

PART I

Introduction and Deep Roots

Part I consists of four chapters to provide an introduction to economic development and an analysis of deep roots. Chapter 1 focuses on the current state of economic development in the world, with a discussion of global regions, land area, population, income level, trade flows, and competitiveness. Chapter 2 evaluates data and methods, with a discussion of the reliability of data sources, an overview of statistics, the importance of creating graphs, and a review of regressions and main problems, and methods to deal with these problems. Chapter 3 starts the *deep roots* discussion on the (initial) main (biogeographic) causes of differences between countries and regions in the level of economic development. It takes us to the origins of life on Earth and human development, with an emphasis on the importance of the *Agricultural Revolution* for creating the conditions for building institutions and more rapid economic growth. Chapter 4 concludes the deep roots discussion by emphasizing the role of geographic-human interaction for properly understanding the evolution and shifts in economic development. It focuses on the role of incorporated institution building in migration flows in relation to geo-human interaction to properly understand these effects.

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1

Economic Development Today

1.1 Introduction

This chapter paints a broad picture of the current state of economic development. Section 1.2 provides a brief overview of the World Bank classification in global regions. Section 1.3 discusses the importance of countries in terms of (agricultural) land area and population. Section 1.4 does the same for income levels and evaluates the differences between domestic product and national income. This section also points out the importance of correcting for price differences when comparing income levels between countries. On that basis, section 1.5 analyzes the differences in income per capita in more detail for a large range of countries. Section 1.6 briefly reviews trade flows of goods and services and evaluates the size of imports relative to exports. Section 1.7 provides an overview of the range of issues which are important for determining the global competitiveness of a country. Section 1.8 concludes.

1.2 World Bank Regions

The World Bank provides detailed free information at the country level in the World Development Indicators online (www.worldbank.org). This information will be used as a basis for discussion throughout this textbook. For presentation and discussion purposes, it is sometimes useful to group countries together in bigger regions. Based on historical, cultural, and geographic information, the World Bank identifies seven main global regions: see Table 1.1.

The East Asia and Pacific (EAP) region consists of 32 countries and includes diverse countries like China, Indonesia, and Australia. Occasionally, this group will be subdivided into smaller parts (East Asia, Southeast Asia, and Oceania). The Europe & Central Asia (ECA) region consists of 49 countries, including the core European countries, such as France, Germany, and the UK, and Central Asian countries, such as Kazakhstan and Russia. This group is also occasionally split into smaller parts (Europe and Central Asia).

The Latin America & Caribbean (LAC) region consists of 35 countries. It includes virtually all American countries south of the US border, such as Mexico, Brazil, and Argentina. From a geographical point of view, a cut at Panama would have been

Table 1.1. Overview of the World Bank regions

Code	Region	Example countries	#
EAP	East Asia and Pacific	China, Japan, Indonesia, Australia	32
ECA	Europe & Central Asia	UK, Germany, France, Russia	49
LAC	Latin America & Caribbean	Brazil, Mexico, Argentina	35
MNA	Middle East & North Africa	Egypt, S. Arabia, Algeria	21
NAM	North America	USA, Canada, Bermuda	3
SAS	South Asia	India, Pakistan, Bangladesh	8
SSA	Sub-Sahara Africa	Nigeria, S. Africa, Ethiopia	48

Source: World Development Indicators online.

Note: # = number of countries.

understandable. The World Bank decided to include Mexico and the Central American countries in the LAC region in view of the historical and cultural links. As a consequence, the North American (NAM) region consists of only three countries: the USA, Canada, and Bermuda.

As a connection between Europe and Africa, the Middle East & North Africa (MNA) region consists of 21 countries, including Egypt, Saudi Arabia, and Algeria, and stretches partly over the African and Asian continents. The remainder of Africa (48 countries) is grouped together in the Sub-Sahara Africa (SSA) region. It includes Nigeria, South Africa, and Ethiopia. The final region is South Asia (SAS), which consists of eight countries, including India, Pakistan, and Bangladesh. A general word of caution for putting together different countries in one group is provided at the end of this chapter in Box 1.2.

1.3 Land Area and Population

There are many countries in the world. In the World Development Indicators (WDI), the World Bank distinguishes between 217 different countries. Some of them are so small in terms of land area, population, and economic clout that you may never have heard of them. The small Polynesian island state of Tuvalu, for example, has a land area of 26 km² and a population of about 12,000 people. Even the tiny land area of Washington DC is more than six times as large, while its population is about 60 times as large. As usual, when information is gathered, some data are missing. Taiwan, for example, is considered by China to be one of its provinces. As a result, Taiwan was expelled from the United Nations in 1971 when China took its place. There are, therefore, no official data available for Taiwan at the World Bank. Similarly, for some countries some data is lacking or somewhat older. For the purposes of this chapter, the most recently available information from the WDI is used in the period 2017–2019. For all countries with missing information and a population of at least 300,000 people, information was gathered from the CIA World

Factbook (www.cia.gov/library/publications/resources/the-world-factbook/). In this way, a complete dataset for 196 countries was created.

This chapter focuses attention on the most important countries. Important in what sense? Clearly, if you are one of the few inhabitants of Tuvalu, this is an important country to you and your family. However, for the world as a whole, this chapter assumes that “large” countries are important. Again, the question is raised: large in what sense? There are, of course, several options available, their suitability depending on the object of study. In general terms, land area or population can be looked at. Since this is a book on economic development, various income measures can be examined. Since this book analyzes in an international context, exports or international capital flows can be used. In the rest of this chapter, all these aspects are briefly examined, together with some of their interactions.

1.3.1 Land Area and Agricultural Land Area

As the central piece left over after the break-up of the Soviet Union, the Russian Federation, henceforth Russia for short, is still by far the largest country in the world in terms of land area. With 16.4 million km², as indicated in Table 1.2, or 12.6 percent of the world total, Russia is about 75 percent larger than China, the world’s second-largest country. Other unsurprising large countries are Canada, the USA, and Brazil. Perhaps more remarkable in the top 10 list is the ninth place for Kazakhstan (formerly a part of the Soviet Union) and Algeria (tenth) in Africa. Other African countries follow: Sudan (eleventh) and DR Congo (Zaire, twelfth). (There are two “Congo” countries in Africa, the largest of which in terms of both population and size, a former Belgian colony, might also be known under the old name Zaire.) As a result of the most frequently used methods for projecting the world globe

Table 1.2. Top 10 countries in land area and agricultural land area, 2019

Rank	Country	Land area	%	Country	Agricultural	%
1	Russia	16.38	12.6	China	5.28	10.9
2	China	9.39	7.2	USA	4.06	8.3
3	USA	9.15	7.0	Australia	3.71	7.6
4	Canada	9.09	7.0	Brazil	2.84	5.8
5	Brazil	8.36	6.4	Russia	2.18	4.5
6	Australia	7.69	5.9	Kazakhstan	2.17	4.5
7	India	2.97	2.3	India	1.80	3.7
8	Argentina	2.74	2.1	S. Arabia	1.74	3.6
9	Kazakhstan	2.70	2.1	Argentina	1.49	3.1
10	Algeria	2.38	1.8	Mongolia	1.11	2.3
	World	129.94	100	World	48.62	100

Sources: Based on the most recently available information in the World Development Indicators online for the period 2017–2019 and CIA World Factbook for missing data.

Notes: Land area and agricultural land area in million km²; % is relative to world total.

6 Economic Development Today

on a flat piece of paper, most people tend to underestimate the size of the African land area. To avoid this problem and get a better indication of the land area at different locations, panel a of Figure 1.1 provides a simple equilateral projection of bubbles proportional to a country's total land area, where the center of the bubble is located at the country's geographic center. Similar diagrams for other variables for the same reason are provided in the remainder of this chapter. For discussion purposes, the figure displays individual country data and at the same time groups the countries together in the seven regions of the World Bank (see Table 1.1).

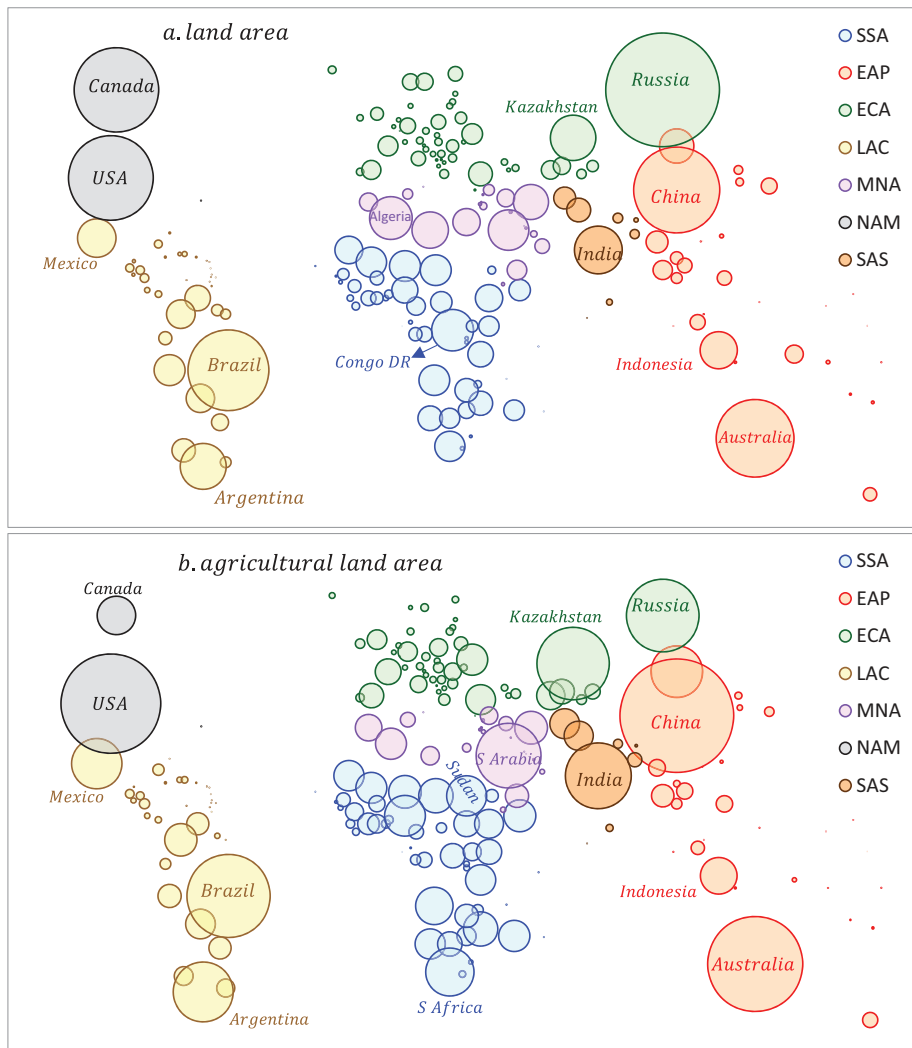


Figure 1.1 Land area and agricultural land area, 2019

Source: See Table 1.2.

Notes: Bubbles are proportional to a country's land area (panel a) and agricultural land area (panel b), located at the geographic center (except for the USA, which is at the geographic center of the 48 contiguous states) (CIA World Factbook), equilateral projection. For the world as a whole, agricultural land area is about 38 percent of total land area; 196 countries; see Table 1.1 for the World Bank region abbreviations.

The top six countries in Table 1.2 clearly stand out in panel a of Figure 1.1. Together, these six countries already account for 46 percent of the world's total land area. This graph also clearly illustrates the size of the African continent. Only one African country makes it to the top 10, but there are many African countries and they tend to be large in size. Taken together, the African countries account for more than 23 percent of the world's total area. If we realize that Russia (for its land area at least) and Kazakhstan are located in Asia, we also note that Europe is rather small in total land area (the sum of the other bubbles is not so large).

Since there are large land areas which consist of deserts, are almost permanently frozen, or receive hardly any rain at all, one may wonder how useful the land area is for humans. A first indication is to look at agricultural land area rather than total land area. This is done in panel b of Figure 1.1, where the bubbles are proportional to agricultural land area rather than total land area. For the world as a whole, agricultural land area is about 38 percent of total land area. Note, therefore, that comparing the bubbles in panel b with the bubbles in panel a only gives an indication of a country's relative importance (as a share of the world's total) in one case compared to the other. It can be observed that Russia and Canada are not nearly as important in terms of agricultural land area. The reverse holds for China, Kazakhstan, Australia, Argentina, and South Africa, which all are significantly more important in terms of agricultural land area. As a group, the East Asia & Pacific region and the Sub-Saharan Africa region gain in importance. It is important to realize, of course, that this provides no information regarding the intensity of agricultural production, which is low in Kazakhstan, Australia, and Mongolia.

1.3.2 Population

As an indicator of economic importance, a country's land area is of limited use. Many of the countries listed in Table 1.1 incorporate vast stretches of desert, rocks, swamps, or areas frozen solid all year round. Such uninhabitable land cannot be used to sustain and feed a population engaged in commerce, production, and trade. In this respect, the total population of a country is a better indicator of its fertility and potential economic viability. Table 1.3 lists the top 15 countries in terms of total population.

Two Asian countries, China and India, clearly stand out in terms of total population. Together, they have 2.76 billion inhabitants, which is about 36 percent of the world's total population. The USA, ranked third with 328 million inhabitants, has only about 24 percent of the Indian population, which is ranked second. Asian countries dominate the population list. Apart from China and India, this includes Indonesia (fourth), Pakistan (fifth), Bangladesh (eighth), Japan (eleventh), the Philippines (thirteenth), and Vietnam (fifteenth). Note that Russia (ninth) is not included in this list of Asian countries, despite the fact that its largest land mass is in the Asian continent, because the largest share of its population is on the European continent. This makes it the only European country on the list (Germany is eighteenth). The Americas (the USA, Brazil, and Mexico) and Africa (Nigeria, Ethiopia, and Egypt) both have three countries on the list.

Rank	Country	Population (millions)	%
1	China	1,398	19.1
2	India	1,366	17.6
3	USA	328	4.4
4	Indonesia	271	3.5
5	Pakistan	217	2.8
6	Brazil	211	2.6
7	Nigeria	201	2.4
8	Bangladesh	163	2.2
9	Russia	144	2.0
10	Mexico	128	1.8
11	Japan	126	1.7
12	Ethiopia	112	1.4
13	Philippines	108	1.3
14	Egypt	100	1.3
15	Vietnam	96	1.2
World		7,700	100

Source: See Table 1.2.

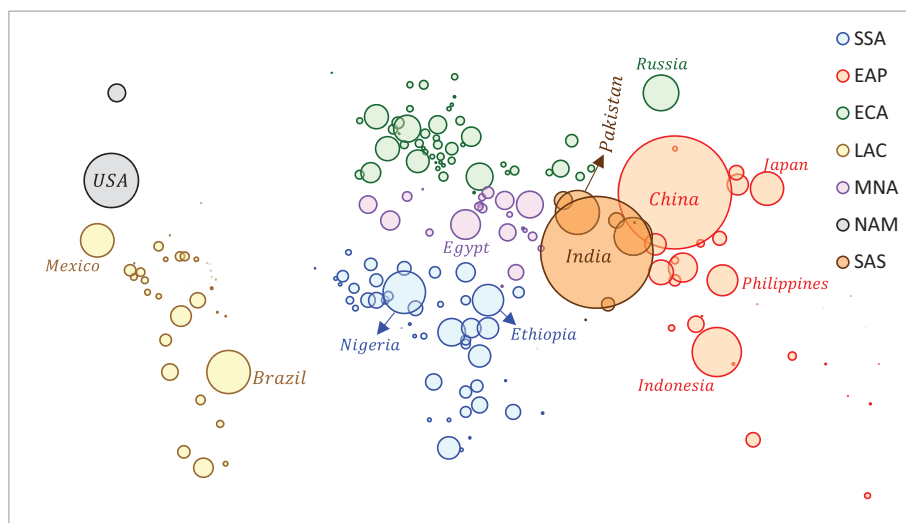


Figure 1.2 Total population, 2019

Sources: See Table 1.2 and Figure 1.1.

Notes: Bubbles are proportional to a country's total population located at the geographic center; 196 countries; see Table 1.1 for the World Bank region abbreviations.

Figure 1.2 provides an indication of the distribution of the world population across the globe. When compared with Figure 1.1 on the distribution of land area, the Americas shrink substantially (from 30.2 percent of land area to 13.2 percent in terms of population). Asia, in contrast, becomes much more important. This holds in particular for South Asia (from

3.8 percent in terms of land area to 23.9 percent in terms of population) and the countries in East Asia and Southeast Asia. Together, the EAP and SAS countries account for 54.5 percent of the world population.

1.4 Income

The best indicator of the economic power of a nation is, of course, obtained by estimating the total value of the goods and services produced in a certain time period. Actually doing this and comparing the results across nations is a formidable task, which conceptually requires taking three steps. First, a well-functioning statistics office in each nation must gather accurate information on the value of millions of goods and services produced and provided by the firms in the economy. This will be done, of course, in the country's local currency, that is dollars in the USA, rupee in India, yuan in China, and so on. Second, we have to decide what to compare between nations: gross domestic product or gross national income? Third, we have to decide *how* to compare the outcome for the different nations. The second and third steps are outlined in further detail below.

1.4.1 Domestic Product or National Income?

As mentioned above, we can compare either gross domestic product (GDP) or gross national income (GNI) between nations. GDP is defined as the market value of the goods and services produced by labor and property *located* in a country. GNI is defined as the market value of the goods and services produced by labor and property of *nationals* of a country. If, for example, a Mexican worker is providing labor services in the USA, these services are part of American GDP and Mexican GNI. The term "located in" sometimes has to be interpreted broadly, for example if a Filipino sailor is providing labor services for a Norwegian shipping company, this is part of Norwegian GDP despite the fact that the ship is not actually located in Norway most of the time. The difference between GNI and GDP holds for all factors of production, including capital, such that:

$$\text{GDP} + \text{net receipts of factor income} = \text{GNI} \quad 1.1$$

Does it really matter whether we compare countries on the basis of GDP or GNI? Essentially: no. This is illustrated in Figure 1.3 using a logarithmic scale,¹ with the size of the bubbles proportional to the size of GNI. Almost all observations are close to a straight 45° line through the origin, at least for the large countries. This implies that the

¹ A logarithmic scale uses order of magnitudes, such that each step is the previous step multiplied by a value. It allows us to depict a wide range of values in one graph. In Figure 1.3, the multiplicative value is 10, so we go from 1 to 10, then from 10 to 100, then from 100 to 1,000, and so on. Obviously, some other multiplicative value can also be used.

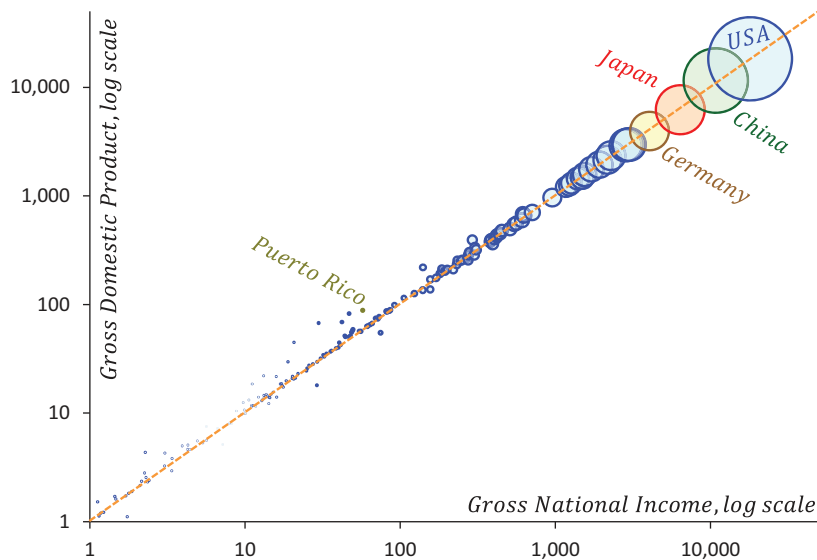


Figure 1.3 Gross national income and gross domestic product, 2019

Source: World Development Indicators.

Notes: GNI and GDP in billion constant 2010 USD (most recent up to 2019); the dashed line is a 45° line; logarithmic scales; bubbles are proportional to the size of GNI; 195 countries.

values of GDP and GNI are usually close to each other. When restricting attention to the 30 largest countries, which together account for 87 percent of total GNI and GDP, the (unweighted) average absolute deviation between GNI and GDP is only 2.6 percent. The maximum deviation for this group of countries is in Switzerland, where GDP is 10.2 percent higher than GNI. The figure also illustrates that for some smaller countries the deviation between GDP and GNI can be more substantial. This is shown in the graph for Puerto Rico, where GDP is 50 percent larger than GNI because of the investments by American multinationals.

1.4.2 Comparison

The left part of Table 1.4 reports the top 10 countries in terms of GNI level when the outcome for each nation in local currency is simply converted to the same international standard currency on the basis of the average exchange rate in the period of observation (referred to as GNI xrate). The total value of all goods and services produced in the world in 2019 was about \$86 trillion. Taken together, the top 10 countries account for about 68 percent of world GNI in exchange rate terms.

Based on exchange rates, the USA is by far the largest economy in the world, producing about 25 percent of all goods and services. This is about 50 percent more than China, which is ranked second (at 16.6 percent), followed by Japan (6.1 percent). There are four European countries in the top 10, namely Germany (fourth), the UK (sixth), France (seventh), and Italy (eighth). None of these European countries makes it to the land area top 10 of Table 1.2 or the population top 15 of Table 1.3.