity. It is shorthand for the level of output produced—and thus the income generated—per unit of land area. It can, for example, be measured as the value added or gross domestic product (GDP) generated per square kilometer of land. Given that high density requires the geographic concentration of labor and capital, it is highly correlated with both employment and population density. Density is the defining characteristic of urban settlements.

### *The economic world is not flat*

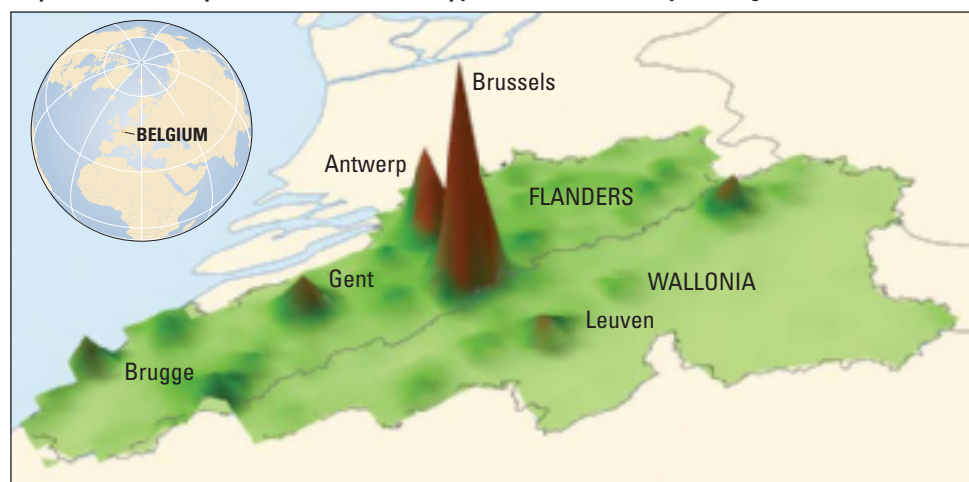
The geographic distribution of economic activity, at any resolution, is uneven. No matter the geographic scale examined, be it the country or a subnational area such as a province or district, there is a hierarchy of density. At the top is the primary city, and at the bottom are agricultural lands or rural areas. Between them is a continuum of settlements of varying density.

The geographic unevenness of economic mass, or bumpiness, tends to increase with a country's land area. But even the economic geography of small countries is bumpy. The Belgian city of Brussels has a land area of 161 square kilometers, of which 159 square kilometers are used for nonagricultural purposes. On this small area, a GDP of €55 billion is generated by about 350,000 workers—that is, the average square kilometer of land has more than 2,000 workers annually producing almost €350 million of services and goods. Brussels not only has high densities of GDP and employment; it also has the highest population density of any European (EU27) area classified as NUTS1 (Nomenclature of Territorial Units for Statistics)—more than 6,000 people per square kilometer, 18 times the average for Belgium.<sup>4</sup> For the sake of comparison, the population density of London and Madrid is about 5,000 people per square kilometer.

This density contrasts markedly with the agricultural areas of Belgium. In the Flemish Flanders (Vlaams Gewest) area, 6,323 square kilometers of land are used for agriculture. Its area is almost 40 times that of Brussels, but its employment is just 13 percent of Brussels and its GDP a mere 4.5 percent, translating into employment and GDP densities of only seven workers and €330,000 per square kilometer. The ratio of output density between Brussels and Flanders is 1,000 to 1. In between metropolitan Brussels and rural Flanders is a range of settlements, each with a different density (see map 1.1). The cities of Antwerp, Brugge, Gent, and Leuven have an average output of €22 million and employment density of 342 workers per square kilometer.<sup>5</sup>

In both developed and developing countries, then, the economic landscape is bumpy. But the topography does not correspond to a simple urban-rural dichotomy. A continuum of density gives rise to a portfolio of places. At the head is a country's leading, primary, or largest city. Below the primary city is a spectrum of settlements—secondary cities, small urban centers, towns, and villages (see figure 1.1). In some countries, such as France and Mexico, the size difference between the top two cities is phenomenal. With a population of 10 million, Paris dwarfs second-ranked Marseille with just 1.5 million. And with a population

**Map 1.1 The landscape of economic mass is bumpy, even in a small country like Belgium**



Source: WDR 2009 team and World Bank Development Research Group, based on subnational GDP estimates for 2005. See also Nordhaus 2006.

of 22 million, Mexico City is more than four times as populous as Guadalajara, Mexico's second city. Conversely, in India and the United States, the size difference between the two biggest cities is relatively small. With populations of more than 22 million people, Mumbai and New Delhi stand shoulder to shoulder. New York has a population of 22 million, Los Angeles 18 million.<sup>6,7</sup>

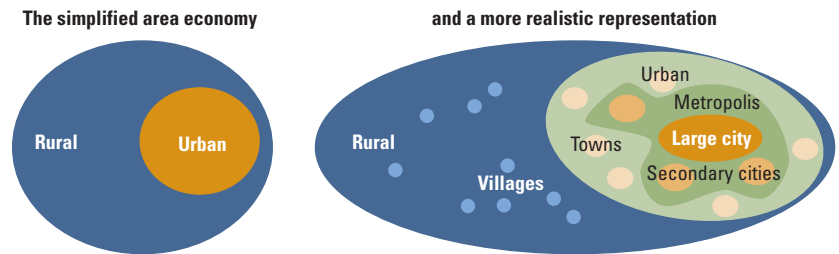
### *An evolving portfolio of places*

Although the growth of cities appears chaotic, the underlying patterns have a remarkable order (see figure 1.2). A country's urban hierarchy is characterized by two robust regularities:

- The “rank-size rule”—the rank of a city in the hierarchy and its population are linearly related.
- Gibrat's law—a city's rate of population growth tends to be independent of its size.

According to a special case of the rank-size rule, known as Zipf's law, the population of any city is equal to the population of the largest city, divided by the rank of the city in question within the country's urban hierarchy (see box 1.1).<sup>8</sup> As early as 1682, Alexandre Le Maitre observed a systematic pattern in the size of cities in France.<sup>9</sup> For all classes of country, the relative size distribution has remained stable over time, even as incomes and populations grew (see figure 1.2). Concerns about “urban

**Figure 1.1 From dichotomy to continuum: a portfolio of places**



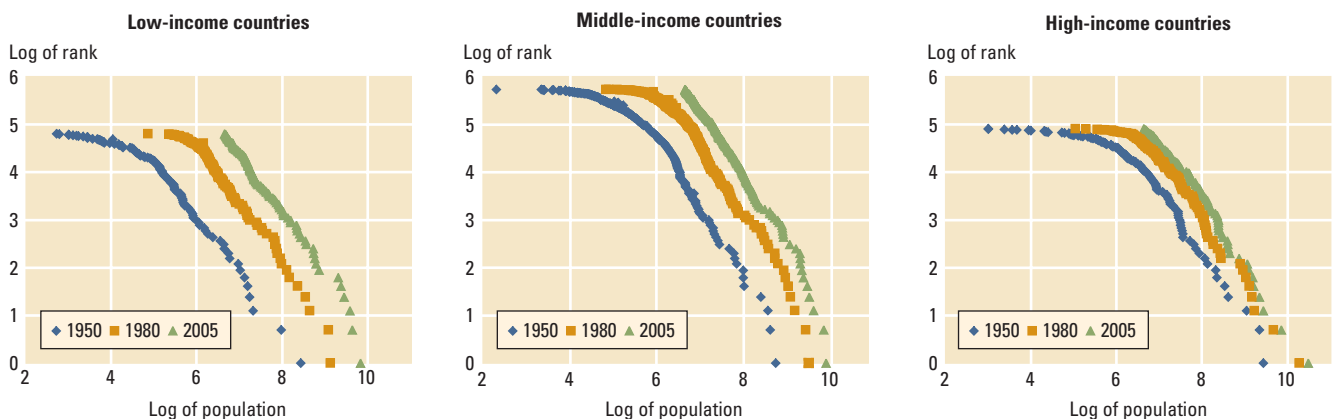
Source: WDR 2009 team.

primacy” notwithstanding, the “portfolio of places” is an enduring feature of economic development.

Settlements of different sizes complement one another. Metropolises, secondary cities, market towns, and villages are all linked through their complementary functions (see box 1.2). The primary city is often but not always the national administrative center and the seat of political power: Cambodia's Phnom Penh, Cameroon's Yaounde, and Colombia's Bogotá. A country's leading city also tends to be its most diversified, both in the provision of goods and services and in cultural and other amenities. For the cultural amenities, think of Broadway in New York City, the Opera House in Sydney, and the Louvre in Paris. But think also of Trinidad and Tobago's Port of Spain, famous for the annual carnival that attracts large numbers of visitors.

Just as a primary city forms the core of a country's metropolitan area with other adjacent cities, other large urban centers or

**Figure 1.2 Almost a law: relative size distributions of settlements remain stable over time**



Source: United Nations 2006c.

Note: Each data point represents an agglomeration area of population size of 750,000 or more.

### BOX 1.1 *Two laws and a rule: the empirical regularities of a country's city-size distribution*

The rank-size rule, discovered in 1913, can be expressed as the rank  $r$  associated with a city of size  $S$  is proportional to  $S$  to some negative power. The special case in which the estimated power equals  $-1$  is known as Zipf's law, named after a linguist, George Zipf. Evidence on the pervasiveness of the rank-size rule comes not only from large cities belonging to countries of different income classes, but also from the experience of individual countries. The remarkable westward and southward expansion of the U.S. urban hierarchy notwithstanding, the rule provides a good description of the size distribution of U.S. cities for every decade between 1790 and 1950.<sup>a</sup> Indeed, even today, the rank-size rule continues to describe well the size distribution of U.S. cities (see figure below). This is so despite evidence that the shape of the rule has changed over time, becoming slightly flatter so that the overall distribution of

U.S. city sizes is more even—and that the rule fails to hold at the extremes of the U.S. city-size distribution, a common finding for many countries.<sup>b</sup> Moreover, the rank-size rule also holds for countries as diverse as Kazakhstan and Morocco, providing further evidence of its universality (see the figure below).

Whether the rank-size rule is really a rule with underlying theoretical structure is still under debate. It can be shown to follow from Gibrat's law, which implies that cities grow in parallel.<sup>c</sup> This is consistent with the absence of any systematic growth differences between cities. But this does not imply that policy is incapable of influencing a city's size and economic performance. Cities can and do move up and down their national urban hierarchies as a result of good and bad policy choices. And even transitory departures from a parallel growth

path can have important long-term repercussions for the welfare of a city's inhabitants. On whether the power in the rank-size rule equals  $-1$ , so that Zipf's law holds, many researchers seem to agree that, in general, it does not.

The robust message from the rank-size rule is that, for a given country or area, a wide range of city sizes coexists. Even the most developed countries have a portfolio of settlements of different sizes, ranging from the small to the large, as opposed to a single megacity or a collection of cities, all of similar size. Agglomeration is a balancing act between centripetal and centrifugal forces. The balancing point differs depending on the sector, the economic activities, and the type of industries.

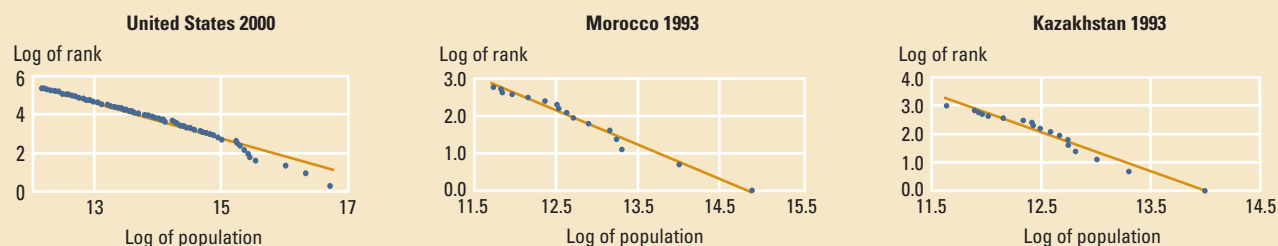
Contributed by Mark Roberts.

a. Madden 1956, cited in Kim and Margo 2004.

b. Gabaix and Ioannides 2004, p. 14.

c. Gabaix and Ioannides 2004, pp. 16–17.

#### The rank-size rule, for nations as diverse as the United States, Morocco, and Kazakhstan



Sources: The graph for the United States is from Rose (2005); the graphs for Kazakhstan and Morocco are based on data for cities and urban agglomerations from Brakman, Garretson, and Marrewijk (2001).

secondary cities act as regional foci for both the economy and society. For example, they are the local centers for the financial sector, which serve the areas around them. Düsseldorf, Hamburg, Hanover, and Munich are all home to regional stock exchanges, as well as local concentrations of venture capital firms.<sup>10</sup> Dallas and Atlanta emerged as regional centers of commerce and finance in the lower South of the United States, and both host regional offices of the Federal Reserve Bank.<sup>11</sup> Large urban centers and secondary cities also act as local political centers, and provide advanced public health, education, and cultural facilities. Hyderabad, the state capital of Andhra Pradesh, with numerous universities, leading institutes for technical education, and

private medical colleges, is a seat of learning in southern India.

These large regional cities are connected to smaller cities or major towns. The Ruhr area of Germany, the Randstadt area of the Netherlands, and the Padang-Medan hub in Indonesia's Sumatra represent alliances of cities. Smaller cities within these areas constitute more specialized urban centers, typically focusing on manufacturing and the production of traditional and standardized items. Symbiosis is the ruling order: just as the larger cities help to serve the smaller cities, so the reverse is true. For instance, the larger cities depend on the smaller ones for the daily provision of workers through commuting.<sup>12</sup>

Just as there are mutually beneficial links between larger and smaller cities, the same is

### BOX 1.2 *The Republic of Korea's portfolio of places*

Illustrating a well-developed portfolio of places are seven settlements in the Republic of Korea's urban hierarchy: Seoul, Pusan, Daegu, Ansan, Gumi, Jeongeup, and Sunchang.

Seoul is at the pinnacle of the hierarchy. Located 50 kilometers from the Republic of Korea's border with the Democratic Republic of Korea in the Han River basin, it is the country's capital and home to a quarter of its population (that is, 9.76 million people). It serves as the nation's political center and cultural heart. Also typical is its specialization in business services, finance, insurance, real estate, and wholesaling and retailing. Overall, services account for 60 percent of the local economy. Seoul is also highly specialized in publishing and printing and in fashion design and high-end apparel, with the two industries employing more than half the city's 465,000 manufacturing workforce.

Next in the urban hierarchy are Pusan and Daegu. With a population of 3.7 million, Pusan is the Republic of Korea's second largest city. In the southeastern corner of the Korean Peninsula, its seaport, one of the world's largest, handles more than 6.5 million container ships a year. Daegu is a metropolitan area of 2.5 million, dominated by textile and clothing manufacturing and automotive parts manufacturing and assembly. Since 1970, the Gyeongbu Expressway has connected Pusan to Seoul through Daegu. About 20 flights operate daily between Seoul and Daegu, and since 2001, the two cities have been linked by a high-speed train.

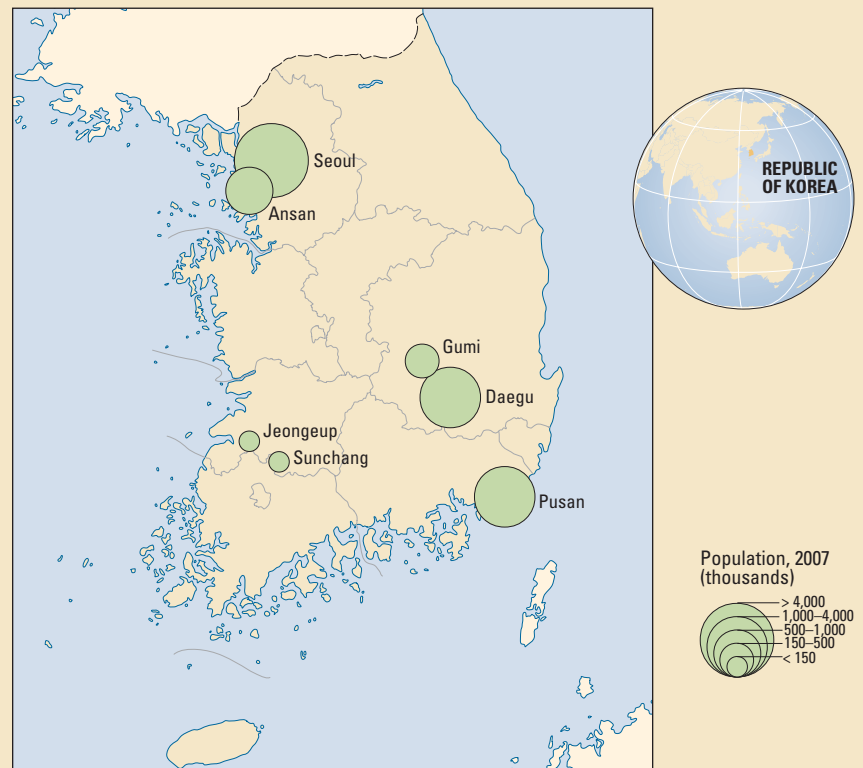
Much farther down the hierarchy, Ansan and Gumi are secondary cities, with populations of around 679,000 and 375,000, respectively. In Gyeonggi province, Ansan belongs to the Seoul National Capital Area, as part of Seoul's suburban area. Gumi is in Gyungbok province, in the southeast. As tends to be the case with secondary cities, Ansan and Gumi are more specialized in

manufacturing, especially standardized manufacturing, than cities farther up the hierarchy. Although both cities serve as manufacturing centers, they differ in their specializations. Gumi is heavily specialized in the radio, television, and communication equipment industry, which by itself accounts for more than 50 percent of local manufacturing employment. Ansan is specialized in such high-tech industries as electrical machinery and computers and office machinery. It also has agglomerations in several heavy industries: almost 14,000 workers, or 14.7 percent of the local manufacturing workforce, are employed in the fabricated metal products industry.

At the bottom of the hierarchy, Jeongeup and Sunchang, both in the Jeonbuk province, are close to the interface between rural and urban. So while Jeongeup has a relatively large population (129,050), one in four of its inhabitants is a farmer. Likewise, Sunchang is a rural town: half of the 32,012 residents are farmers. To the extent that they exhibit any specialization in manufacturing, it is either in traditional resource-related industries, as in Jeongeup, or in the manufacture of food and beverage products, as in Sunchang.

Contributed by Park Sam Ock.

**Seoul heads the hierarchy of settlements in the Republic of Korea**



Sources: WDR 2009 team, using data from the National Statistical Office of the Republic of Korea.

true for smaller cities and towns, and towns and rural areas. Towns are the connective tissue between rural and urban areas. They act as market centers for agricultural and rural output, as stimulators of rural nonfarm activity, as places for seasonal job opportunities for farmers, and as facilitators of economies of

scale in postsecondary education and health care services. Symbiosis is again the rule. Towns draw sustenance from the agricultural activity of rural areas, but their prosperity also spills over to villages by providing non-farm employment opportunities. Farmers in Vietnam migrate seasonally to work in urban

construction, returning to invest the money earned in their farms.<sup>13</sup> Farmers in Makueni, Kenya, use nonfarm income to invest in terracing, planting trees, clearing bush, building houses, and educating their children. Farmers in the semiarid Diourbel region of Senegal have responded to growing urban demand for meat by diversifying away from groundnut production into animal husbandry.<sup>14</sup>

### *Measuring density*

Measures of gross product at a refined spatial scale, such as a district or a city, are difficult to come by. Even for developed countries, output estimates tend to be available only for rather broadly defined subnational areas (first level and administrative units, such as provinces or states). At this level, important variations in economic density are likely to average out. Fortunately though, as illustrated earlier for Belgium, output and population density are closely correlated. Reliable population estimates are more easily available, even for villages or townships, because in most countries, a population census is taken every decade.

The strong correlation between population density and economic mass is consistent with urban areas being a conglomeration of consumers and producers, of buyers and sellers, and of firms and workers. For a typical metropolitan area, the gradient of population density for distance from the city center is similar to the corresponding gradient for employment density.<sup>15</sup> As implied above, the extent to which a country's population lives in urban areas bears a strong relationship to how "bumpy" its economic geography is. Density goes from smoothly spread out to quite uneven as a country develops. Urbanization is thus synonymous with a tendency toward greater agglomeration within a country. A country's urban share is a good proxy for the proportion of its population living in areas of high density and, therefore, for the "bumpiness" in its economic geography.

This Report proposes the use of an agglomeration index computed using geographic information systems as a measure of density. Measures of urbanization are nonuniform across countries, which makes comparability and aggregation a challenge. The index allows for a more consistent comparison of the level of urbanization—or,

interchangeably, agglomeration, density, or geographic concentration of economic activity—across countries.

The index identifies an area of 1 square kilometer as urban, agglomerated, or dense if it satisfies the following three conditions:

- Its population density exceeds a threshold (150 persons per square kilometer).
- It has access to a sizable settlement within some reasonable travel time (60 minutes by road).
- The settlement it has access to is large in that it meets a population threshold (more than 50,000 inhabitants).

Box 1.3 summarizes the rationale and methodology underpinning the index.

One advantage of the agglomeration index is that it incorporates both density and the local distance to density. Based on the criteria of population density and accessibility to a sizable market, the index also comes closer to providing an economic definition of an area that can both benefit from and contribute to agglomeration economies. Although economic density is both a cause and a consequence of agglomeration economies, accessibility to this economic mass from the outer parts of the city facilitates the exploitation of such benefits to proximity. This is especially true in the service sector in which face-to-face interactions are often necessary. By reducing the need to allocate valuable land area to residential uses in and near urban centers, transport infrastructure facilitates economic density.

Going to work by car or by high-speed public transportation is a luxury that developed country commuters do not always share with their counterparts in developing countries. For any given geographic distance, therefore, accessibility to a city tends to be lower in developing countries because of the need to rely on alternative, more time-intensive modes of transportation, such as walking, cycling, or inefficient public transportation operating on poor-quality roads. In Mumbai, India, 44 percent of people walk to work,<sup>16</sup> and in Hefei City, China, more than 70 percent either walk or cycle.<sup>17</sup>

Such variations in accessibility determine both the shape and form of a city. When most people walk to work, a city is more likely to be monocentric and densely

### BOX 1.3 Computing the agglomeration index

The United Nations maintains the *World Urbanization Prospects* database, a treasure trove of information. It provides urban shares and population data for 229 countries stretching back to 1950. But these data are based on country definitions, which can be quite different. This Report proposes a new measure of agglomeration, based on a uniform definition of what constitutes an “urban” or agglomerated area, using the technique outlined in Chomitz and others (2007) and elaborated in Uchida and Nelson (2008).

This should not be read as implying that *World Urbanization Prospects* data are flawed. A better interpretation is to see the challenge of measuring urbanization as analogous to the measurement of poverty. Each country has its own poverty line and criteria to track changes in national poverty rates. But these measures do not allow reliable comparisons of poverty between countries, and they cannot be used to aggregate poverty for groups of countries. The merit of a uniform poverty measure—such as those living below US\$1 or US\$2 a day,

adjusted for purchasing power differences between countries—is that it allows international comparisons and calculations that aggregate poverty for regions and the world. The agglomeration index allows the same comparisons and aggregation.

The methodology underlying the calculation of the agglomeration index can be summarized as follows:

- *Specify thresholds.* To be classified as “urban” using the agglomeration index, an area must satisfy three criteria based on (1) minimum population size used to define a sizable settlement, (2) minimum population density, and (3) maximum travel time, by road, to the sizable settlement.
- *Locate the centers of sizable settlements.* This mapping is done for cities that meet the minimum population size criterion using data from the Global Rural-Urban Mapping Project (GRUMP) human settlements database.<sup>a</sup>
- *Determine the sizable settlement’s border.* The border surrounding a sizable

settlement center is calculated based on the maximum travel time to the center.

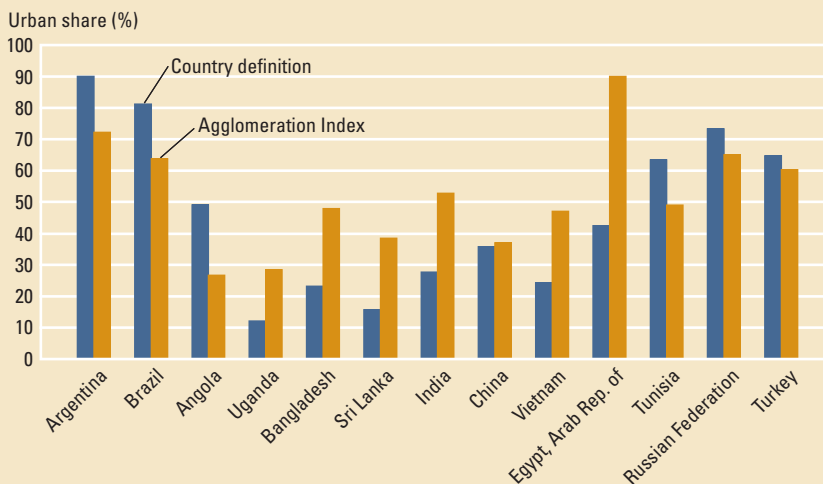
- *Create population density grids.* These are created at a 1-kilometer spatial resolution using two global grid-based population data sources, GRUMP and LandScan.<sup>b</sup>
- *Identify the areas.* Identify the grid cells that satisfy thresholds for all three criteria.
- *Aggregate grid cell populations.* The result is analogous to urban population. The proportion of this number to that country’s total population is the agglomeration index, a summary measure of the proportion of the population living in areas of high density.

In calculating the index, this Report uses a base case set of thresholds of 50,000 for minimum population size of a settlement, 150 people per square kilometer for population density, and 60 minutes for travel time to the nearest large city.

The density and travel time thresholds are those employed in Chomitz, Buys, and Thomas (2005). The density threshold is the same as the one used by the Organisation for Economic Co-operation and Development (OECD). The threshold of 50,000 for a sizable settlement is reasonable for developing and developed countries. Many developing nations have more than 10 percent of their total population in urban centers of between 50,000 and 200,000. Some examples include Chile in 2002, Brazil in 2000, and Malaysia in 2000, all with around 17 percent of their national population living in urban centers of 50,000–200,000 inhabitants. Of India’s urban population in 2001, 20 percent lived in settlements of this size.

According to the *World Urbanization Prospects* database, the worldwide urban share in 2000 was 47 percent. Using the base case criteria, this ratio is 52 percent, but using 100,000 as the minimal settlement size, it is 44 percent, according to the agglomeration index. But country level estimates can be further apart (see figure at left).

**The internationally comparable agglomeration index can yield different urban shares than those from country-specific definitions**



Sources: Chomitz, Buys, and Thomas 2005; Nelson 2008; Satterthwaite 2007; United Nations 2006c.

a. The GRUMP human settlements database was developed by the Center for International Earth Science Information Network (CIESIN) at Columbia University (<http://sedac.ciesin.columbia.edu/gpw/index.jsp>).

b. LandScan was developed by Oak Ridge National Laboratory (<http://www.ornl.gov/sci/landscan/>).

populated at its core. In Mumbai, half of all workers commute less than 2 kilometers, implying that they live close to their places of work. Similarly, to obtain the advantages of

agglomeration in industrial districts, workers in nineteenth-century Britain had to live nearby. The centers of industrial towns were densely populated, and overcrowded housing

was common. Not until the electric tram was introduced did this change.

In determining accessibility, and thus the shape and form of cities, features of physical geography can also be important. Manhattan Island in New York City is difficult to get to, simply because of geography, so it has skyscrapers and a classic monocentric structure, with half its employment within a three-mile radius of Wall Street. By contrast, in Los Angeles, one has to widen the area to a radius of 11 miles from the center to find as large a share of employment.<sup>18</sup> The implication: economic density in New York City is \$1.44 billion of gross product per square kilometer, in Los Angeles it is \$0.49 billion.<sup>19</sup>

In the United Kingdom, Stevenage, Basildon, and Crawley are commuter towns that serve London. About 11 percent of London's GDP is generated by commuters from suburban areas.<sup>20</sup> Similarly, in the United States, a daily tide of workers commute into Washington, D.C., from the neighboring states of Maryland and Virginia. In 2005 the net contribution of commuters from these two states to Washington, D.C.'s output was \$36.4 billion. Maryland's Montgomery County—within easy commutable distance of the district—alone contributed \$6.4 billion to Washington's gross product.<sup>21</sup>

The biggest advantage of the agglomeration index is its comparability across countries. Here the index has an advantage over the United Nations' *World Urbanization Prospects* database, which contains the "de facto population living in areas classified as urban according to the criteria used by each area or country."<sup>22</sup> The heterogeneity across countries can make cross-country comparisons misleading. A few examples:

- *India.* With the criterion for an urban area used by Zambia or Saudi Arabia, defined as settlements with populations of 5,000 or more, the share of India's population in urban areas in 1991 would be 39 percent instead of the official figure of 26 percent. This is because 113 million inhabitants of 13,376 villages would be reclassified as urban.
- *Mexico.* Based on Mexico's official criterion of settlements of 2,500 or more as urban, the country's urban share in 2000 was 74.4 percent. But if the settlement population threshold were to be

redefined as 15,000 (Nigeria and Syria, for example, have cutoffs of 20,000), that share would drop to 67 percent.

- *Mauritius.* In 2000 about a quarter of Mauritius's population lived in settlements with between 5,000 and 20,000 inhabitants. Some of these settlements are district capitals, but none of them are classified as urban. If they were, the urban share would have been more than two-thirds rather than less than half.

At a regional level, according to *World Urbanization Prospects* data, South Asia poses the paradox of being the least urbanized region (27 percent urban) in the world while also the most densely populated. Using the agglomeration index, South Asia's urban share in 2000 was 42 percent, making it more urbanized than both Sub-Saharan Africa and East Asia and the Pacific (figure 1.3). The *World Urbanization Prospects* also pose a puzzle for Latin America and the Caribbean. The urban share in this region in 2000 was greater than that in Eastern Europe and Central Asia and almost on par with the OECD's. The OECD has an average GDP per capita more than six times that of the average Latin American country. More reasonably, the agglomeration index indicates that Latin America and the Caribbean's urban share in 2000 was similar to that of Eastern Europe and Central Asia, and 15 percentage points lower than that of the OECD.

Despite these drawbacks, the *World Urbanization Prospects* data are the only available information for comparisons over time. The agglomeration index is available only for 2000, because time-series data on road networks, necessary to estimate travel time, are not readily available. So, the agglomeration index and *World Urbanization Prospects* database should be considered as complementary data sources for examining urbanization and density, and this Report uses both the agglomeration index and the *World Urbanization Prospects* data.<sup>23</sup> Calculating comparable urban share measures for at least some countries in the past is possible; going forward, it should be a priority for all countries.

### **Economic concentration—the richer, the denser**

In the early stages of development, when an economy is primarily agrarian, people live

spread out on farmland. Even the largest towns and cities are small. Urban settlements are likely to be small port cities and market towns, serving the rural needs and trading surpluses of agriculture. Industrialization brings with it a rapid process of urbanization—new cities are born, and existing cities expand. As people crowd into these cities at a faster rate than their boundaries expand, population and economic density increase. Quite early in a country's development, this leads to a hierarchy of places.

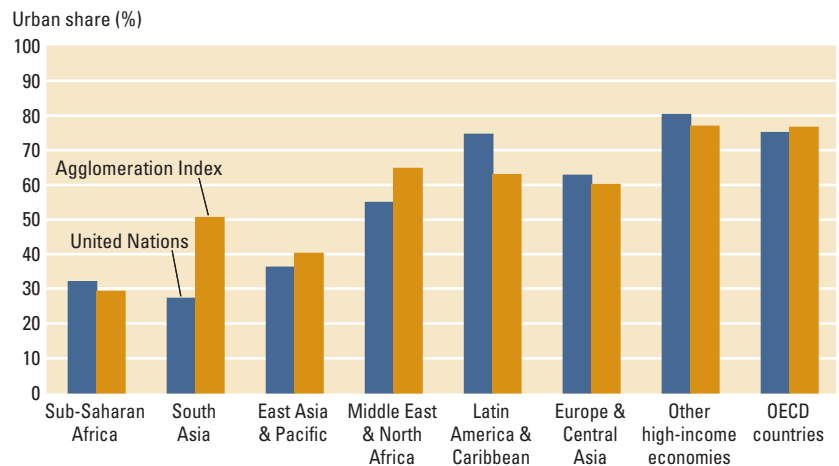
So, two transitions characterize economic development. The first involves the movement from a primarily agrarian economy to a much more manufacturing-oriented economy. The second transition, taking place at a much higher level of development, involves the transformation to a service-oriented economy. The first phase of urbanization, which occurs at a faster rate, coincides with the transition from a rural to an urban economy. The second phase of urbanization, at a slower rate and a much higher level of development, is linked to a within-urban evolution. In most countries, these transformations happen at the same time but in different areas.

To measure concentration, we have to define an area. The policy debate often involves a discussion of urban primacy, such as whether developing country cities are too big or too small. More academic discussions use a purer geographic notion of space. This chapter uses both spatial units—primary cities and the densest grid cell of 1° longitude by 1° latitude of a country—to measure concentration.

### *Historically, rapidly rising concentration, then a leveling off*

By one definition, a city is a geographic area characterized by a concentration of economic actors.<sup>24</sup> Globally, the top 30 cities, ranked by GDP, generated around 16 percent of the world's output in 2005, while the top 100 generated almost 25 percent. The urban agglomerations of Tokyo and New York have estimated GDPs (in purchasing power parity) broadly similar to those of Canada and Spain, respectively, whereas London has a higher estimated GDP than either Sweden or Switzerland. Similarly, primary cities in developing countries account

**Figure 1.3 The agglomeration index helps to compare urbanization across regions**

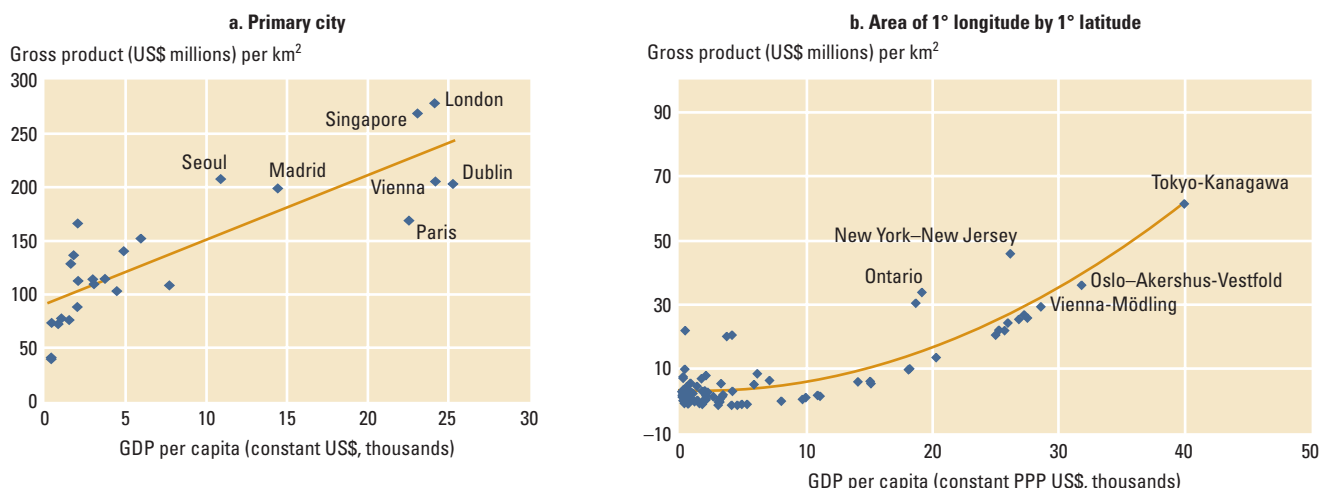


Sources: Chomitz, Buys, and Thomas 2005; Nelson 2008; Satterthwaite 2007; United Nations 2006c.

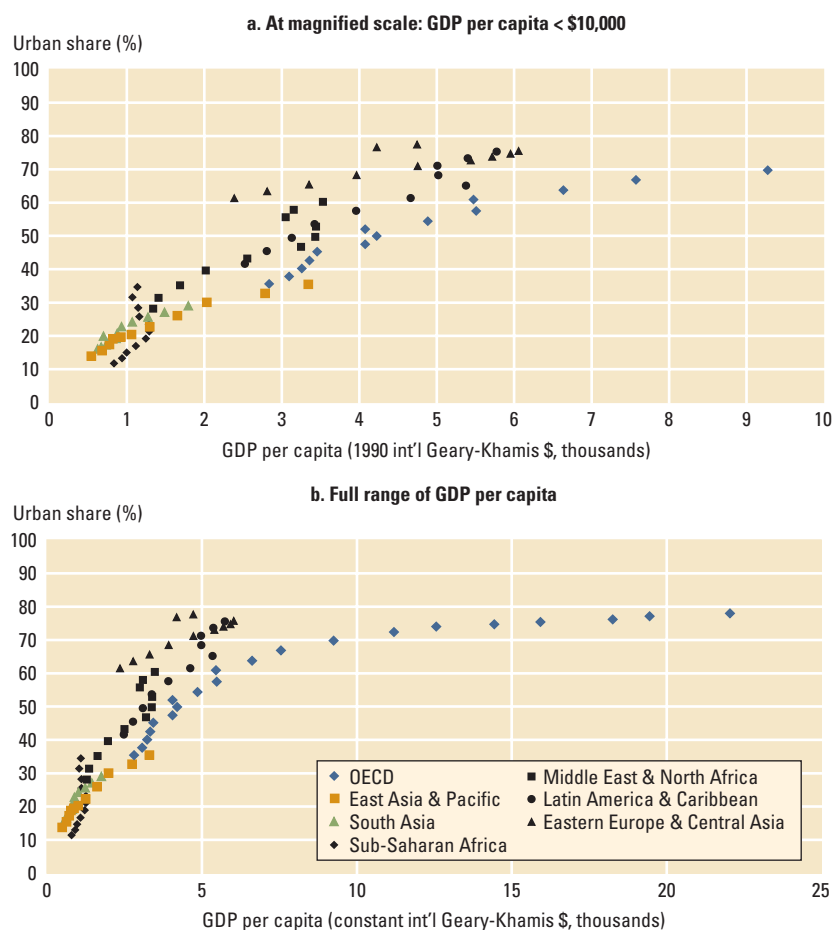
for disproportionate shares of their national GDP. In 2005, Mexico City contributed 30 percent of Mexico's GDP despite occupying only 0.1 percent of its land. Luanda contributed a similar share of Angola's GDP, while occupying 0.2 percent of its land. Likewise, the largest cities in Hungary, Kenya, Morocco, Nigeria, and Saudi Arabia—Budapest, Nairobi, Casablanca, Lagos, and Riyadh—contributed about 20 percent of their country's total GDP while taking up less than 1 percent of land.<sup>25</sup>

Density, defined as GDP in purchasing power parities per square kilometer, rises with the level of development, and the densest places in the world are in the richest countries. Dublin, London, Paris, Singapore, and Vienna ranked at the top, in 2005, with more than \$200 million in gross product per square kilometer. Likewise, Tokyo-Kanagawa, New York-New Jersey, Oslo-Akershus-Vestfold, and Vienna-Mödling were the densest grid cells of 1° longitude by 1° latitude, generating more than \$30 million of gross product per square kilometer (figure 1.4).

A century of data on aggregate urban shares, and two centuries of population estimates for primary cities, suggest that urbanization is initially rapid before slowing. Developing countries—especially those in Africa and Asia—are at phases during which urban shares increase sharply. People in Western Europe and North America, which went through the same phase a century ago, have understandably forgotten. Emerging economies such as the Republic of Korea that

**Figure 1.4 The richer a country, the more concentrated its economic mass**

Sources: WDR team estimates based on World Bank (2007j), and databases from [www.citymayor.com](http://www.citymayor.com) and [www.gecon.yale.edu](http://www.gecon.yale.edu).

**Figure 1.5 Developing countries have a pace of urbanization similar to that of early developers**

Sources: Maddison 2006; United Nations 1969; United Nations 1949; United Nations 1952; Historical Database of the Global Environment; United Nations 2006c.

developed rapidly provide the best case studies for understanding the pace and pattern of geographic concentration. Their experience traces the initially rapid and the more gradual growth of today's wealthiest nations.

At the aggregate level, using the population shares in urban areas, the urbanization pattern of developing countries in Asia, Africa, Middle East, and Latin America over the last 50 years closely tracks the first part of the historic path earlier traversed by OECD countries between 1900 and 2000 (figure 1.5). The urbanization in Asia mirrors the rapid phase of urbanization that OECD countries experienced in the nineteenth century. Likewise, the geographic transformations in Latin America and the Caribbean, in Eastern Europe and Central Asia, and in the Middle East and North Africa are qualitatively similar to those experienced by the OECD in the first phase of urbanization. Quantitatively, the urban shares for Latin America and the Caribbean and for Eastern Europe and Central Asia regions are higher than those for the OECD at comparable incomes.

This may, however, be an artifact of the data. Data from the *World Urbanization Prospects* database systematically overstate—purely as a definitional matter—the urban shares of Latin America and the Caribbean, Eastern Europe and Central Asia, and Sub-Saharan Africa. The safest conclusion may be that the pattern of urbanization—the

### BOX 1.4 Africa's urbanization reflects industrialization

Between 1970 and 1995, the urban populations in Sub-Saharan Africa were growing at 5.2 percent a year while their GDP per capita was shrinking at 0.66 percent a year. Since the work by Fay and Opal (2000), many have argued that urbanization does not necessarily accompany development, with Sub-Saharan Africa in mind (Commission for Africa 2005). But Satterthwaite (2007) questions the validity of the urban population numbers in most studies. Since many were based on projections, some may have been grossly overestimated.

The problem is the lack of regular population censuses. For Chad and Eritrea the population projections spanning 1950 through 2030 were based on one population census. Those for the Democratic Republic of Congo were derived from two observations, the most recent for 1984. It is thus reasonable to consider only countries with at least two censuses during the period examined (1970–95), a census post-2000 for more accu-

rate population estimates, a population of at least 1 million in 1995, and data on sectoral value added for 1970 and 1995.

This whittles the sample down to just 10 countries: Benin, Botswana, Central African Republic, Ghana, Mauritania, Niger, Rwanda, Senegal, Zambia, and Zimbabwe. Of these 10 countries, five experienced conflict at least once, and the other five were peaceful throughout the period. The results do not appear to differ systematically between these two sets of countries. The main findings follow:

- Except for Botswana, the countries experienced on average a doubling of population, but only 60 percent cumulative growth in GDP. Population growth outpaced increases in gross value added, and GDP per capita fell.
- Urban population growth and total GDP growth are positively correlated. Countries with the fastest growth

in total GDP—a doubling of their economies—also witnessed the fastest growth in urban population—a four-fold increase. The leaders in the sample were Benin and Zimbabwe.

- The pace of urbanization was positively correlated with growth in industries and services, activities predominant in urban areas.

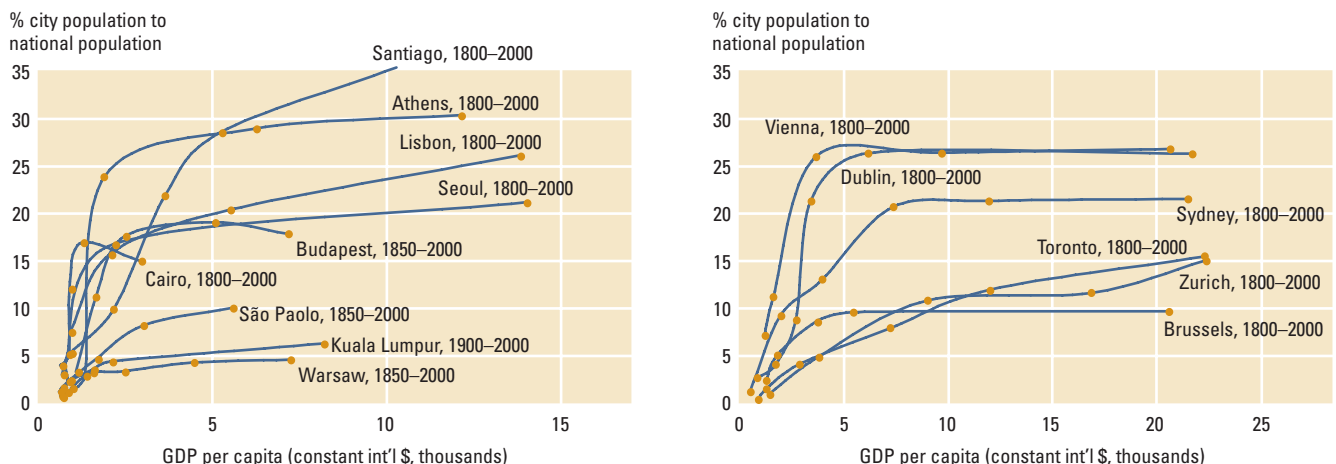
These patterns do not support the claim of African urbanization without growth. In contrast, countries with higher GDP growth experienced faster urbanization, and rapid urbanization came hand-in-hand with higher growth in industries and services. A counterfactual of an Africa without urbanization is one with even slower economic growth, greater GDP per capita losses, and increases in poverty.

Sources: Fay and Opal 2000; Satterthwaite 2007; United Nations 2006c.

relationship between economic growth and urbanization—is not unprecedented. Even in Sub-Saharan Africa, faster urbanization between 1970 and 1995, albeit with negative GDP per capita growth, was associated with higher total GDP growth. Urbanization also came hand-in-hand with rapid growth in industries and services (see box 1.4).

At a disaggregated level, the primary city's population share of a country displays a similar, nonlinear pattern of initially rapidly rising concentration, followed by a subsequent leveling (figure 1.6). This intensification of economic mass within a country's largest cities is seen for a wide range of incomes, from Budapest, Cairo, Kuala

**Figure 1.6 Density intensifies rapidly in the early phase of urbanization before leveling off**



Sources: WDR 2009 team estimates, based on the Staff City Population Database, Human Settlements Group, International Institute for Environment and Development (IIED). Data from 1950 to the present, primarily from United Nations (2006c); data before 1950, primarily from Chandler and Fox (1974), Chandler (1987), and Showers (1979). Latin America drew on a review of 194 published censuses.

Lumpur, and Warsaw to Athens, Lisbon, Santiago, and Seoul. These evolutions have also been observed in Brussels, Dublin, Sydney, Toronto, Vienna, and Zurich over the two centuries since 1800.

***Again today, rapidly rising concentration, then a leveling off***

A similarly shaped pattern reappears in contemporary comparisons between a country's level of development and the concentration of density. During 2000–05, the average urban population growth for low-income countries was 3 percent a year—faster than upper-middle-income countries at 1.3 percent and high-income countries at 0.9 percent. The relationship is robust. It holds for a variety of concentration measures, ranging from the agglomeration index, to population, gross product, and household consumption density. It is robust to geographic scale: an area of 1 square kilometer, a city, a grid cell of 1° longitude by 1° latitude, and an aggregated urban sector.

***Local 1-square kilometer areas.*** Estimated agglomeration indexes produce a pattern similar to the historical time series: rapidly rising density for countries during the early phase of urbanization (figure 1.7). This strong positive relationship between

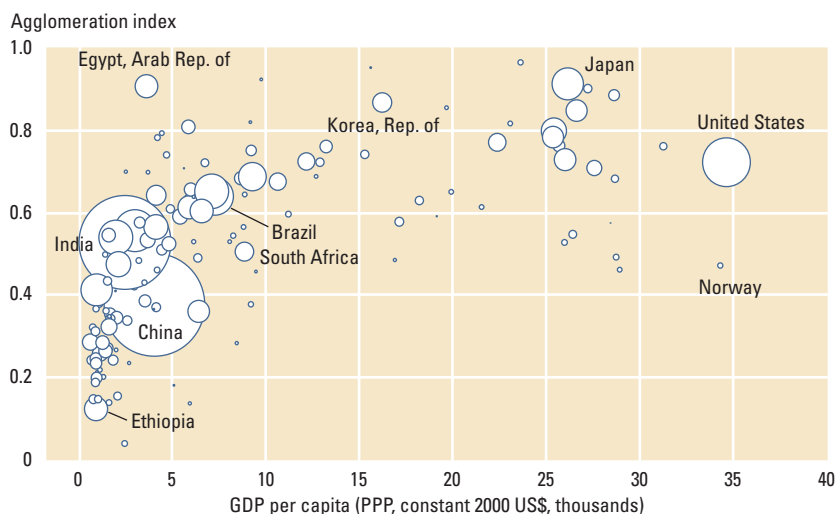
urban share and development holds until a GDP per capita of around \$10,000. This incipient urbanization is associated with a rapid shift in the number of people moving from rural to urban areas. Subsequently, the pace of urbanization slows and density levels off as the urban share surpasses 60 percent, and the level of GDP per capita surpasses \$10,000. With only a handful of exceptions, countries with GDPs per capita above \$25,000 have an agglomeration index above 70 percent.

***Administratively defined areas.*** Taking individual cities as the geographic unit, a positive concave relationship exists between a country's level of development and its primacy—the share of urban population living in the country's primary city, a widely used concentration measure. Similar to the relationship between agglomerations and the level of development, primacy also rises rapidly before stabilizing during the latter stages of urbanization (see figure 1.8, panel a). Population and output density are highly correlated, but population density understates the geographic concentration of economic mass. Agglomeration economies, the benefits that firms and workers enjoy as a result of proximity, make it likely that output density will increase more than proportionately with employment or population density.

***1° longitude by 1° latitude.*** Using the terrestrial grid cells to estimate concentration as the share of the densest cell's gross product in the country's GDP, concentration of economic mass rises rapidly among countries with a GDP per capita of less than \$15,000, and then stabilizes and tapers off among higher-income countries (see figure 1.8, panel b).

***Urban areas of countries.*** Concentration measured by consumption, rather than by population or GDP, suggests the same concave relationship with the level of development. For instance, the urban shares of household consumption in Malawi and Cameroon at GDPs per capita of \$150 and \$700, respectively, are 36 percent and 48 percent. At about 63 percent, the shares are higher for Jordan and the Arab Republic of Egypt with GDP per capita of around \$1,600, and rise to 80 percent in Panama and Poland

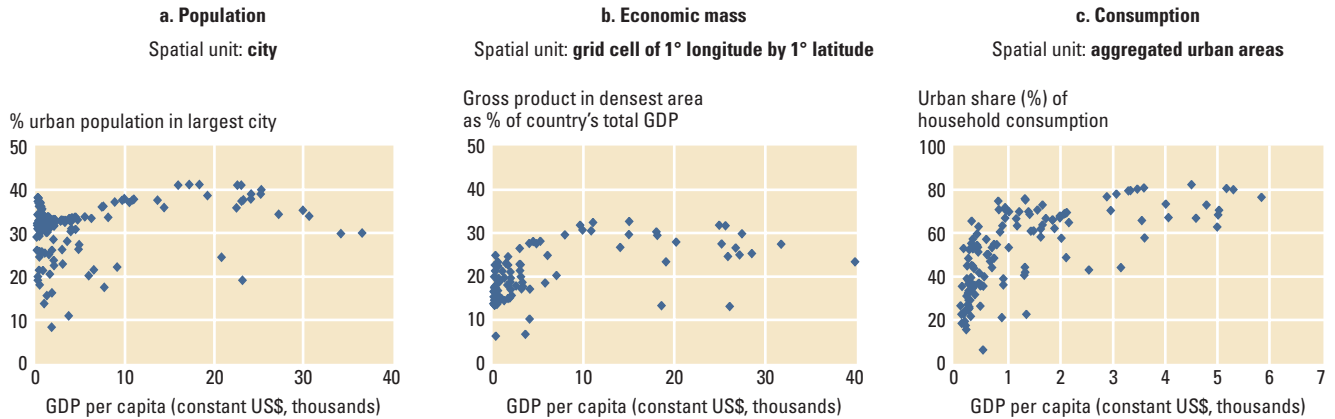
**Figure 1.7 Shares of population living in urban agglomerations rise with the level of development**



Sources: Calculated by WDR 2009 team using Nelson (2008) and World Bank (2006g).

Note: The size of each circle indicates the population size of that country. PPP = purchasing power parity. The agglomeration index uses the following criteria: density of 150 persons per kilometer or more, access time of 60 minutes or less to a sizable settlement, defined as one that has a population of more than 50,000.

**Figure 1.8 Geographic concentration of population, gross product, and household consumption rises sharply with development, then levels off**  
Cross-country evidence, late 1990s and 2000s



Sources: WDR 2009 team estimates, based on World Bank (2007j), Nordhaus (2006), and more than 120 household surveys for more than 75 countries.

with GDPs per capita of \$3,500 and \$5,000, respectively (see figure 1.8, panel c).<sup>26</sup>

### *A portfolio of bigger and denser places*

It follows from these stylized facts of geographic transformation that high-income countries have a portfolio of places with a higher proportion of large settlements and a lower proportion of small settlements than do middle-income countries. And the middle-income countries have a significantly higher proportion of medium-size settlements than do low-income countries. In low-income countries, about three-quarters of the population live in small settlements of less than 20,000 people, and only 10 percent live in urban agglomerations of more than 1 million people. In high-income countries, the opposite is true. Less than a quarter of the population live in small settlements of less than 20,000 people, and about half of the population live in settlements of more than 1 million people (see table 1.1).

At an incipient stage of urbanization, the portfolio of places in a small country or part of a larger country, such as a province or even a large district, can be approximated as 75 percent rural and 25 percent urban, all settlements of relatively low density. As urbanization accelerates—still predominantly a rural-urban transformation driven by industrialization—and the area or province grows toward a GDP per capita of \$10,000, its distribution of settlements

will approximate a 50/50 urban-rural split. During more advanced urbanization—now a within-urban transformation in a postindustrial area—the distribution of population can be approximated as 75 percent urban and 25 percent rural.

This generalization corresponds well to the experience of the United States. In 1690, when the average GDP per capita was a mere \$500 (1990 international dollars),<sup>27</sup> the primary city in colonial British America was Boston. With a population of 7,000, however, Boston was by modern-day standards little bigger than a small town. In the urban hierarchy, only three other cities had populations greater than 2,500, two of them New York and Philadelphia. The early phase of American industrialization brought with it an increase in the urban share from 7 percent in 1820 to 20 percent in 1860, as GDPs per capita rose from \$1,257 to \$2,170 (1990 international dollars). During this time, the population of the primary city, now New York, expanded from 123,706 to 805,651. Its rapid growth allowed the urban hierarchy to expand and stretch out.

**Table 1.1 The size of urban settlements grows with development**

Population size	Low-income countries (%)	Middle-income countries (%)	High-income countries (%)
Small settlements: less than 20,000	73	55	22
Medium settlements: 20,000 to 1 million	16	25	26
Large settlements: more than 1 million	11	20	52

Source: World Bank 2007j.

The number of cities with a population greater than 1 million increased from just one, New York, in 1820 to nine in 1860. All these cities were in the Northeast, where industrialization began. As the geographic transformation wore on, and the United States completed its transition to a mature industrial economy, population density in a consistent sample of U.S. cities with populations greater than 25,000 increased from 7,230 persons per square mile to 8,876 per square mile. The average land area of a city increased from about 19 square miles to 40 square miles.<sup>28</sup> Cities became more packed and more sprawling at the same time.

### **Convergence—rural-urban and within cities**

A “bumpy” economic geography distributing production and people unevenly across the space in a country is a natural feature of the working of a market economy. This bumpiness tends to become more pronounced as a country develops. The question often asked is: what does this do to the geographic distribution of poverty, consumption, and other living standards? The answer can determine the political and social sustainability of the process of concentration.

#### ***Rural-urban disparities in well-being—first wide, then narrow***

Rural-urban disparities in productivity, wages, and well-being can be expected to be large and increasing in the earlier stages of development. With the rapidly increasing concentration of economic mass in a country’s towns and cities in the earlier stages of development, significant disparities in productivity, wages, and basic welfare occur between urban and rural areas. The agglomeration of capital, consumers, and workers quickly brings production advantages, and transport costs restrict the benefits to the locality. These larger local markets enable firms to spread the fixed costs of production across a wider number of consumers, producing cost and productivity advantages.<sup>29</sup> This means higher wages in towns and cities, and greater availability of a more diversified range of goods and services.

The concentration of mass also helps to ensure a better supply of basic infrastructure

and public health facilities in urban areas. Along with diverging wages, this promotes divergence in more basic measures of welfare between urban and rural areas.<sup>30</sup> But rural-urban disparities begin to narrow as the urbanization process slows, and governments become more capable. The exodus of people and workers from rural areas to towns and cities reduces surplus labor from the land in agriculture—and reduces competition between workers in rural labor markets. And labor-saving technological progress releases labor for migration to urban areas and improves productivity. In time, investments and fiscal redistributions give rural residents better local access to basic amenities, such as a clean daily source of running water, sanitation, and electricity, as well as schooling and health care. Indeed, with development and the passage of time, a country’s economic geography approximates a “natural” balance that equalizes welfare between urban and rural residents. In this situation, people choose to live where they expect to be best off in material and nonmaterial well-being. The Islamic Republic of Iran illustrates this rural-urban convergence (see box 1.5).

Evidence from today’s industrial countries suggests that development has largely eliminated rural-urban disparities. High urban shares and concentrated economic density go hand in hand with small differences in rural-urban well-being on a range of indicators. The 15 countries that joined the European Union (EU) before 2004, all with GDPs per capita in excess of \$13,000 (1990 international dollars), consider the unemployment rate an important policy target.<sup>31</sup> But rural-urban unemployment differences should not be a concern. The unemployment rates are 10.1 percent for urban areas, and 9.9 percent for rural areas. This is also evident for youth: 19.4 percent in urban areas compared with 18.7 percent in rural areas. The rates of labor force participation in urban and rural areas are 68.3 and 69.4 percent, respectively.<sup>32</sup> For England, the high degree of rural-urban equality in well-being is reflected in similar disposable incomes: indeed, at £522, weekly disposable income in villages is 10 percent higher than the £476 in cities.<sup>33</sup>

### BOX 1.5 *Urbanization and narrowing rural-urban disparities in the Islamic Republic of Iran*

Rural-urban disparities have narrowed in the Islamic Republic of Iran. In 1976, on the eve of the Iranian revolution, the mean per capita household income in rural areas was 44 percent of that in urban areas. By 2005, it had increased to 63 percent.

The Shah's government favored cities over the countryside. Price controls for essential foods depressed agricultural incomes. High tariffs, import bans, and licensing for industrial goods propped up prices of manufactured goods and depressed farmers' purchasing power. An inward-looking development strategy oriented toward final domestic demand amplified internal migration to Tehran and a few other large cities. For every indicator of development, the center performed far better than the periphery. In 1973, the poverty rate was 23 percent in the central region and 42 percent for the country. This spatial inequality matched the nation's ethnic map, fueling tensions.

What has happened since the commitment in 1979 to address spatial disparities?

- First, the share of the urban population has increased from 49 to 67 percent between 1979 and 2005. This is a continuation of a longer-term trend: the urban population had grown by 5.4 percent per year (and in Tehran by 6 percent) between 1966 and 1976.
- Second, the rural-urban gap in household incomes has narrowed. Between 1976 and 1984, agricultural value added grew by 31 percent, twice the rate of the nonoil economy. One reason for this growth was that farmgate prices rose 55 percent. Another reason was that more was spent on projects to increase the productivity of small and medium-size farms. Growth could also be attributed to the fact that agricultural production in the Islamic Republic of Iran is dominated by the private sector, whereas large industrial enterprises and service providers were nationalized after the revolution, which hindered their efficiency.
- Third, rural and urban human development indicators improved, even in

the lagging provinces. Between 1976 and 1996, the female literacy rate rose from 17 to 62 percent, while for urban women it rose from 56 to 82 percent. During 1994–2000, infant mortality and under-5 mortality fell fastest in the poorest provinces.

- Finally, overall poverty has fallen. The national poverty rate was at 8.1 percent in 2005, with relatively modest differences in rural and urban poverty of 10 and 7.1 percent, respectively. But poverty rates still vary a lot between provinces, ranging from 1.4 to 23.3 percent.

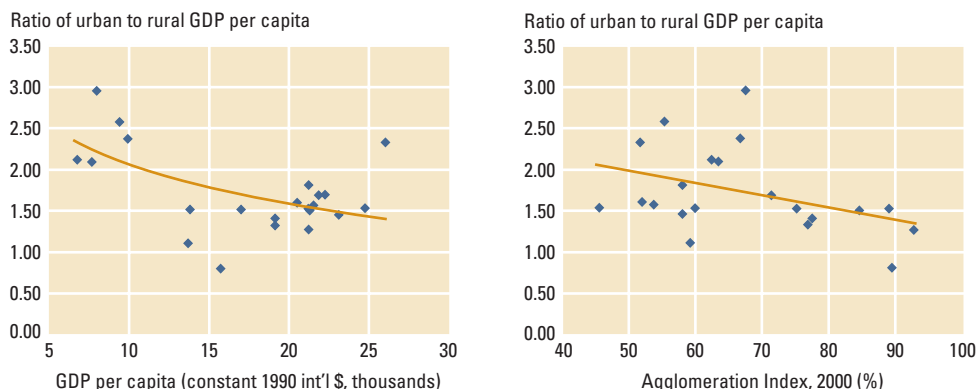
The political commitment to spatial equity has produced mixed outcomes during the last 30 years: overall poverty declines and a convergence in rural-urban standards of living, but persistent differences in interprovincial living standards.

Based on a contribution by Anton Dobronogov, Alexander Kremer, and others.

For 21 of the 30 OECD countries, the higher the GDP per capita in 2003,<sup>34</sup> the lower the ratio of GDP per capita in predominantly urban areas to that in rural areas (see figure 1.9).<sup>35</sup> For the Czech Republic, Hungary, Poland, the Slovak Republic, and Turkey, with an average GDP per capita below \$10,000 (1990 international dollars), GDP per capita in urban areas is two to

three times higher. But for OECD countries with average GDPs per capita above \$10,000, the ratio is between one and two (except for Norway). Given the well-developed fiscal redistribution mechanisms in OECD countries, and differences in age-demographic profiles between urban and rural areas, these disparities in GDP per capita will overstate rural-urban differences in, say,

**Figure 1.9 Rural-urban disparities in GDP per capita tend to be smaller in richer OECD countries**



Source: WDR 2009 team, based on data from OECD (2007), pp. 1–256.

**Table 1.2 Rural-urban disparities in earnings, wealth, and consumption characterize development over the last two centuries**

Country (year)	Rural-urban disparity (%)	Description and country sample
Sweden (1805)	221.0	Wealth per male adult in urban and rural areas.
Finland (1805)	146.0	Wealth per male adult in urban and rural areas.
England (1830s)	73.2	Urban wages are wages per laborer in the building trades, and rural wages are for agricultural laborers.
France (1882)	29.0	Urban wages are for unskilled wages in the regional capital city (department <i>chef lieu</i> ), and rural wages are based on average farm wages.
France (1911)	51.0	
United States (1925)	28.0	Urban earnings are manufacturing earnings, and rural earnings are agricultural earnings.
United States (1935)	75.0	
Developing countries (nineteenth century)	51.2	Urban wages are for unskilled general laborers, and rural wages are agricultural wages, including payments in kind. The countries included are Argentina 1872; Australia 1887; Denmark 1872; France 1892, 1801; Hungary 1865; Japan 1887; and the United States 1820–29, 1890.
Developing countries (twentieth century)	41.4	Urban wages are based on wages for unskilled construction workers, and rural wages are agricultural cash wages. There are 19 countries (1960–70) underlying this average: Argentina, Cameroon, Chile, Costa Rica, Côte d'Ivoire, Guatemala, Kenya, Pakistan, Malawi, Malaysia, Mexico, Morocco, Panama, Sri Lanka, Tanzania, Trinidad and Tobago, Tunisia, Uruguay, and R. B. de Venezuela.
Developing countries (twenty-first century)	42.0	Based on per capita household consumption, after controlling for household characteristics. There are 72 countries (2000–05) underlying this average disparity: Armenia, Angola, Bangladesh, Belize, Benin, Bhutan, Bolivia, Brazil, Burkina Faso, Burundi, Bulgaria, Cambodia, Cameroon, Chad, Chile, Colombia, Dem. Rep. of Congo, Costa Rica, Côte d'Ivoire, Croatia, Djibouti, Ecuador, Arab Rep. of Egypt, El Salvador, Ethiopia, The Gambia, Georgia, Ghana, Guatemala, Guinea, Guyana, Honduras, Hungary, India, Indonesia, Jamaica, Jordan, Kyrgyz Republic, Madagascar, Malawi, Maldives, Mali, Mauritania, Mexico, Moldova, Mongolia, Morocco, Mozambique, Nepal, Nicaragua, Nigeria, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Rwanda, Senegal, South Africa, Sri Lanka, Swaziland, Tajikistan, Tanzania, Thailand, Timor-Leste, Uganda, Ukraine, Vietnam, and Zambia.

Sources: Sweden and Finland 1805: Soltow 1989, table 1, p. 48; England 1830s: Williamson 1987, table 3, p. 652; France 1882, 1911: Sicsic 1992, table 2, p. 685; United States 1925, 1935: Alston and Hatton 1991, table 3, p. 93; Developing countries (nineteenth century): Clark 1957, table II pp. 526–31; Developing countries (twentieth century): Squire 1981, table 30, p. 102; Developing countries (twenty-first century): WDR 2009 team estimates based on individual country's household survey for 72 countries; the data set is described in detail in Montenegro and Hirn (2008).

Note: Rural-urban disparity (in nominal terms) is computed as the difference in wages, earnings, wealth, or consumption between urban and rural areas relative to the rural averages.

average levels of personal disposable income and consumption. The agglomeration index produces the same qualitative pattern.

Rural-urban disparities in these countries were wide throughout the nineteenth and early twentieth centuries. Wealth per male adult in nineteenth century Sweden was more than 200 percent higher in urban areas than in rural areas, and 150 percent higher in Finland (see table 1.2). Meanwhile, for rapidly urbanizing England, urban wages were more than 70 percent higher than rural wages in the 1830s. France and the United States saw big increases in the urban wage premium from 1882 to 1911 and from 1925 to 1935. Indeed, in the United States, the premium increased almost threefold in a decade.<sup>36</sup> For developing countries in the nineteenth century, including Australia, Denmark, France, Japan, and the United States, urban nominal wages were 50 percent higher.

Today's developing countries are still in the first phase of urbanization and, not surprisingly, have large rural-urban

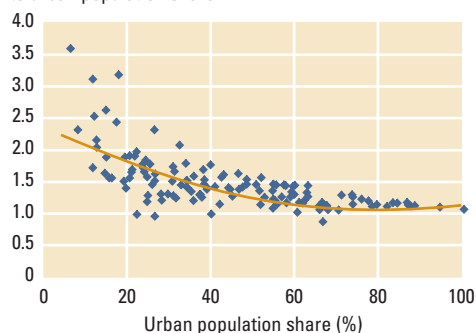
disparities in productivity and income. For a sample of developing countries in the 1960s—among them Malaysia, Mexico, and Trinidad and Tobago, which have since reached upper-middle-income or high-income status—urban wages exceeded rural wages by more than 40 percent. Similar gaps can be observed in per capita consumption between urban and rural areas for a recent sample of 72 developing countries.

The rural-urban discrepancy between economic mass and population distributions diminishes with urbanization. Another way to examine consumption disparities between urban and rural areas is to look at the population share of a country's urban areas and compare it with the share of consumption in these areas. If this ratio is greater than one, consumption per capita is, on average, higher in urban areas than in rural areas, while the converse is true if the ratio is less than one.

Rural-urban disparities in consumption fall with density in today's developing

**Figure 1.10 Rural-urban gaps in per capita consumption become smaller with urbanization**

Ratio of urban consumption share to urban population share



Source: WDR 2009 team estimates from more than 120 household surveys for more than 75 countries.

countries (see figure 1.10).<sup>37</sup> In Malawi and Sri Lanka the ratio is around two: urban areas account for about 10 percent of the population but 20 percent of consumption. For countries with higher levels of urbanization, the spatial distribution of population more closely resembles that of production. Madagascar and Tanzania have urban population shares of around 20 to 25 percent and urban consumption shares of about 30 to 35 percent. By the time a country enters an advanced stage of urbanization, population is more or less proportionately distributed with economic mass, so that the ratio is close to one. In Chile 85 percent of the population reside in urban areas, and these urban residents account for 92 percent of national consumption. In Brazil 80 percent of people live in urban settlements, and these 80 percent are responsible for 85 percent of consumption. As development progresses and the concentration of economic activity in areas of high density increases, rural-urban disparities narrow. A downward sloping line at all levels of urbanization is a good omen: most developing countries may have passed the peak in their rural-urban disparities.<sup>38</sup>

What is true for private consumption is true for basic amenities. Among low-income countries with urban population shares of less than 25 percent, access to water and sanitation in towns and cities is around 25 percentage points higher than in rural areas.<sup>39</sup> But for more urbanized countries, such as Algeria, Colombia, and South Africa, the disparity in access is 15 to 20 percentage

points. For countries where urbanization is advanced and the urban share is approaching its natural maximum, almost no difference exists between urban and rural areas in access to basic services. Equalization of access to basic services can be expected to promote a corresponding convergence in nonmaterial indicators of welfare and living standards (see table 1.3).

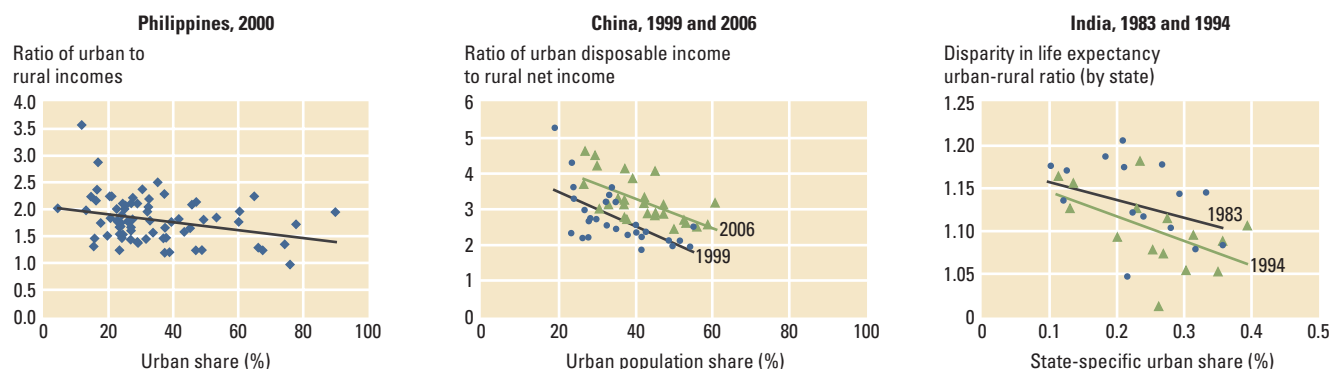
Narrowing rural-urban disparities is important, but the progress in absolute measures of basic welfare in the rural areas of the world's poorest countries is even more important. Rising rural-urban disparities are consistent with an absolute improvement in basic welfare in both rural and urban areas. The overall evidence is encouraging. Over the past decade, most low- and middle-income countries have experienced absolute improvements on a range of basic welfare indicators, including infant and under-5 mortality rates, malnutrition, immunization, and school participation in rural and urban areas. Of 32 low-income countries, three-quarters reduced infant and under-5 mortality rates and the incidence of severe stunting and severe underweight, especially in rural areas.<sup>40</sup> And since 1990, school attendance rose in four-fifths of these countries, especially in rural areas.<sup>41</sup> Both

**Table 1.3 Rural-urban disparity in basic services narrows with development**

Urban population share (mean GDP per capita)	Disparity in access to clean water (percentage points)	Disparity in access to sanitation (percentage points)	Examples of countries in the sample
75% or higher (mean GDP per capita: \$21,602)	8	8	United States, Norway, Switzerland, Spain, Germany, Canada, Mexico, Chile, Brazil, Argentina, Gabon, R. B. de Venezuela, Djibouti, Lebanon, Jordan, United Kingdom
50%–70% (mean GDP per capita: \$9,672)	15	20	Estonia, Panama, Turkey, Hungary, Ecuador, Colombia, Malaysia, Syria, Azerbaijan, South Africa, Rep. of Congo, Algeria, Tunisia, Bolivia
25% or lower (mean GDP per capita: \$2,585)	24	26	India, Rep. of Yemen, Madagascar, Chad, Tajikistan, Bangladesh, Tanzania, Kenya, Nepal, Cambodia, Malawi, Uganda, Sri Lanka, Bhutan

Source: World Bank 2007j.

Note: Disparity refers to the percentage point difference between urban and rural areas.

**Figure 1.11 Even at the subnational level, rural-urban disparities fall as density increases**

Sources: Balisacan, Hill, and Piza forthcoming; Yao forthcoming; Cali 2008.

urban and rural areas in these nations have achieved progress toward the Millennium Development Goals.

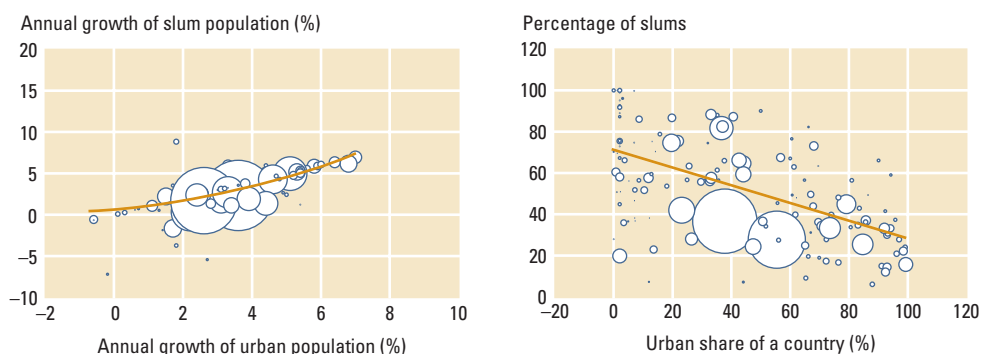
Rural-urban convergence takes place sooner in more urbanized subnational areas. In both China and the Philippines, urbanized provinces exhibit lower internal urban-rural disparities in incomes (see figure 1.11). In China the entire relationship has shifted upward over the past decade so that, in general, rural-urban disparities have increased over time, consistent with China's early stage of development, which is marked by rapid urbanization. In India rural-urban gaps in life expectancy were smaller in the more urbanized states in both 1983 and 1994. But the entire relationship has shifted downward over time.

### *Slums—divergence and convergence within cities*

In poor countries, higher average living standards in cities do not rule out poverty

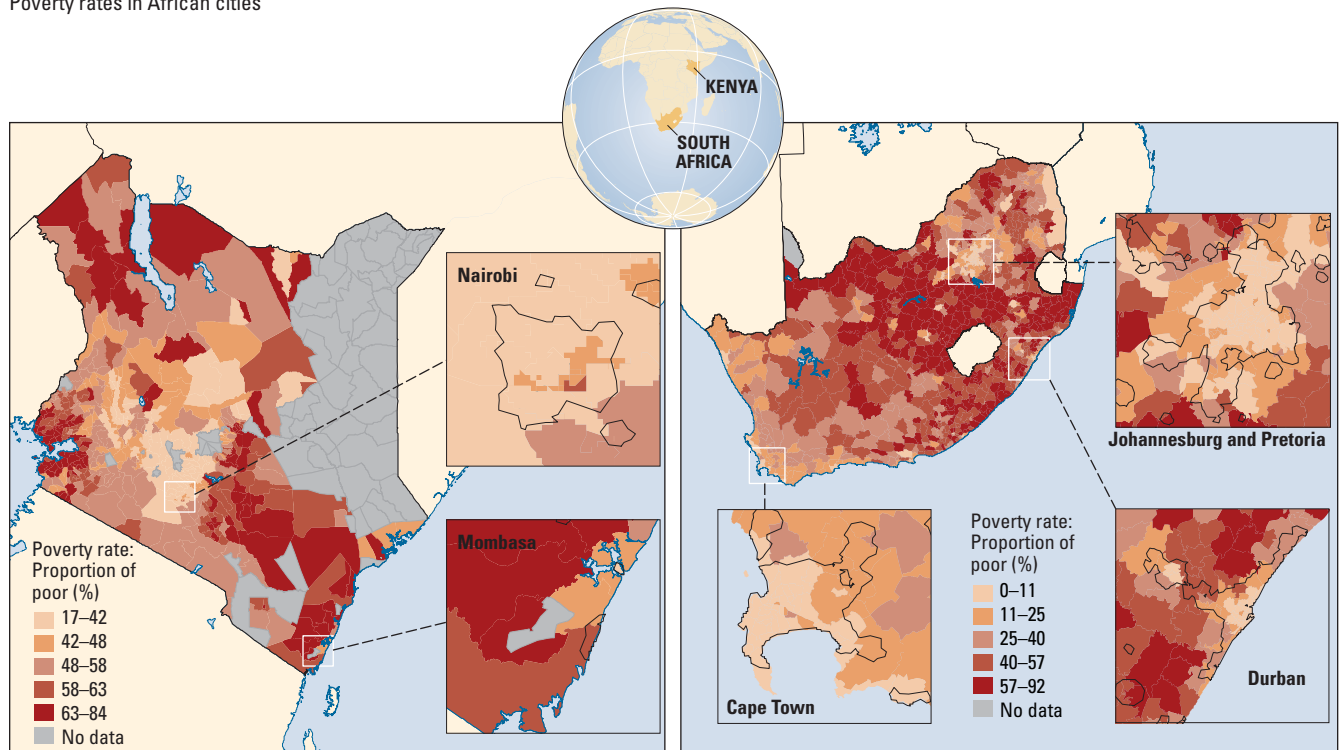
and deprivation. Disparities within cities can be large. In Nairobi poverty is high in the inner city but much lower in the rest of the city and the suburbs (see figure 1.12). In Mombasa, Kenya's second-most-populous city, marked geographic divisions in the poverty rate are evident (see map 1.2). South African cities also show internal disparities in the poverty rate. Cape Town has a low poverty rate in the coastal areas, but a higher poverty rate in the interior of the city. Similarly, both Johannesburg-Pretoria-Tshwane and Durban have visible divisions. But the geography of poverty in Durban is different from that in Cape Town and Johannesburg: the poverty rate is, in general, higher outside the city boundaries than inside.

The most obvious sign of divisions within cities is slums. Slums have chronically overcrowded dwellings of poor quality in underserved areas. The reason for the lack of basic public services and infrastructure is the inability or unwillingness of many urban

**Figure 1.12 Slums grow with the pace of urbanization, and fall with its level**

Source: Kilroy 2008.

**Map 1.2 Local divisions—spatial disparities within urban settlements can be large**  
Poverty rates in African cities



Source: The Poverty Mapping Project, Columbia University, using data from Alderman and others (2002); Statistics South Africa; the Central Bureau of Statistics, Kenya; and the Ministry of Planning and National Development, Kenya.

governments, utilities, and service providers to operate in slums, generally because of the informality and illegality of such settlements.<sup>42</sup> So living standards, especially health, security, and sanitation, are lower in slums than in formal settlements close by. Mumbai's Dharavi, believed to be Asia's biggest slum, has "maybe a million residents . . . crammed into a square mile of low rise wood, concrete and rusted iron . . . a family of 12 living in a 90-square-foot room." In Shiva Shakti Nagar, again in Mumbai, each community tap is shared by roughly 100 people.<sup>43</sup>

The growth of slums in major cities is characteristic of rapid urbanization. Because rapid population growth cannot be satisfactorily accommodated, slums and shantytowns grow bigger and more visible. This contributes to wide and increasing geographic divisions in well-being within urban areas. Development—both economic and institutional—and better infrastructure, combined with focused interventions, eventually bring about a convergence in living standards in urban areas.

Slums are part of rapid urbanization, and it is not uncommon for a fifth to a third of a city's population in a contemporary developing country to reside in slums (see figure 1.12).<sup>44</sup> Goiânia, the capital of the Brazilian state of Goiás, a medium-size city of 40,000 in 1950, is today a city of more than 1 million, with much of the population increase accommodated in slums.<sup>45</sup> Since 1950, Delhi's population has risen more than tenfold, from 1.4 million to 15.6 million,<sup>46</sup> accompanied by an increase in the number of slum clusters from 200 to 1,160.

"A dirtier or more wretched place he had never seen. The street was narrow and muddy, and the air was impregnated with filthy odors. . . . Covered ways and yards, which here and there diverged from the main street, disclosed little knots of houses, where drunken men and women were positively wallowing in filth." A contemporary description of a developing country slum such as Nairobi's Kibera or Huruma, Abidjan's Washington, Delhi's Majboor Nagar or Kanchan Puri, Buenos Aires's San Fernando,

### BOX 1.6 *Slums, then and now*

The term “slum,” probably originating from an old English or German word meaning a poorly drained or muddy place, was applied to housing in the early Industrial Revolution in the United Kingdom before the railways were in place, when canals transported heavy goods along the length and breadth of the country. During Britain’s rapid industrialization, most factories were built beside canals, the main channel for transporting coal for their steam engines and other inputs of production.

Poor workers, migrating to cities for factory jobs, could ill afford to walk long distances to and from their places of work. Before electric trams, other forms of transport were expensive. So workers settled close to factories. Cheap housing grew around these factories in low-lying, poorly drained areas. Housing was overcrowded. Sanitation was inadequate and in most cases nonexistent. And air quality was poor, with soot and other pollutants. Sickness was commonplace. Diarrhea, typhus, respiratory diseases, measles, and scarlet fever cut the life expectancy of those born in cities by 12 years compared with those born in rural areas.

The growing public health hazards in Britain’s urban slums exacted a terrible health toll that eventually

reached out beyond the working class, finally motivating strong political action. But rather than attempting to stop more workers from coming, or clearing out these areas of disease and poverty, the government in the 1870s passed legislation for strict building regulations, prescribing the dimensions of streets and houses, and making it mandatory that all dwellings be connected to newly built sewerage systems. Major municipal investments in water works, sewage facilities, and public health dramatically reduced mortality in Britain’s cities between 1874 and 1907.

Despite atrocious and filthy conditions, millions of migrants keep leaving rural areas for the teeming economic opportunity offered in the cities of poor and middle-income countries. Even though health hazards and mortality rates are far worse in the shanties around many cities in Africa, people there are trading, working, and sending large sums of money home. The challenge facing policy makers today is similar to that faced by the Victorians in London: how to nurture these agglomerations with functional land markets, better transport, and public health infrastructure to capture the benefits of economic growth.

Sources: Satterthwaite and others 2007; Crafts 2008; *The Economist* 2007a.

or Rio de Janeiro’s Rocinha? No, this is an excerpt from Charles Dickens’s *Parish Boy’s Progress*, published in 1838, describing the rapidly expanding city of London in the nineteenth century (see box 1.6).

London was by no means the only city or urban area in nineteenth century Britain with large slum settlements. Chronically overcrowded and inadequately serviced housing was a common feature of British cities and industrial towns of the time. In Edinburgh rapid population growth and a first wave of suburbanization by the then-rising middle classes meant that by the 1860s, the core of the city had a large slum area with population densities as high as 600 persons per acre. Residents in this area lived

in multistory tenements arranged along narrow, unlit foot passages. This “housing was hopelessly inadequate in all respects—in quantity, in quality and environmental amenities, if needs as basic as clean water and safe sewage disposal can be described as amenities.”<sup>47</sup> Apart from the obvious misery, slums were prone to deadly outbreaks of measles and scarlet fever and high rates of mortality attributable to diarrheal diseases, typhus, and respiratory diseases.<sup>48</sup>

Yesterday’s slums are today’s world-class cities. Britain is not the only industrial country to suffer from slums and wide intracity divisions in welfare during the earlier phases of development and rapid urbanization (see box 1.7). The stylized pattern of divergence followed by convergence is a hallmark of other modern-day developed countries as well. Slums for these cities are now much a thing of the past. Aided by improving land markets, investments in infrastructure, and targeted incentives, within-city welfare disparities tend to narrow, but only in the more advanced stages of urbanization. Indeed, for “world” cities such as London, New York, Paris, Singapore, and Tokyo, slums can, with the benefit of hindsight, be viewed as part of their “growing pains.” Britain cleaned up its Dark Satanic Mills over a century, and if it had started the cleanup sooner, the working class would have suffered from slower wage growth and lower consumption.<sup>49</sup>

The emergence and growth of slums in the early and intermediate stages of a country’s development can be explained by the interaction of functioning labor markets with dysfunctional land markets. In the rapid phase of urbanization, the labor market signals higher labor demand in urban areas, the higher demand that arises from growth in industries and services. Labor responds by moving to towns and cities.

As a reflection of this, slum dwellers in developing countries are often productively engaged, taking advantage of the economic opportunities the city offers. Mumbai’s Dharavi has 15,000 “hutment” factories, and “the clothes, pots, toys and recycled materials its residents produce earn the factories millions of dollars a year.” Many slum residents started businesses after the state government provided them with limited

### BOX 1.7 *Many of today's world-class cities were littered with slums*

"In **Antwerp** and in most Belgian towns the basic problem in matters of working class housing was . . . no individual sanitation or individual water supply. . . . The three heavy cholera epidemics of the 19th century had terrific effects in these slums . . ."

"The first encampments of **Baltimore's** poor were at the water's edge. Time and again, outbreaks of yellow fever, malaria, cholera, typhoid fever swept the town. These epidemics seemed peculiarly associated with the low-lying encampments of the poor. The yellow fever epidemic of 1797, for example, was said to have begun in the stagnant waters of the Fells Point cove and to have spread . . . to the huts and hovels on the banks of the Jones Falls and thence on to the shacks and shanties at the foot of Federal Hill."

"By the 1890s, Polish immigrants had supplanted the Irish and Germans, creating a ghetto of a new dimension. Single dwellings housed from six to eight families, one [family] to a room. . . . Fells Point was described by a health official as an Augean stable . . . a mass of nuisance . . . Open drains, great lots filled with high weeds, ashes and garbage accumulated in the alleyways, cellars filled with black water, houses that are total strangers to the touch of whitewash or scrubbing brush, human bodies that have been strangers for months to soap and water . . . that's Pigtown."

"The slums of **Dublin** were among the worst in Europe, rivaled only by **Glasgow**. Tall town houses, originally built as elegant homes for the rich in the eighteenth century, fell into the Tomae hands of avaricious and pitiless landlords who filled them to bursting point with the desperate and impoverished urban poor. Conditions were often unspeakably vile, with massive over-crowding and utterly inadequate sanitation."

"Katajanokka's transformation in its entirety from a low-income housing area to an enclave for the city's civil service elite and bourgeoisie represented an urban growth pattern that emerged for the first time in the history of **Helsinki**. A former slum had become a prestigious residential area for the privileged classes."

"Here the background embraces the pauper burial-ground, the station of the **Liverpool** and **Leeds** railway, and, in the rear of this, the Workhouse, the "Poor-Law Bastille" of **Manchester**, which, . . . looks threateningly upon the working-people's quarter below. . . . Passing along a rough bank, among stakes and washing-lines, one penetrates into this chaos of small one-storied, one-roomed huts, in most of which there is no artificial floor; kitchen, living and sleeping-room all in one. In such a hole, scarcely five feet long by six broad, I found two beds—and such bedsteads and beds!—which, with a staircase and chimney-place, exactly filled the room."

"**Melbourne's** most infamous slum, Little Bourke Street, . . . by the 1880s . . . was crowded, bustling and growing. . . . The lane is completely filled up with all kinds of filth comprising garbage tips, putrid liquid, straw rags, and other rubbish. A most disagreeable odor arose from this offensive mass . . . the loathsome mass . . . exposed and allowed to rot and spread its contaminating influences."

"About 200 years ago, Lower **Manhattan** was adorned by a pretty five-acre lake known as the Collect. . . . By the mid-1700s, however, the Collect was already rimmed with slaughterhouses and tanneries. The effusions from these bloody businesses were poured directly into the lake and more industries, more trash, quickly followed. By 1800 the Collect was a reeking cesspool. By 1813 it had been entirely filled in and by 1825 something entirely new stood on the site—America's first real slum, the Five Points."

"Although this is a hugely expensive area in **Paris** to live today, in Victor Hugo's day it was a slum area, close to the Bastille Prison."

"[T]he lawyer Derville ventures into the slums of Saint Marceau, the poorest section at the outskirts of **Paris**. Taking his coach through the filthy rutted lanes, he arrives at a broken-down building, made entirely of second-hand materials and poorly built, where Colonel Chabert is lodged with the cows, goats, rabbits and impoverished family of a former regimen-

tal soldier turned milkman, Vergniaud. There the Colonel lives in a single room with a dirt floor and a straw bed."

"Between 1815 and 1851 France's population grew from 29 to 36 million . . . it was the cities that absorbed the thousands of migrants unable to find work in the countryside. . . . But there were simply not enough jobs. Unemployment and overcrowding created appalling living conditions. Only one in five houses had running water. In 1832 cholera wiped out some 20,000 Parisians."

"Like so many other European cities, **Paris** suffered from chronic post-war housing shortages. Of the 17 slum areas designed for clearance, most were still intact in the 1950s."

"One of the worst outrages of industrialism in China against humanity is the herding of these workers in noisome slums in the factory districts, . . . so foul and revolting . . . in **Shanghai**. . . . There are no sanitary provisions of any kind, and the passages between the rows of houses are practically open latrines. Overcrowding exists to a distressing extent. The many children who are reared in these filthy quarters are covered with running sores from dirt and bodily neglect."

"In the 15 years between 1930 and the end of the war, the population of **Singapore** doubled to a million people. The population explosion had generated a housing shortage of epidemic proportions. Small shophouses gave shelter to as many as 100 people. The average living space was 9 feet by 9 feet, about the size of a prison cell."

"All of the ghettos of the 1920s within the city of **Tokyo** were products of Tokyo's urban development and Japan's modern economic growth. . . . The sheer size of these ghettos was astonishing. . . . Poverty pockets re-emerged in all parts of the metropolis of Tokyo after the Second World War, even in the midst of the old city of Tokyo."

Sources: Belgium: Lis; Baltimore: Garrett 2002; Dublin: Kearns 2006; Helsinki: Mäkinen; Manchester: Engels 1987; Melbourne: Mountford; Manhattan: Baker 2001; Paris: Sanderson, Villon 2000, *The Economist*; Shanghai: Schwenning 1927; Singapore: Baker 1999; Tokyo: Koji 1969.

rights over their dwellings in 1976 and began to supply water and power to parts of the settlement. Because Dharavi is sandwiched between the city's two main railway lines and is surrounded by six stations, it also acts as Mumbai's transportation hub.<sup>50</sup> In short, slums arise in many developing countries as low-income households take advantage of spatially concentrated employment opportunities and as businesses take advantage of their location in a land-constrained environment. Consistent with today's industrial countries, the correct response is not to slow, stop, or reverse urbanization. It is to tackle dysfunctional land markets.

The interplay of such market forces and responses from rational market actors can also be seen in many Sub-Saharan African countries. But inefficient land markets, often thanks to misguided urban planning and zoning, produce only a limited and unresponsive supply of affordable, legal land sites for building housing to keep pace with the demand.<sup>51</sup>

### What's different for today's developers?

At the beginning of the nineteenth century, one person in every 10 in today's developed

European countries lived in urban settlements of 5,000 inhabitants or more.<sup>52</sup> In this respect, at least, little had changed from the previous five centuries. So the takeoff into urbanization over the next century broke dramatically from the past.

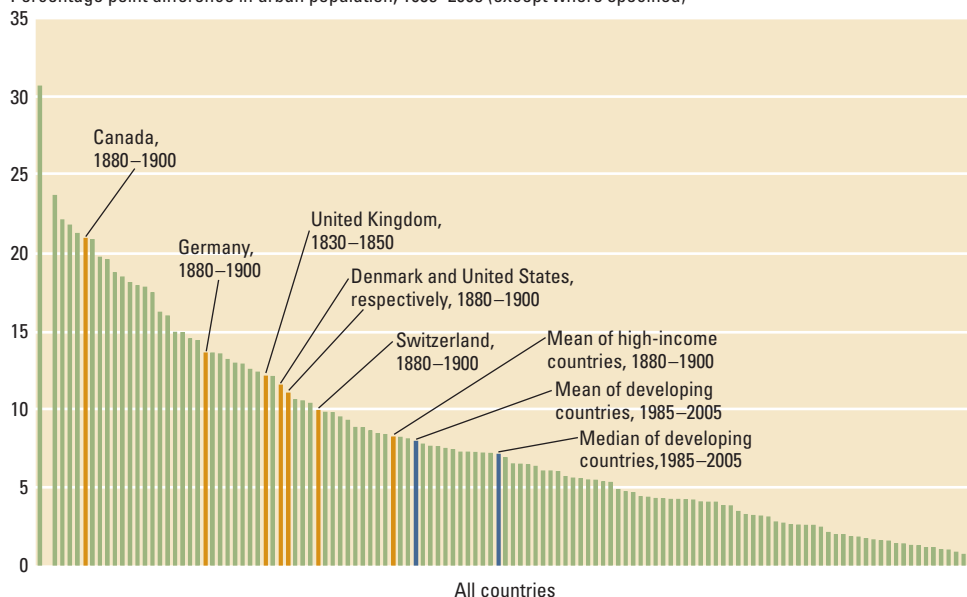
### *The pace and pattern of urbanization is similar*

It started in Great Britain. In 1800 Britain's urban share stood at 19.2 percent, about twice the European average. But in the first two decades of the century, the number of people living in urban areas doubled. By 1820 the urban share was 40 percent. By the close of the century, seven of every 10 Britons were living in urban settlements. Britain was joined in its headlong rush into urbanization by other early European industrializers. By the second half of the nineteenth century, urbanization spread beyond the Old World to the United States and Canada. By World War I, four of every 10 Americans were living in urban settlements with populations of 5,000 or greater; just 60 years earlier, the ratio was one in 20.

So if anything is different for today's developers, it is certainly not the pace of urbanization. Indeed, the average pace of

**Figure 1.13 Urbanization's speed has precedents**

Percentage point difference in urban population, 1985–2005 (except where specified)



Sources: WDR 2009 team calculations based on data from the United Nations (2006c); historical data for Canada, the United Kingdom, and industrial countries' averages are from Bairoch and Goertz (1986) and Dumke (1994).

urbanization for developing countries over 1985–2005 is remarkably similar to the average for European and North American countries<sup>53</sup> between 1880 and 1900 (see figure 1.13).<sup>54</sup> For the early developers the average absolute increase in the urban share over the 20 years was 7.7 percentage points, and for current developers the respective median and mean absolute increases were 7.1 and 8.0 percentage points. The pace of urbanization among most of the early developers in the last two decades of the nineteenth century ranked in the top quartile of the contemporary distribution of urbanization speeds.

### *The volume of urbanization is greater for today's developers*

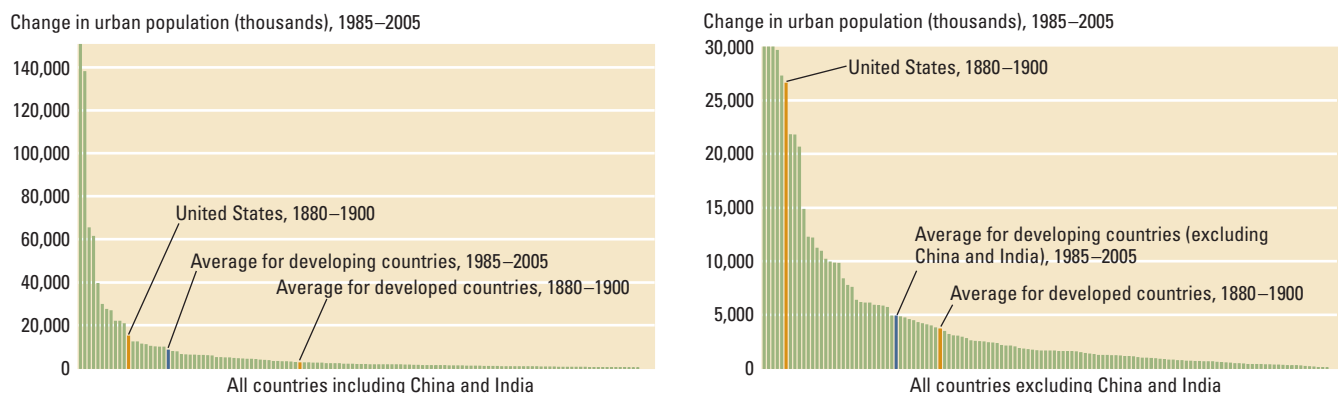
What then is different? One difference is the unprecedented absolute increases in urban populations in many developing countries in recent decades. Today's developing countries simply have larger populations than the industrializing countries of the nineteenth and early twentieth centuries. The urban population today, estimated at 3.3 billion, is far greater than the world's total population as recently as 1960. It took more than 10,000 years for the urban population to reach 1 billion in 1960, 25 years to add the second billion, and only 18 to add the third.<sup>55</sup> According to the UN projection, it will take just 15 years to add the fourth.<sup>56</sup> In East Asia alone, 500 million people will join today's 750 million urbanites over the next 25 years, essentially adding another Paris or Kuala Lumpur every month.

Between 1985 and 2005, China added 225 million people to its towns and cities, almost the entire population of the United States. Yet China for the same time period, ranked only fifteenth in its absolute increase in urban share. In India the number of people in towns and cities rose by 137.8 million, adding a Germany and an Italy to its urban areas in just two decades.

Today's developing countries had an average increase in their urban population of 8.3 million over 1985–2005, almost three times the increase for many of today's high-income European and North American countries between 1880 and 1900. But when China and India are excluded from the group, the average urban population increase in recent decades has only been 4.4 million, about 50 percent more than the average for the early developers during 1880–1900 (see figure 1.14).<sup>57</sup>

Correspondingly, megacities in developing countries are unprecedented in their size. Through the nineteenth century the world's largest city was London. But its 1900 population of 6.6 million was only a third that of modern-day Mumbai or New Delhi, the largest cities in low-income countries. The London of 1900 and, indeed, even the London of today are also smaller than modern-day Shanghai (10 million), the largest city in lower-middle-income countries, and several others (Cairo, Jakarta, and Manila) among the more successful developers. With more than 22 million people, Mexico City, the largest city in upper-middle-income countries, is three

**Figure 1.14 The population increment in urban areas of today's developing countries is much larger**



Sources: WDR team calculations based on data for 1985–2005 from the United Nations (2006c) plus historical data from Bairoch and Goertz (1986).

times the size of London at the start of the twentieth century.

***Urbanites today enjoy both higher private earnings and better public services***

Cities now do better than rural areas in both income and nonincome indicators of well-being. In 2000 the infant mortality rate in rural Malawi was 117 per 1,000 live births, in urban Malawi it was 83. Urban Benin did much better than rural Benin in lowering under-5 mortality rates and reducing diarrhea and acute respiratory infections.<sup>58</sup>

Urban Ugandan women were less likely to suffer from anemia or malnutrition. Superior health indicators are repeated in urban areas throughout the developing world—from Chad and Cameroon in Sub-Saharan Africa, to Nepal in South Asia, Kazakhstan in Central Asia, and Nicaragua in Latin America, and to Morocco and Egypt in North Africa and Middle East.<sup>59</sup>

But the opposite was true for the developers of the nineteenth and early twentieth centuries. Migrants to cities could expect better material standards of living, offset by poorer health and shorter lives for them and their children. In 1881–91 life expectancy at birth was 51 years in English and Welsh villages, but only 44 years in London and 39 years in large towns.<sup>60</sup> In 1850s Britain the infant mortality rate in cities with populations greater than 100,000 was, at 196 per 1,000 live births, far higher than the 138 per 1,000 live births in rural communities.<sup>61</sup>

Even as late as 1937, George Orwell saw it fit to characterize industrial towns and cities as places where “one always feels that the smoke and filth must go on for ever and that no part of the earth’s surface can ever escape them.”<sup>62</sup> It is perhaps no surprise, then, that the absence of respiratory diseases attributable to poor air quality in the cities would have resulted in life expectancies 4.7 years longer in the England and Wales of 1861–70. In the absence of cholera, diarrhea, dysentery, and typhus, life expectancy might have been 1.7 years longer, and the absence of measles and scarlet fever, common in the cities, would have added 2.3 years to life expectancy.<sup>63</sup> Thus in the 1830s, while

workers in London earned an urban real wage premium of 67 percent, a large part of this premium was compensation for the evident health hazards of city living.<sup>64</sup>

In Germany during the second half of the nineteenth century, infant mortality rates in rural areas were about 150 per 1,000 live births. But expanding Berlin had the highest infant mortality in the Kaiserreich era, hovering around 300 per 1,000 live births in the 1860s, and peaking at 410 per 1,000 live births in the 1870s. The rural-urban gap in physical well-being remained for decades during the nineteenth century.<sup>65</sup>

As the U.S. economy industrialized and urbanized, people living in high-density areas at the turn of the twentieth century were exposed to infectious and parasitic diseases. In 1880 urban mortality for adults was 50 percent higher than rural mortality, and two decades later, the urban mortality rate was still 18 percent higher. The rural-urban mortality difference was even greater for infants and young children. For infants, excess urban mortality was 63 percent in 1890 and 49 percent in 1900, and for young children ages one to four, the respective figures were 107 percent and 97 percent. In 1900 male life expectancy was 10 years shorter in urban areas than in rural areas.<sup>66</sup>

That the cities and towns of modern-day developing countries do better than villages on indicators of health, while the opposite was true for the developed countries at similar incomes in the nineteenth century, reflects advances in public health and medicine, and improvements in sewers and water systems. It also reflects the public benefits that today’s cities in developing countries confer. So the advantages of high density are not limited to income generation and wealth creation—they also include social services.

With these differences in private and public sources of well-being, it should hardly be a surprise that cities and towns in the developing world are growing rapidly. The surprise is that this move to density is not faster. And the policy implication? Any strategy for a less desperate and more deliberate urbanization must include efforts to improve public services in rural areas.