The Wealth of Nations: Economic Growth

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Introduction

Why are you so much more prosperous than your great-great-grandparents were?

The United States was not always as prosperous as it is today. Its real GDP per capita today is about 25 times what it was in 1820. At that time, only a small fraction of the population lived in cities; most people worked in agriculture. People could not even imagine, let alone have access to, many of the goods, services, and technologies that we take for granted, including radio, television, indoor plumbing, shopping malls, cars, planes, or even trains.

Introduction

The United States and several other countries have vastly increased their real GDP per capita over the past 200 years, developing new goods, services, and technologies. We call this process ***economic growth***.
The key questions we address in this lecture are how and why the United States and several other countries have managed to achieve such notable economic growth over the past two centuries.

Outline

Key ideas

- **Economic growth measures how much real GDP per capita grows over time.**
- Today's high levels of real GDP per capita in many nations are a result of rapid economic growth over the past two centuries.
- **Sustained economic growth relies on technological progress**.
- There are sizable differences in the historical growth rates of different economies, which are largely responsible for their differences in the levels of real GDP per capita.
- **Economic growth is a powerful tool for poverty reduction.**

1. The Power of Economic Growth

Last lecture we saw how aggregate incomes (GDP) are determined.
We can now start using these ideas to understand why several countries, including the United States, have managed to become so **much richer** over the past 200 years and, in the process, gain a new perspective on the differences across countries that we have documented before.
Throughout this chapter, we refer to *real GDP*, which **uses market prices from a specific base year** (in this chapter generally 2011) **to express the value of production in the economy**.

1. The Power of Economic Growth

A FIRST LOOK AT U.S. GROWTH

Figure: Real GDP per Capita in the United States (2011 Constant Dollars)

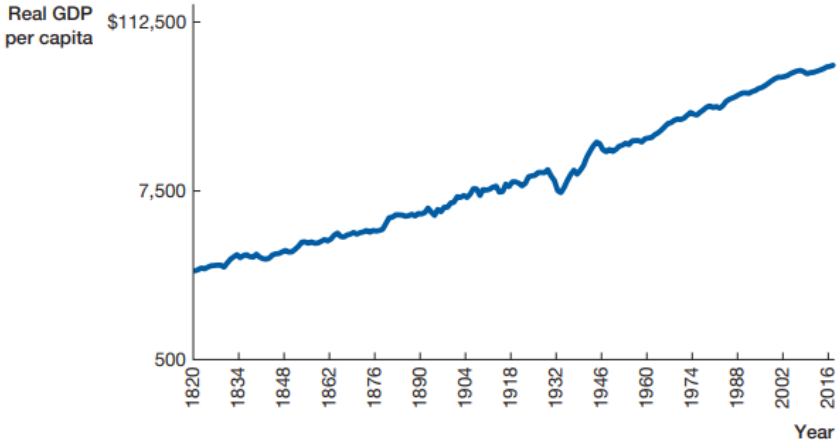

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 176

1. The Power of Economic Growth

- **Economic growth**, or simply growth, refers to the **increase in real GDP per capita of an economy**.
- The previous figure shows this type of economic growth and a marked increase in real GDP per capita in the U.S. economy over the past 200 years.
- The **growth of real GDP per capita** in the United States has been **relatively steady and sustained**, except during the Great Depression and its aftermath. Note that the y-axis has a proportional scale, so that the vertical distance between 500 and 2,500 is the same as that between 2,500 and 12,500.
- As a result of the continued economic growth, U.S. **real GDP per capita and standards of living are much higher today than they were in 1820**. For example, real GDP per capita has increased from $2,806 in 1820 to $14,655 in 1950 and to $50,752 in 2014 (all numbers in 2011 constant dollars).

1. The Power of Economic Growth

- Let us first specify the measurement of growth in a little more detail.
- A **growth rate** is defined as the change in a quantity — here, real GDP per capita — between two dates, relative to the baseline (beginning of period) quantity.
- Let's choose two dates (say, t and $t+1$) and denote real GDP per capita on these two dates by y_t and y_{t+1}, respectively.
- Then the growth rate of real GDP per capita between these two dates is defined as follows:

$$Growth_{t,t+1} = \frac{y_{t+1} - y_t}{y_t}$$

1. The Power of Economic Growth

- Let us focus on annual differences, so that, for example, t and $t+1$ correspond to the years 2005 and 2006, respectively. The U.S. economy had real GDP per capita of \$50,512 in 2005 and \$51,374 in 2006, so the growth rate between 2005 and 2006 can be computed as

$$Growth_{2005,2006} = \frac{\$51,374 - \$50,512}{\$50,512} = 0.017$$

  (or equivalently, $0.017 \times 100 = 1.7$ percent)
- Using this formula, we can compute growth rates of real GDP for any country.

1. The Power of Economic Growth

Figure: The Annual Growth Rate of real GDP per Capita in the United States Between 1950 and 2014 (2011 Constant Dollars)

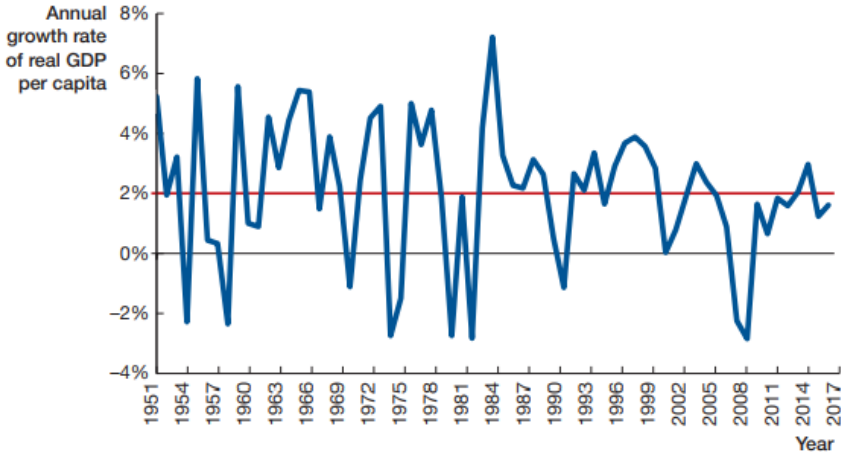

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 177

1. The Power of Economic Growth

- Previous figure depicts the annual growth rate of real GDP per capita of the U.S. economy between 1950 and 2014, which is computed using the growth rate formula.
- It shows that the average growth rate is positive, at approximately 2.03 percent.
- Economic fluctuations are also visible here, including the one starting in 2008, the Great Recession.

1. The Power of Economic Growth

EXPONENTIAL GROWTH

- Central to our discussion of economic growth is the idea of exponential growth, which refers to the process by which a quantity grows at an approximately constant growth rate.
- Exponential growth results because new growth builds on past growth and its effects compound. This implies that relatively modest differences in growth rates translate into large differences in the level of a quantity after many years of growing.

1. The Power of Economic Growth

- To understand both exponential growth and its implications, consider a simple example, where a variable Y_t starts out with the value 1 in the year 2000 and has a constant growth rate of 5 percent (0.05) in subsequent years.
- What will be the value of this variable in the year 2015?
- A first guess might be obtained by adding the increment of $1 \times 0.05 = 0.05$ to the base value 15 times (once for every year between 2000 and 2015).
- This would give us an increase of $15 \times 0.05 = 0.75$, thus producing the value $Y_{2015} = 1.75$.

1. The Power of Economic Growth

- But this is not a correct depiction of how growth takes place because the power of compounding has to be factored in.
- Let's see why this is so by starting with 2001. With a growth rate of 5 percent, we will have $Y_{2001} = 1.05$.
- What about in 2002? The key here is that the additional 5 percent growth between 2001 and 2002 will start from 1.05 — not from the initial level of 1.00. Hence, we will have $Y_{2002} = 1.05 \times 1.05 = 1.1025$.
- Similarly, $Y_{2003} = 1.1025 \times 1.05 = 1.1576$, and by continuing like this, we obtain $Y_{2015} = 2.0789$.
- If you want to obtain this number directly, you could also use the following formula:

$$Y_{2015} = (1.05)^{15}$$

- Or, more generally, if an object grows at the rate g percent for n years, its value at the end of the n years will have increased by $(1 + g)^n$.

1. The Power of Economic Growth

- **Exponential growth results because current growth builds on past growth.**
- For example, to obtain Y_{2003} we started from the level at 2002, $Y_{2002} = 1.1025$, and built on it with 5 percent growth, to obtain $1.1025 \times 1.05 = 1.1576$.
- This implied that the increase from 2002 to 2003, $1.1576 - 1.1025 = 0.0551$, was greater than 0.05, the increase from 2000 to 2001, even though both of them corresponded to 5 percent growth.

1. The Power of Economic Growth

- To see the power of exponential growth on economic growth, consider two countries with the same level of real GDP per capita in 1810, say $1,000 (in 2011 constant U.S. dollars). Furthermore, suppose that **growth is exponential** and, in particular, that real GDP per capita in one of these countries grows at **2 percent per year** while in the other one it grows at **just 1 percent**.
- At first glance, this difference seems small. And it is true that such a difference in growth will have only small implications over 1 or 2 years. But the implications of this difference 200 years later will be quite impressive.
- The country growing at 1 percent per year will achieve real GDP per capita of approximately $7,316 in 2010. In contrast, because of the exponential nature of growth, the country growing at 2 percent per year over the same period will reach a real GDP per capita of $52,485. Thus, a **more than sevenfold difference** results between these two countries from "**just**" a 1 percent difference in growth rates.

1. The Power of Economic Growth

PATTERNS OF GROWTH

- **Exponential growth is largely responsible for how the large differences in real GDP per capita that we observe today emerged over time.**
- The nations that are relatively rich today have grown **steadily** over the past 200 years, whereas the economies of those that are poor have failed to do so.

1. The Power of Economic Growth

Figure: GDP per Capita and Growth in Selected Countries (PPP-Adjusted 2011 Constant Dollars)

Country	Real GDP per Capita		Implied (Average) Annual Growth
	1960	2017	
United States	$17,600.11	$56,153.42	2.07%
United Kingdom	$11,959.49	$42,137.82	2.25%
France	$10,465.52	$40,975.05	2.43%
Mexico	$5,741.75	$18,360.42	2.01%
Spain	$5,741.40	$37,232.80	3.35%
Nicaragua	$4,476.47	$5,360.22	0.32%
Ghana	$2,816.50	$5,153.55	0.37%
Singapore	$2,663.43	$79,842.57	6.16%
Brazil	$2,463.11	$14,108.92	3.29%
Democratic Republic of the Congo	$2,422.75	$798.68	−2.03%
Guatemala	$2,418.48	$7,473.34	2.06%
Kenya	$1,749.13	$2,987.50	0.94%
South Korea	$1,175.10	$37,725.07	6.37%
China	$1,154.19	$13,051.32	4.56%
India	$1,033.67	$6,281.54	3.23%
Rwanda	$962.58	$1,948.49	1.24%
Botswana	$427.35	$16,235.75	6.60%

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 179

1. The Power of Economic Growth

- We see that PPP-adjusted GDP per capita has increased significantly in the United States, the United Kingdom, and France; the growth rates in the last column confirm this. For example, both the United States and the United Kingdom show an average annual growth rate of about 2 percent between 1960 and 2019.
- Also there has been an even greater increase in PPP-adjusted GDP per capita and correspondingly higher growth rates for Singapore, Spain, South Korea, Botswana, and China. All five of these countries were significantly poorer than the United States in 1960, but they closed some or almost all of the gap with the United States by 2019. Such success is reflected in the higher growth rates for these countries.
- Other countries that have not closed the gap between themselves and richer countries, or have done so only to a limited extent. These nations include Mexico, Brazil, and India, which show similar or only slightly higher growth rates than the United States. Guatemala, Kenya, Ghana, Rwanda, and Nicaragua had even lower growth rates than the United States over this time period and thus have become relatively poorer.

1. The Power of Economic Growth

Figure: GDP per Capita of Selected Countries (PPP-Adjusted 2011 Constant Dollars)

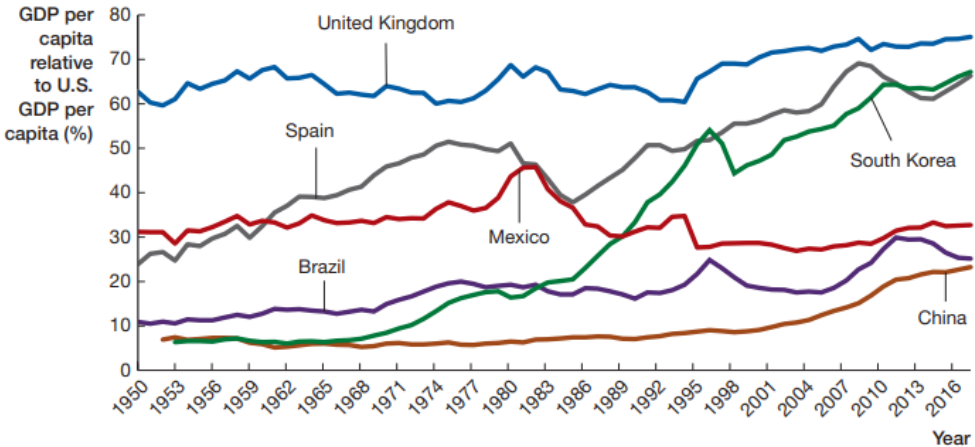

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 180

1. The Power of Economic Growth

- How has PPP-adjusted GDP per capita evolved in these countries relative to the United States? The overall patterns are consistent with those shown in the table but the growth of these economies over time also reveals some interesting facts.
- PPP-adjusted GDP per capita in the United Kingdom has remained at about 70 to 80 percent of the PPP-adjusted GDP per capita of the United States since the 1950s.
- Spain and South Korea showed early spurts of rapid growth, even though they started with very different income levels at the beginning of the period. By the 1980s, both countries had closed much of the gap between themselves and the United States, though they both also show periods of relative decline.
- Brazil also experienced relatively rapid growth in the 1950s and 1960s, closing some of the gap with the United States. But around 1980, this process went into reverse, and by 2010, PPP-adjusted GDP per capita in Brazil was about 20 percent of the GDP per capita of the United States — not much above where it started, in relative terms, in the 1950s.

1. The Power of Economic Growth

Figure: Average Growth Rates of GDP per Capita from 1960 to 2014 (PPP-adjusted 2011 Constant Dollars)

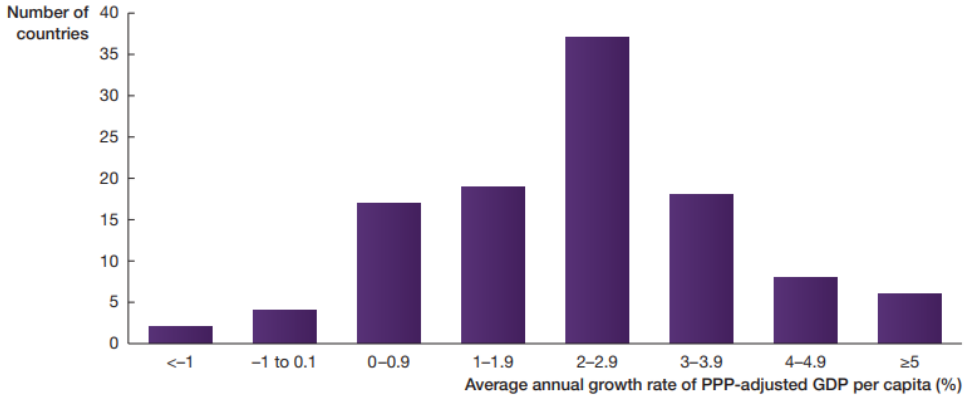

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 183

1. The Power of Economic Growth

- The figure shows a graph of the growth rates of all countries for which we have data between 1960 and 2017. It shows that there is a wide range of growth rates. Some countries, such as Nicaragua, the Democratic Republic of the Congo, and Zimbabwe, have grown at negative rates during this period, while others, such as South Korea and Singapore, have achieved very high growth rates.
- Using historical data, we can compare growth across countries even further back in time than 1960. To show these growth patterns in a simple way, the following Figure lists levels of GDP per capita for several countries (in PPP-adjusted 2011 constant dollars) in 1820, 1870, 1920, 1970, and 2010 and their annual growth rates between 1820 and 2010 and between 1920 and 2010.

1. The Power of Economic Growth

Figure: Average Growth Rates of GDP per Capita from 1960 to 2014 (PPP-adjusted 2011 Constant Dollars)

	PPP-adjusted GDP per Capita					Average Growth	
Country	1820	1870	1920	1970	2010	1820–2010	1920–2010
United Kingdom	3,202	4,925	7,021	16,623	36,708	1.29%	1.85%
United States	2,101	3,775	8,571	23,204	47,074	1.65%	1.91%
France	1,752	2,896	4,982	17,615	33,157	1.56%	2.13%
Spain	1,556	1,863	3,361	9,756	25,932	1.49%	2.30%
Brazil	1,054	1,101	1,487	4,720	10,620	1.22%	2.21%
Mexico	968	1,005	2,814	6,669	11,912	1.33%	1.62%
China	926	818	852	1,201	12,400	1.37%	3.02%
India	823	823	980	1,340	5,206	0.98%	1.87%
Morocco	664	869	1,096	2,495	6,217	1.18%	1.95%
South Korea	517	520	942	3,346	33,503	2.22%	4.05%
Ghana	—	678	1,206	2,198	2,967		1.01%
Haiti	—	—	—	1,419	1,059		
Kenya	—	—	—	1,413	1,762		

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 183

1. The Power of Economic Growth

- We see that income levels are not all that different across countries in 1820.
- The United States was only about twice as rich as Mexico (U.S. PPP-adjusted GDP per capita of $1,873 versus Mexico's $863). But by 2010, there was a sizable gap between these two countries, which can be accounted for by their different growth rates. The average growth rate of the United States between 1820 and 2010 was 1.65 percent per year, while Mexico grew at an average rate of only 1.33 percent per year.
- India started out with a little less than half of the PPP-adjusted GDP per capita of the United States in 1820. But by 2010, the gap was nearly tenfold. This is a direct consequence of the difference in the two countries' growth rates in PPP-adjusted GDP per capita.
- In 1820, the United Kingdom was significantly richer than the United States. Yet by 2010, the United States was about 30 percent richer than the United Kingdom. While the United States grew at 1.65 percent per year, the United Kingdom grew at only 1.29 percent per year. This relatively small difference in growth rates was sufficient for the United States to overtake the United Kingdom and become richer by 2010.

1. The Power of Economic Growth

- By 1970, several other countries, including Spain, South Korea, and China, became poorer relative to the United States. Yet it also shows that these countries grew faster than the United States over the past 40 years, closing the gap that had opened up previously.
- Part of this growth is what we call **catch-up growth**, meaning that these nations are catching up with the income and technology leader of the world, in this case the United States. Countries undergoing catch-up growth do so mostly by benefiting from available technologies but also by increasing their saving, efficiency units of labor, and efficiency of production.

1. The Power of Economic Growth

- As already described, exponential growth can have drastic implications when sustained over long periods. Given the importance of this pattern and to contrast it with catch-up growth, we refer to the experience of relatively steady growth over long periods of time as **sustained growth**.
- The reason we are introducing the concept of sustained growth as well as exponential growth is that the latter term is often used to describe the idea that economic growth has an exponential, or cumulative, nature, while the former refers to the actual growth experience of several countries over the past 200 years or so.
- Our next task is to understand how this type of sustained growth emerges and what factors determine the growth rate of an economy.

2. How Does a Nation's Economy Grow?

- The aggregate production function, which we studied, gives us a first answer to this question.
- Recall that the aggregate production function, $Y = A \times F(K, H)$, links GDP to the two factors of production: the physical capital (K) and total efficiency units of labor (H). The aggregate production function also depends on the level of technology (A), which, as we saw, captures the level of productivity that comes both from technological progress (for example, innovation and expansion of the knowledge available to the economy) and the efficiency of production. When A changes, the aggregate production function shifts.
- A nation can increase its GDP by increasing its stock of physical capital, K; by increasing the total efficiency units of labor, H (for example, by increasing the human capital of workers); and by improving its technology, A. In this section, we look more closely at these three areas.

2. How Does a Nation's Economy Grow?

- Let us consider the physical capital stock, K, which represents the value of all equipment (for example, machines, cars, planes, and computers) and structures (like buildings) of the economy. The physical capital stock (and therefore GDP) can be increased by investment, a process also known as *physical capital accumulation*.
- You will recall that the national income accounting identity implies that $Y = C + I + G + X - M$, where C is consumption (household expenditures on consumption of goods and services), I is investment (expenditures on investment goods by private agents), G is government purchases of goods and services, X is exports, and M is imports. Recall that in a closed economy, there are no exports or imports, and if we also ignore the government (as we have done here), then we have $G = X = M = 0$. Therefore, the national income accounting identity implies

$$Y = C + I$$

2. How Does a Nation's Economy Grow?

- In other words, GDP is equal to the sum of aggregate consumption and investment.
- This equation also implies that investment comes directly from aggregate saving. This is because in our closed economy without government spending, all income will be either consumed or saved, so GDP is also equal to aggregate consumption plus aggregate saving or, in other words, $Y = C + S$. Thus

$$I = S$$

2. How Does a Nation's Economy Grow?

- Interpreted differently, this relationship says that all resources that households decide to save will be allocated to firms that will use them for investment (for example, by banks that will take money deposited by households and lend it to firms for investment).
- Consequently, a nation with a high saving rate will accumulate physical capital rapidly — that is, increase its physical capital stock rapidly — and, by the aggregate production function, increase its GDP. Thus to determine whether and how rapidly an economy will increase its physical capital stock, we need to understand the saving decisions of households, which we turn to next.

2. How Does a Nation's Economy Grow?

OPTIMIZATION: THE CHOICE BETWEEN SAVING AND CONSUMPTION

- To understand how the GDP of a nation is divided between consumption and investment, we need to study the preferences of consumers, who decide how much of their income will be allocated to savings.
- This involves studying how households trade off consumption today versus consumption tomorrow because saving is a way of allocating some of today's resources for consumption tomorrow (or more generally, consumption in the future). This is yet another example of optimization on the part of individuals and households.
- Each household typically faces different priorities and needs that influence its decisions to consume its income today versus save it for tomorrow. For example, those preparing to send their children to college may save more today.

2. How Does a Nation's Economy Grow?

- As with all optimization problems, such choices are affected by prices. In this case, the relevant price is the **interest rate**, which determines the rate of return that households expect on their savings.
- **Higher interest rates typically encourage more saving.**
- In addition, expectations of future income growth and perhaps taxes will have an impact on the saving decision.
- For instance, households that expect rapid income growth in the future may have less reason to save to finance future consumption (because future income growth will enable them to do this) or even to save "for a rainy day" (against potential future hardships).
- Conversely, if they expect high taxes in the future, households may save more in order to be able to pay these taxes without reducing future consumption.

2. How Does a Nation's Economy Grow?

- These trade-offs determine the **saving rate** of the economy, which corresponds to the fraction of income that is saved.
- We can compute the saving rate by dividing total savings by GDP.
- For example, in 2013, the level of total savings in the U.S. economy was $2.18 trillion, while GDP was $16.80 trillion (both in current dollars). Then the saving rate is

$$\textit{Saving rate} = \frac{\textit{Total saving}}{\textit{GDP}} = \frac{\$2.18\ \textit{trillion}}{\$16.80\ \textit{trillion}} = 0.1298 = 12.98\%$$

2. How Does a Nation's Economy Grow?

KNOWLEDGE, TECHNOLOGICAL CHANGE, AND GROWTH

- **Technological change** is the process of new technologies and new goods and services being invented, introduced, and used in the economy, enabling the economy to achieve a higher level of real GDP for given levels of its factors of production, physical capital stock, and total efficiency units of labor.
- Technological change, as it turns out, is exponential. In particular, using the same definition of exponential growth, this means that improvements in technology take place at an approximately constant rate—rather than by constant increments.

2. How Does a Nation's Economy Grow?

- There is a simple reason for this exponential nature of technological change. As we have seen, growth in real GDP per capita is exponential because growth compounds — that is, it takes place on the basis of the current level of real GDP, whose increase is already a result of past growth.
- A similar logic holds for technological change. Inventors of new innovations and technologies do not start from scratch in their attempts to improve the productive capacity of a firm or an economy: they build on the knowledge stock resulting from past innovations.
- Hence, every new innovation, instead of increasing the productive capacity of the economy by a constant amount, increases it by a constant proportional amount.

2. How Does a Nation's Economy Grow?

- So if we improve technology starting with a technology level that produces a real GDP per capita of $1,000, then innovations that enable us to be more productive by a certain constant percentage amount — say 10 percent — will raise real GDP per capita from $1,000 to $1,100. But if we instead start with a technology level that produces $100,000 of real GDP per capita, similar innovations bringing a 10 percent improvement will correspond to a $10,000 increase in real GDP, taking us to $110,000.
- For this reason, improvements in technology appear to be the most plausible engine of sustained growth.

3. The History of Growth and Technology

GROWTH BEFORE MODERN TIMES

- Humanity had, of course, a long history before the nineteenth century, during which several major achievements took place in science, technology, and the arts. But from an economic point of view, the period before 1800 is distinguished by one thing: a lack of sustained growth.
- USA has had some downturns and one big setback during the Great Depression, but on the whole, it has experienced relatively steady economic growth in real GDP per capita.

3. The History of Growth and Technology

- Even though there was some economic growth during the ancient Greece, ancient Rome, and Venice during the fifteenth and sixteenth centuries, sustained economic growth was rare or even absent.
- Two reasons account for this lack of sustained growth before modern times:
  - The first — the more important one — is related to the major factor that explains sustained growth: technology. Before 1800, although there were some important technological breakthroughs, the pace of technological change was much slower, almost stagnant, compared to what came thereafter.
  - Second, whatever improvements in real GDP were realized did not typically translate into increases in real GDP per capita. This last point was the basis of the theory of Thomas Malthus, which is sometimes referred to as the “Malthusian model.”

3. The History of Growth and Technology

MALTHUSIAN LIMITS TO GROWTH

- Thomas Malthus had a particularly dismal view of the workings of the economy. This was partly because, writing in 1798, he had not seen a period of steady growth like the one Europe experienced in the nineteenth century.
- Malthus argued that when the standards of living rose, couples would have more children. Because he assumed that real GDP could not grow faster than population, he then concluded that increasing population would push real GDP per capita down toward — and possibly below — the subsistence level.
- This fall in real GDP per capita in turn would trigger famines or wars that would kill a large fraction of the population.

3. The History of Growth and Technology

- With a given level of aggregate income, a lower population would then cause real GDP per capita to increase again.
- So in a pattern sometimes referred to as the Malthusian cycle, increased aggregate income would raise real GDP per capita above subsistence, fueling population growth, which in turn would put pressure on resources and reduce real GDP per capita back to its initial level or sometimes even below it.
- This pattern subsequently “corrects” the increase in population through reduced fertility and higher mortality, often due to famines.
- Dismal though it may be, the Malthusian model seems to be a good representation of how the world actually was before 1800.
- Around the same time or shortly thereafter, fertility declined. This process, which has both economic and social causes, is referred to as the demographic transition.

3. The History of Growth and Technology

- Many historians and economists view the demographic transition as a central ingredient to modern growth because it enabled the economies that experienced reduced fertility to break away from the Malthusian cycle. Until the demographic transition in the nineteenth century, there were recurrent Malthusian cycles.
- After this date, relatively sustained growth in real GDP per capita took place in many economies, particularly in the Western world.

3. The History of Growth and Technology

THE INDUSTRIAL REVOLUTION

- But the demographic transition by itself would not have been sufficient to kick-start growth.
- If all that had happened was that fertility had declined and stabilized around a lower number, there would not necessarily have been any qualitative changes in the patterns of real GDP growth per capita.
- Instead, sustained growth was due to another major change that occurred around the same time: the Industrial Revolution, which opened the way for more steady and rapid technological changes that underpinned modern economic growth.

3. The History of Growth and Technology

- The Industrial Revolution is the term coined to designate the arrival of many new machines and methods of production in Britain, starting in textile manufacturing and thereafter spreading into other sectors.
- The Industrial Revolution is important both as an event in itself (because it was the first time technology and scientific methods were used in production in such a coordinated manner) and also as the starting point of the wave of industrialization that spread to many other countries around the world.
- Although clearly new technologies and new knowledge had been created before, innovation and the application of new technologies to the production of goods and services became more systematic and pervasive during and in the aftermath of the Industrial Revolution.
- The available evidence thus suggests that the changes in technology that are the root cause of the sustained growth we observe today started with the Industrial Revolution at the end of the eighteenth century in Britain.

3. The History of Growth and Technology

GROWTH AND TECHNOLOGY SINCE THE INDUSTRIAL REVOLUTION

- Many of the technologies that we take for granted today—from railroads to automobiles and airplanes; from radio and TV to telecommunication technologies, computers, the Internet, and social networking; from electricity to almost all the technologies used on the factory floor to produce the goods we use in our everyday life; from nearly all the drugs that save hundreds of millions of lives every year around the world to basic sanitation, including indoor plumbing—have been invented and made available to us over the past 250 years.
- Such advances are the result of the exponential growth in our knowledge and technology since the Industrial Revolution.
- An important foundation of this growth has been research and development (RD) activity, which firms, universities, and governments undertake to improve this knowledge base.

4. Growth, Inequality, and Poverty

- The fact that an economy is growing does not necessarily imply that all citizens are benefiting equally from that growth. In fact, in recent decades, rapid growth in the U.S. economy has gone hand-in-hand with increases in inequality.
- There are almost always some households and individuals with significantly higher-than-average incomes and some with significantly lower-than-average incomes.
- In fact, economic growth is sometimes associated with increasing inequality because only some workers and businesses benefit from the new technologies that are driving this growth.

GROWTH AND INEQUALITY

- There are several reasons that a society might care about inequality. Some may wish to live in a society that does not have great disparities in the living standards of its citizens. We may feel that greater inequality leads to more social polarization or even to a greater incidence of crime in society.

GROWTH AND POVERTY

- What is the relationship between growth and poverty?
- The following Figure complements this picture by showing that, on average, growth of income per capita is associated with a decline in poverty. For each country in the exhibit, the y-axis shows the percentage rise or decline in poverty between 1993 and the early 2010s (depending on data availability), while the x-axis shows the average growth between the same dates.

4. Growth, Inequality, and Poverty

Figure: Relationship Between Growth and Change in Poverty in the Early 1990s and the Early Twenty-First Century

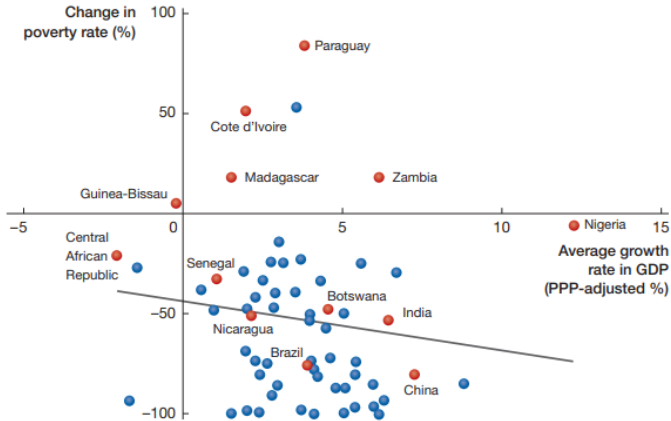

Figure: Macroeconomics (Acemoglu, Laibson, List 2022), Page 195

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- Countries in the lower right quadrant are those that have experienced positive growth and declines in poverty and include Botswana, China, India, and Brazil, among others.
- The exhibit also includes the line that best fits these points. Although in some countries growth and poverty have both increased significantly (such as Côte d'Ivoire and Paraguay), on the whole there is a negative association between growth over the recent decades and the fraction of the population living in poverty.

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- Yet the exhibit also shows quite a bit of dispersion around that best-fit line, reminding us that many other factors beyond growth can influence poverty.
- Even though this association does not prove that growth in income per capita is the direct cause of declining poverty, it is the type of evidence that bolsters many economists' belief that economic growth is one of the most effective ways of reducing poverty.
- Nevertheless, it is important to remember that economic growth does not guarantee an automatic reduction in poverty (as the cases of Côte d'Ivoire, Paraguay, Madagascar, and Zambia in the exhibit show). It will do so only if it is not associated with a significant rise in inequality.

Summary

- Many countries, including the United States, have experienced rapid economic growth over the past 200 years, increasing their real GDP per capita several times over. For example, current U.S. real GDP per capita is about 25 times U.S. real GDP per capita in 1820. In addition, U.S. growth has been relatively sustained, meaning that GDP per capita has grown relatively steadily, with the exception of the Great Depression and the decade following it.
- Economic growth can sometimes take place rapidly due to catch-up growth, whereby relatively poorer nations increase their real GDP per capita by taking advantage of knowledge and technologies already invented in other, more advanced countries.
- Because of the diminishing marginal product of physical capital and limits to how much each worker can invest in his or her human capital before joining the workforce, sustained growth is generally impossible to achieve just by building up physical and human capital. Rather, the most plausible driver of sustained growth is technological progress. Empirical evidence also suggests that technological progress accounts for the bulk of the increase in real GDP per capita (or per hour worked) in the United States.

Summary

- Though the past 200 years have been characterized by sustained economic growth in many parts of the world, the preceding centuries did not experience steady growth. Instead, most economies during these times experienced Malthusian cycles: increases in GDP-fueled population growth, which reduced the standard of living and subsequently acted as a check on further population growth by reducing fertility and survival. The world broke out of the Malthusian cycle through the Industrial Revolution, which started a process of rapid technological progress, underpinning the sustained growth of the past two centuries.
- Economic growth has the capacity to significantly reduce poverty, provided that such growth is not associated with substantially increased inequality.