14 National Accounts: GDP, Inflation, Inequality, and Unemployment

In this chapter,

- Definitions of gross domestic product (GDP), unemployment, inflation, and income inequality
- The limits of GDP
- Labor markets and social welfare
- Global market comparisons and interactions
- Why people perceive inflation higher than it actually is.
- Informal workers and the problems with persistent high unemployment.

What does an unemployment rate of 7% exactly mean? Is GDP an outdated measure (as *The Economist* suggested in April 2016)?[1] How do are inequality and inflation rates compared among countries? By the end of this chapter, we will have examined all the different market interactions and their macroeconomic outcomes. Then we will put everything together, establishing a final framework for the economics of global business.

14.1 Gross Domestic Product (GDP)

Economists define economic growth as the real (as opposed to nominal) rate of change in a country's gross domestic product (GDP). GDP is the market (monetary) value of all final goods and services produced by the country. This definition raises at least three questions: Why final goods? Why use market value? Why produced instead of sold?

There are three ways to calculate GDP, and they all yield the same result: the production approach (supply), the expenditure approach (demand) and the

1. "The Trouble with GDP," *The Economist*, April 30, 2016, http://www.economist.com/news/briefing/21697845-gross-domestic-product-gdp-increasingly-poor-measure-prosperity-it-not-even.

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income approach (value-added). Because GDP is determined in the markets for goods and services through a clearing equilibrium following aggregate supply and demand interactions, it follows that the aggregate supply of domestic goods quantity is equal to aggregate demand of domestic goods quantity. Both need to be equal to the value-added way of calculating GDP. All three measures are actually estimations instead of calculations, and all are fraught with methodological problems. It is almost impossible to observe the production of all services and goods produced in an economy over a period. GDP has many limits and provides unsatisfactory answers to issues such as these: Should we count illegal activity? Does GDP take into account nonremunerated work (such as cooking one's own food)? Is it moral for GDP to increase following a tragedy (such the loss of life in a car accident)? GDP is flawed and should never be used as a proxy for true development. It is, at best, a good proxy about material prosperity.

GDP and GDP per capita are measures of economic output and indicate the income flow generated by countries and their population. GDP per capita shows the average income of a person in a country. GDP is not a good measure of social cohesion, life satisfaction, or anything else. It is simply a measure of how much a country produces that is measurable at market prices. Nevertheless, the spotlight is on GDP because most people want an increase in living standards, and income is a good proxy for them. In general, ~~higher~~ income ~~leads to higher~~ living standards across the world, and an increase in income is something that most people ~~in the world~~ can easily comprehend. ~~Recent scientific evidence shows that money buys happiness only up to a point. In the United States, most people find that life satisfaction increases until they have approximately US$75,000 annual income.~~ Most governments' economic policies aim at growth because people want to become richer (or less poor). GDP measurements miss many other dimensions of life, which is why some people favor the creation of new measures. What counts in favor of GDP is the fact that we know what it measures, so we can compare it across countries and over time. The focus on GDP may cause some important unintended consequences, such as growth policies that cause significant harm to the environment. At the same time, ~~GDP~~ growth in poor countries is relevant to alleviating poverty. GDP is not a perfect measure, but it is still the major goal of macroeconomic policy around the planet. We need to understand how it is measured.

Production (Supply of Domestic Goods)

Production (or supply of domestic goods) is one of the three ways to measure GDP. How this is done can be shown in a simple example, like the production of bread, assuming the following:

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1. There are only three stages in the production chain of bread—wheat, flour, and bread.
2. The economy is closed.
3. All wheat is used to produce flour.
4. All flour is used to produce bread.
5. All production at each stage is sold (in other words, markets clear).

The market value related to the production of bread can now be calculated. In this example, farmers produce wheat and sell it for 180. Flour manufacturers buy the wheat at 180, process it into flour, and sell it for 350. Bakers buy flour and sell bread for 600. How much value is added into the economy? Each production step adds value into the economy: wheat farmers add 80, flour manufacturers add 170, and bakers add 250, for a sum of 600, which is the market value of all bread produced and sold (in this simplified case, there is no inventory). When calculating GDP, it is not necessary to consider anything other than market prices and final goods (in principle). Intermediate goods are already incorporated in the market value of final goods, so aggregating the value added of all goods and services allows us to calculate the country's GDP.

Income (Value Added)

We can decompose GDP into the different remunerations of input factors and calculate GDP through another lens. For each stage of production, we can decompose flows into three segments—intermediate goods, labor, and capital. We implicitly use a supply-side function in which the production of any good or service in the economy is

$$Y = f(K, AL, AN),$$

where Y is output, f is a function that relates variables to output, K is capital, A is an index of productivity, L is labor, and N is natural resources. This is the Solow's growth model that is the main driver of long-run growth. The main idea of computing GDP by looking at production factors is to divide the value of goods and services in terms of who owns the factors of production. Let's assume that we can divide the production of each step of production of bread into wages, intermediate goods, and profits. For instance, farmers pay 70 in wages, pay 80 in rents (machines, interest on loans, and silos), and receive 30 in profits. We assume that there are no intermediate goods for the production of wheat, a gross simplification but one of the reasons that agriculture is classified as a primary sector. If the other steps in the production of bread are similar in nature, the results are as shown in table 14.1.

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Table 14.1
Remuneration of production factors in the production of bread

Wheat	70	80	30	180
Flour	50	70	50	170
Bread	100	100	50	250
Total	220	250	130	600

~~This is a very simplified way to calculate GDP through remuneration of production factors, but it represents~~ the way input-output (IO) models work. IO models show the interdependence of the economy by targeting how intermediate goods are transformed into final goods. For the United States, the data come from the Bureau of Economic Analysis.[2] The comprehensive version consists of 389 industries and is divided into production of commodities by industry, use of commodities by industry valued at producers' prices, and use of commodities by industry valued at purchasers' prices.

The idea behind value added, then, is to understand which processes contribute more to the GDP of a nation. Full input-output models have hundreds of different components and are both time-consuming and computationally difficult to work with. But they ~~provide~~ the contribution of each industry in generating economic prosperity.

Expenditure (Demand)

In addition to the production side of the economy, which looks at value-added factors and the remuneration of production, there is a demand side (where does GDP go?). ~~Economists divide the demand side (aggregate demand) into~~ five components:

$$AD = C + I + G + X - IM,$$

where AD is aggregate demand, C is the aggregate consumption of all residents in a country, I is new private ~~investments~~ in capital goods (another way to say ~~investments~~ in expanded capacity), G is the value of government ~~expenditures~~ on individual and collective goods and services, X is total exports, and IM is imports from other countries. There are important differences between these concepts and the standard way most people talk about these variables. ~~Are~~ government ~~investments~~ in aggregate demand equal to government outlays? Do imports actually lower national economic output? Let's try to explain why economists define aggregate demand the way they do and try to make sense of the previous questions.

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2. For more, see https://www.bea.gov/industry/io_annual.htm.

Consumption (*C*) is the easiest variable to understand. It is the total value of the good and services consumed by households. From a macroeconomic point of view, families have only two possible choices regarding their incomes—either consume them or save them. The propensity of consumption, which is the percentage of families' income increase that goes to consumption, is a relevant variable for modeling the dynamics of the market for goods and services. The propensity of ~~savings~~ is the ~~rest of the increased income~~ that is saved instead of consumed. A propensity to consume of 0.75 means that, on average, consumers spend 75% of their income ~~increase~~ on goods and services and save 25% ~~of their income increased~~ for future consumption.

Investment (*I*) is the expenditure of firms on the expansion of productive capacity. It is counterintuitive to find aggregate investment in the demand function instead of the supply function. In fact, we separate investment intertemporally because of its macroeconomic effects. When companies first plan expansion, they are consuming resources from society to be able to buy machinery, expand headquarters, hire workers, and so on. Supply does not increase immediately. In that sense, investment can be thought of as comprising of two phases: in the first phase, investment increases demand because companies consume resources from society (final goods and services); in the second phase, society's productive capacity is ~~increased~~ because of increased *K* (capital) in the aggregate supply function. Although the two-stage process of today's investment increasing tomorrow's production is usually clear-cut, occasionally higher ~~investments~~ will not actually lead to capital accumulation.

One such example is the case of ghost cities in China—the new cities ~~that are~~ built by local Chinese governments ~~but t~~hat occasionally fail.[3] Ordos, a ghost city in Inner Mongolia, was built for over a million people, but in 2016, only a few thousand (mostly public servants in care of the city's infrastructure) lived there. In the short run, building such a city certainly increases aggregate demand and GDP because resources are consumed for the lavish project. In the long run, however, a nation's productive capacity is unchanged as such projects are swept away by the rivers of history.

Building ghost cities is a failure of government planning that can happen when politicians ~~have a short-term focus and~~ disregard economic efficiency. Yet there are examples of private megaprojects that boost aggregate demand in the short run without generating increased capacity. Eike Batista, a Brazilian entrepreneur, was once the wealthiest man in South America, with a fortune of US$34.5 billion.[4]

3. Kenneth Rapoza, "What Will Become of China's Ghost Cities?," *Forbes*, July 20, 2015, https://www.forbes.com/sites/kenrapoza/2015/07/20/what-will-become-of-chinas-ghost-cities.

4. Blake Schmidt, "Batista Bounces Back From $35 Billion Loss, but He's Still Stuck in Prison" *Bloomberg*, February 13, 2017, https://www.bloomberg.com/news/articles/2017-02-13/batista-sheds-negative-billionaire-label-as-he-stews-in-prison.

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Most of his wealth came from ~~investments in~~ many industrial projects in ~~Brazil, and all~~ were linked to his major planned source of revenue—offshore oilfields. After investing billions of dollars in several companies (all listed with names that ended in X to signal the proposed multiplication of wealth), OGX, the cornerstone of the X empire, found only 2% of the anticipated 1.5 billion oil barrels, halted exploration, declared bankruptcy, and is now a tiny company in the hands of its former debt holders. The end of the commodities supercycle expedited the demise of the other companies in the X empire, and in 2016, Batista was estimated to be worth a negative US$1 billion. He was jailed in 2017 ~~and~~ accused of bribing local officials. Most of the billions of dollars invested by the X group had little effect on the capital accumulation, and thus long-term growth, of the Brazilian economy.

Government ~~expenditures~~ (consumption and investment) (G) is different from government outlay. The former is related to capital accumulation generated by local and national governments, and the latter is the total amount in government budgets. For instance, G does not include interest payments on the government debt.

Figure 14.1 shows ~~World Bank~~ data for government investment and gives an idea as to the relative size of the government in different countries. As measured by the ratio of government ~~expenditures~~ to GDP, governments in South Africa, Canada, and most of the Europe have the highest relative presence in the respective local economies. The two largest economies in the world, China and the United States, are in the intermediate group, with the US government spending
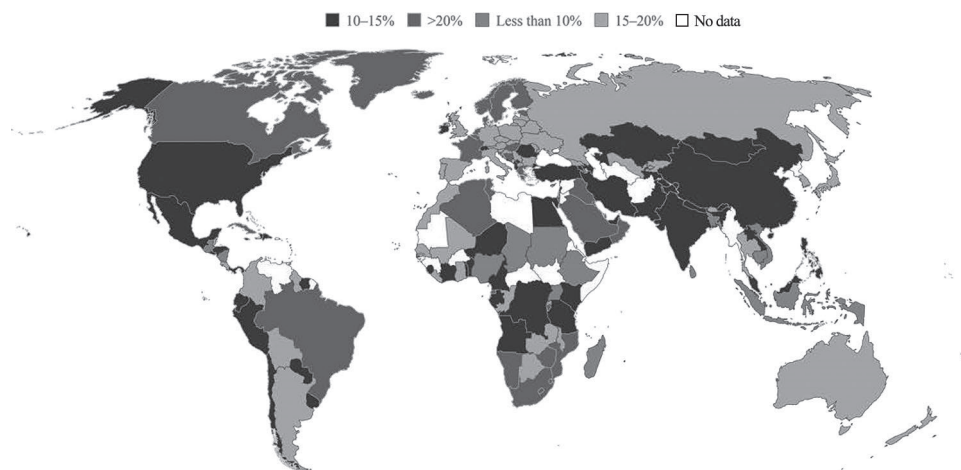

Figure 14.1
World general government final consumption expenditure ~~(percentage of GDP)~~
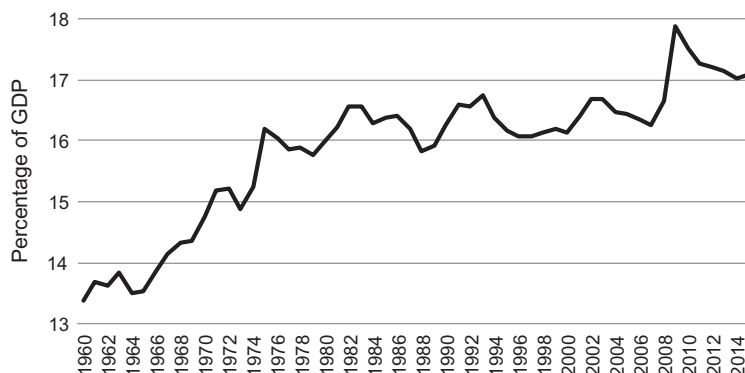*Source:* World Bank, 2017, https://data.worldbank.org/indicator/NE.CON.GOVT.ZS.

Figure 14.2
Growth in world general government final consumption expenditures, 1960 to 2014
Source: World Bank, 2017, https://data.worldbank.org/indicator/NE.CON.GOVT.ZS.

only a little more, in relative terms, than the Chinese one (14.6% for the United States and 13.6% for China), in 2014. On average, governments around the world have been increasing their expenditures over time, from an average of 14.5% of GDP in the 1960s to 17.5% in the 2010s (figure 14.2).

Finally, exports (*X*) and imports (*IM*) comprise international trade. Exports represent the demand for local goods abroad, and imports represent the locals' demand for foreign goods.

The simple arithmetic of the aggregate demand equation implies that rising imports decrease a nation's GDP. At first, it may seem that higher imports are bad for the local economy. This is not true, however, and we need to take imports out of the aggregate demand to avoid conflicts in the ways that aggregate demand (*AD*) and value added are measured. Imports are comprised not only of final goods; international trade is also buoyant because of intermediate and capital goods. Take our example value-added bread production. We found that bread contributes 600 to GDP because it is the market value of all the sales of bread in the country. Now, let's assume that the local economy does not produce wheat and that flour manufacturers import all of this primary good from abroad. Switching from national wheat to foreign wheat does not change the value of bread on the market. Flour manufacturers still spend 180 to purchase the wheat, add 170 of value, and sell all the flour to bread manufacturers at 350. However, if the wheat is bought in the international market, the bread will add not 600 of value to the local economy but only 420, which is the value of bread sales minus the value of imported wheat. This example highlights the reason that *IM* has a negative sign in the aggregate demand (*AD*) calculation. Without it, we would overestimate GDP by counting as domestic added value the production of goods and services

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imported from abroad. In chapter 11, we have already seen that although many people think that it is better for a local economy to be a net exporter ($X - M > 0$), this is not necessarily true. In any case, it would be impossible for all countries to simultaneously run trade surpluses unless interplanetary trade became a reality. Imports would result in economic losses (instead of having a simple accounting impact) only if the local economy was able to provide equivalent goods and services more efficiently and could do so without lowering the economic output in general. This situation is impossible in real life because international trade benefits all countries by shifting internal resources to industries that are more efficient. By engaging in trade, countries are able to produce more than they would be able to do in an autarky (that is, in the absence of international trade). It is easy to see that production in an autarky is less efficient than production in countries that engage in trade because a country would need to devote its resources to producing every good and service consumed in the country, losing economies of scale in some industries and productivity in others.

Bringing It All Together
Regardless of how GDP is calculated, the result is the same. It is the output that is the sum of value added from all industries, and that is consumed by society. The GDP composition of the two largest economies of the world, China and the United States, for instance, can be used to answer questions about whether the US is mostly a service-based economy or whether China is the manufacturing center of the world. In figures 14.3 and 14.4, the economy is divided, on the supply side, into three major sectors—agriculture, industry, and services. The demand side is the regular composition of aggregate demand:

$C + I + G + X - IM$.

Some important differences can be identified in the ways that China and the United States produce and consume things. China is indeed a manufacturing powerhouse in which industrial output accounts for more than 40% of GDP. The US economy, however, is now comprised mostly of services, which correspond to almost four out of every five dollars produced in the country. Agriculture, which is still relevant in China, represents only 1.2% of the income generated in the United States. There also is an extreme difference in the power of consumers in the two countries. Chinese households consume only a little over one in three dollars produced in the country, whereas US households are responsible for more than two out of three dollars of the US economy. In the US, net exports ($X - IM$) are negative, whereas for China they are positive.

The data for both countries is for 2014. In that year, the US economy generated US$15.5 trillion of economic output, and the Chinese economy generated US$9.2 trillion. Even though the Chinese economy is probably eventually going to surpass
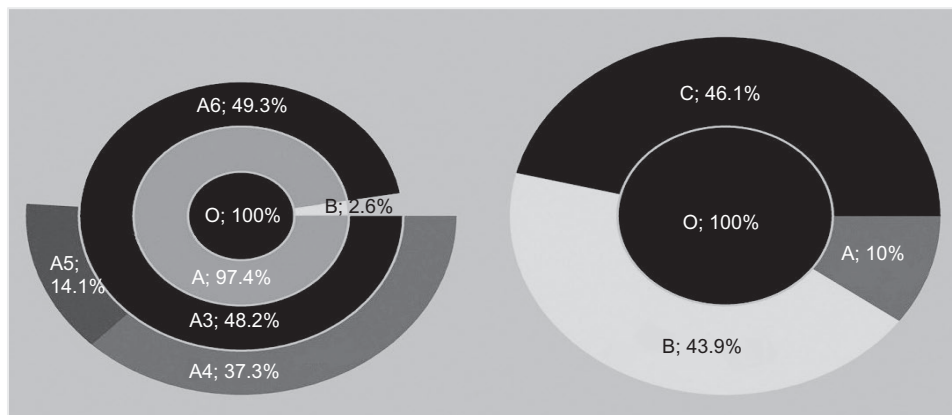
Figure 14.3
GDP composition breakdown for China, 2014
Notes for the left-hand figure: O: GDP (current) US$9,240,270,452,050; A: Gross national expenditure US$9,003,474,413,754; A3: Final consumption expenditure, etc. US$4,449,395,127,883; A4: Household final consumption expenditure US$3,446,754,675,468; A5: General government consumption expenditure US$1,299,157,066,729; A6: Gross capital formation US$4,554,079,285,871; B: External balance on goods and services US$236,796,038,296. *Notes for the right-hand figure:* O: GDP (current US%) US$9,240,270,452,050; A: Agriculture, value added US$925,204,387,867; B: Industry, value added US$4,055,851,231,952; C: Services, etc., value added US$4,259,214,832,230. *How to read and make sense of the circloid:* Each slice of a circle is the summation of the subslices in the layer on top of it—that is $O = A + B$, $A = A3 + A6$, $A3 = A4 + A5$.
Source: Mecometer.com, 2017, http://mecometer.com/infographic/china/gdp-composition-break down.

the US economy, the average American is still much richer than the average Chinese. The main way to compare the income of people from different countries is through GDP per capita, which is calculated by dividing the GDP of a country by the number of people living in it. In 2015, GDP per capita in China was US$7,924, and the average American earned seven times more, US$55,838, according to data from the World Bank. Yet because GDP is not a perfect measure of economic well-being, one can easily find flaws with the comparisons using GDP per capita. Distinctive patterns of income inequality in different countries make average comparisons less straightforward, even if adjustments for costs of living are taken into account. The best way to compare standards of living in different countries is by using purchasing power parity (PPP) as a methodology that takes into account the price dispersion among them.

How Is GDP Actually Measured?

As has been shown, GDP can be measured by adding the value produced by each industry in the economy, by looking at aggregate remuneration of factors, or by
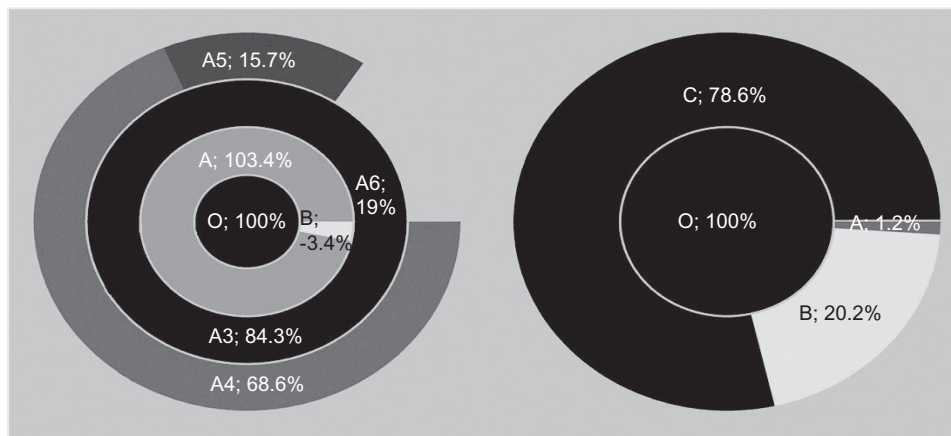
Figure 14.4

GDP composition breakdown for the United States, 2014

Notes for the left-and figure: O: GDP (current) US$16,244,600,000,000; A: Gross national expenditure US$16,791,800,000,000; A3: Final consumption expenditure, etc. US$13,697,600,000,000; A4: Household final consumption expenditure US $11,149,600,000,000; A5: General government consumption expenditure US$2,548,000,000,000; A6: Gross capital formation US$3,094,200,000,000; B: External balance on goods and services –US$547,200,000,000. *Notes for the right-hand figure:* O: GDP (current US%) US$15,533,800,000,000; A: Agriculture, value added US$193,461,490,065; B: Industry, value added US$3,130,113,406,586; C: Services, etc., value added US$12,210,225,103,367. *How to read and make sense of the circloid:* Each slice of a circle is the summation of the subslices in the layer on top of it—that is, O = A + B, A = A3 + A6, A3 = A4 + A5.

Source: Mecometer, 2017, http://mecometer.com/infographic/united-states/gdp-composition-break down.

dividing income into its demand components. The GDP in the United States is a very precise number—US$15,333,800,000,000 in 2014. But all countries do not measure GDP exactly the same way, although the results are comparable, in general. In the United Kingdom, the three main approaches to estimating GDP are combined into one number, while in the United States, GDP is estimated via the income approach by the Bureau of Economic Analysis.[5] In every country, however, GDP is estimated through surveys, and the numbers that statistical offices use are mere estimates of the true economic activity happening over billions of transactions in the economy. GDP figures are frequently revised because of the constant flow of more precise information about different economic sectors. Some market analysts find that, in some countries, GDP estimates are unreliable due to the manipulation of data by government agents or outright fraud. Argen-

5. "How Countries Calculate Their GDP," *The Economist*, March 26, 2014, https://www.eonomist. com/blogs/economist-explains/2014/03/economist-explains-26.

tina declared a national statistical emergency in December 2015 because its recently elected government accused INDEC, the Argentinian statistical office, of generating misleading economic indicators for years.[6]

Even though GDP is an estimate, it usually is a reliable one, comparable over time and methodologically sound, notwithstanding the cases of data manipulation by some unscrupulous governments. In the United Kingdom, the Office for National Statistics publishes its methodology and presents an accessible overview of how it calculates GDP: "It is not possible to use the production approach in the short term as value added data are not readily available. Therefore GDP is based on turnover data from monthly surveys as well as other data sources. The data used are considered the most timely and robust over a short time horizon. At the preliminary estimate, produced 25 days after the end of the quarter, approximately 44% of the output data is available and no information is available for the expenditure or income approaches."[7]

Nominal versus Real GDP

Thus far, we have looked at how to calculate GDP for one period, usually a year. ~~In 2014, GDP in the United States was US$15.5 trillion, and in China it was US$9.2 trillion.~~ In order to be used to make comparisons over time, nominal data needs to be transformed into a real GDP series. When arguing about the strength of the economy, analysts and pundits use the real GDP growth rate, and the real growth rate of economic output is the most important macroeconomic variable to track the basic standards of living in a country over time. Statistical agencies calculate ~~the real rate of GDP growth~~ by taking away the effect of ~~increasing~~ prices ~~to look at the rate at which economic output grows over time~~. To do that, agencies use a measure of inflation called the GDP deflator. As the name implies, this measure deinflates the nominal GDP to extract the effect of inflation on nominal GDP so that the value amount of goods and services produced can be compared in different periods~~s~~.

Another way to look at the nominal and real GDP distinction is to separate the changes in GDP over time into two dimensions—price and quantity. GDP is the aggregate market value of goods and services produced in a period, usually a year or a quarter. The change in the GDP deflator represents price variations. Algebraically,

6. AFP, "Argentina Declares 'National Statistical Emergency,'" *Yahoo Finance*, December 30, 2015, https://www.yahoo.com/news/argentina-declares-national-statistical-emergency-001038414.html.
7. Office for National Statistics, "Understanding GDP and How It Is Measured," August 23, 2013, National Archives, http://webarchive.nationalarchives.gov.uk/20160107005843tf_/http://www.ons.gov.uk/ons/rel/elmr/explaining-economic-statistics/understanding-gdp-and-how-it-is-measured/sty-understanding-gdp.html.

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$$Real\ GDP_t = \frac{Nominal\ GDP_t}{GDP\ deflator_t} 100$$

Here is a simple example. In 2018, for example, nominal GDP is US$20 trillion, and the GDP deflator is 100. In 2019, nominal GDP is US$21 trillion, and the GDP deflator is 104. Nominal GDP is measured through a survey of goods and services and the computation of their market values. Real GDP is the result of the disassociation between the price (GDP deflator) and quantity effects. Changes in the GDP deflator over time reflect price variations and are then a measure of inflation. In the example, nominal GDP increases 5% (from US$20 trillion to $21 trillion), and inflation increases 3% (GDP deflator increases to 103 from 100). Formally,

$$Real\ GDP_{2018} = \frac{20}{100} 100 = 20$$

$$Real\ GDP_{2019} = \frac{21}{103} 100 = 20.388$$

Real GDP grows 1.94% from 2018 to 2019. In real terms, it means that society is producing and consuming approximately 1.94% more goods and services. Whenever the press or economists talk about long-term growth or evolving living standards, the variable they are referring to is real GDP growth.

Potential versus Actual GDP
The difference between actual and potential GDP represents an important measure—the growth gap. Potential output is the amount of goods and services that the economy should be producing at full employment. The actual GDP is the output that agents currently are producing and consuming. When the economy is overheating, actual GDP can surpass potential GDP temporarily, but it is much more common to have a gap resulting from potential GDP being higher. The difficulty in measuring the growth gap lies in modeling the potential output. The GDP growth is calculated by national statistical agencies, and there are long series of actual output data for most countries. But potential output is trickier to estimate and often requires sophisticated models.[8]

Throughout the book, potential output has been an abstract measure, and the growth gap an analytical tool. The difference between potential and actual GDP represents situations in which economies are performing at below their optimal

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8. See Andrew Burns, Theo Janse Van Rensburg, Kamil Dybczak, and Trung Bui, "Estimating Potential Output in Developing Countries," *Journal of Policy Modeling* 36, no. 4 (2014): 700–716, for a model that estimates potential output for 159 countries using a production function method with many assumptions but with good results.

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level. This kind of economic weakness would show in real data as persistent high unemployment, for instance. After all, an economy in full employment should have relatively low unemployment rates because individuals willing to work would be able to find a job. In that sense, potential output is related to the nonaccelerating inflation rate of unemployment (NAIRU), which is a representation of an ideal job market in which most people are employed at stable real wages. If the economy is overheating, unemployment falls, and nominal wages increase rapidly as companies compete over the limited number of people willing to work. When the economy is depressed, unemployment rises, and workers compete for a fixed number of jobs in the private sector. Under full employment, the unemployment rate is unchanged without pressures on wages and prices.

One example of a growth gap is Europe. Not every country in the region has done badly in the first years of the twenty-first century, but the consensus is that especially after the great financial crisis of 2008 the eurozone economy has been underperforming, with Germany being a notable exception (figure 14.5). The eurozone performance can be neatly divided into pre- and postcrisis periods. Most economists agree that the full employment rate in Europe is around 5% to 7%. By the end of 2007, these countries were close to full employment, with actual growth over 3% and unemployment approaching 7%. After 2008, there was only one year in which real GDP advanced at a pace of 2%—namely, 2010. In the rest of the 2009 to 2016 period, economic growth was either negative or anemic. As a result, unemployment increased 2% in structural terms, going from an average of 8.5% of the labor force in the 2000 to 2008 period to 10.8% from 2009 to 2016. There was a clear growth gap between potential and actual output throughout the early 2010s.
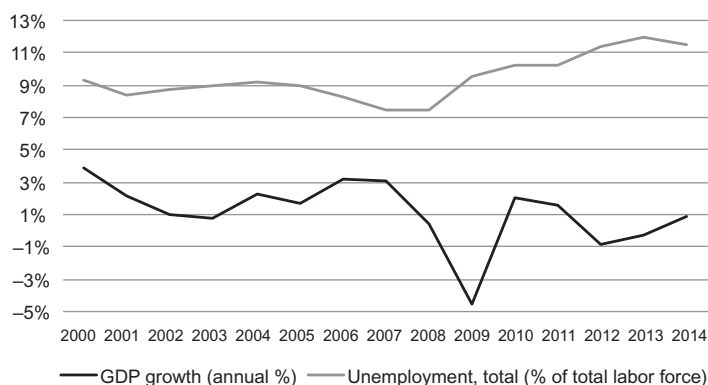

Figure 14.5
Real GDP growth and unemployment in the eurozone, 2000 to 2014
Source: World Bank, 2017, https://data.worldbank.org/indicator/NE.CON.GOVT.ZS.

A reasonable estimate for potential growth in the eurozone should be 2% to 2.5% with a NAIRU of 6% to 7%. At the end of 2017, the eurozone countries were nowhere near that.

Limits of GDP

GDP is supposed to be a measure of prosperity, but it increasingly fails to capture it for many reasons, including methodological shortcomings and the changing nature of the modern world. Given that a national economy is composed of a myriad of transactions, GDP cannot capture them all. This is not usually a major issue because as long as GDP measurement is consistent over time, it is still possible to compare standards of living intertemporally. The main issues are that many of the goods and services we consume today are not traded in the market, the pace of innovation is quicker than it was in the past, and there is a nonlinear relationship between income and welfare.

GDP captures transactions and disregards nontraded goods. In the past, most of value-added activity was in the production of goods and services. Manufacturing, which is easy to measure by GDP standards, accounted for 35% of GDP in the United Kingdom in the 1950s but less than 10% in the 2010s. Meanwhile, cooking and reading to kids at home are not considered economic activities. In modern life, in which opportunity costs are high, such activities—even though not measurable by value-added methodologies—are valuable and improve social welfare, in both the short and long runs. The Internet and other modern technologies have improved the ~~world~~, but ~~a great part of their value for society (and thus for increased standards of living) is not captured in direct economic data because GDP measurement usually is not adjustable to changes in quality~~.

For poor countries, GDP has a strong correlation to standards of living. In the developing world, ~~countries need growth~~ to improve every dimension that makes life better, including health, access to education, and sanitation. For rich countries, that is not necessarily true. ~~Research shows that money~~ buys happiness only up to a point (it does, however, buy life satisfaction without limit).[9] Nobel recipients Angus Deaton and Daniel Kahneman studied the issue and showed that in 2015 dollars the relationship between money and short-term well-being levels off at approximately US$75,000. For most people, there is a measure of income below which the stress of providing for everyday life is high. But there is no way to develop a perfect relationship between money and well-being for most people because the amount necessary for basic quality of life varies across countries, regions, gender, age, and risk-aversion profile. After some quantity of money that

9. Ethan Wolff-Mann, "What the New Nobel Prize Winner Has to Say about Money and Happiness," *Money*, October 13, 2015, http://time.com/money/4070041/angus-deaton-nobel-winner-money-happiness.

satisfies basic needs, more money does not necessarily lead to ~~a better quality of life~~. This ~~is an important observation for~~ many developed countries, in which income per capita is already dozens of times higher than it was a couple of centuries ago. ~~There is a strong case that f~~or many ~~economies~~ the average citizen does not ~~benefit~~ much from ~~increased GDP growth~~. If that is the case, ~~the pursuit of more growth~~ will not necessarily lead to ~~better quality of life~~. It would turn into a flawed measure. For poor and emerging markets, GDP growth would still be a priority but one with decreasing returns over time. This raises the question of whether public authorities in developed countries should replace GDP growth with other variables (such as employment or inequality) as the priority of macroeconomic policy.

There are other criticisms of GDP based on methodological concerns, but the main ones are the insufficient link to quality of life, the increasing importance of nonmarket activities, the evolution of goods and services, and most important, the relationship between GDP and the environment. Not every unit of GDP generates environmental damage, but a large part of it does. Navigating the tradeoff between growth and environmental concerns is one of the most important issues in political economy today.

14.2   Unemployment

~~High unemployment is bad for society. Everybody knows that if unemployment is rising, then social welfare is declining. Increasing unemployment stretches the fabric of society because people~~ feel powerless ~~against the strong economic dynamics~~. Nevertheless, who counts as unemployed in a society? How can countries like Spain or Greece maintain rates of unemployment of over 20% without collapsing? After all, labor markets function like any other. The invisible hands of economic folklore should move demand and supply for labor toward equilibrium and ~~leave no individual unemployed~~.

Most countries follow the standards set by the International Labor Organization (ILO), an agency of the United Nations. Defining the unemployment rate is trivial in essence but operationally complex. First, only a person who is in the labor force can be unemployed. Individuals who are not regarded as part of the labor force include those who are under age sixteen, students, retired, in the military, taking care of children or other family members, incarcerated, and neither working nor seeking work. An unemployed person is somebody who is part of the labor force and cannot find a job, even though ~~he or she~~ is actively looking for one.

In the United States, the labor force rose from approximately 150 million persons in 2006 to 160 million in 2016. By comparison, the labor force in Hong Kong totaled
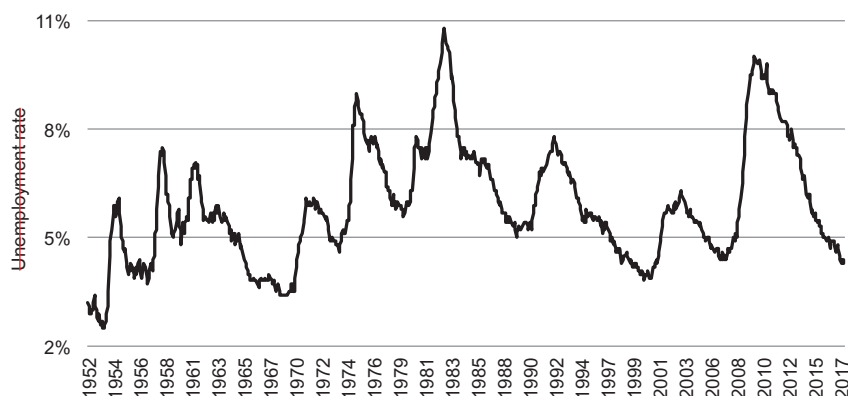
Figure 14.6
The unemployment rate in the United States, 1952 to 2017
Source: Bureau of Labor and Statistics, 2017, https://data.bls.gov/timeseries/LNS14000000.

4 million people at the end of 2016. Unemployment in the United States at the end of 2016 was 4.6%, which meant that 6.9 million individuals in America could not find a job (figure 14.6). In Hong Kong, unemployment stood at 3.4%, with 136,000 people without a job in the same period. Yet both countries were considered to be in full employment. The unemployment rate follows the business cycle, rising in a recession and decreasing as the output increases. After the 1950s, the two deepest recessions in the United States happened in the early 1980s and in 2009, with unemployment in both cases hovering at 10%. The first was due to the great disinflation presided over by Paul Volcker, chair of the Federal Reserve, and the second was a recoil from the great financial crisis of 2008.

Is the ideal unemployment rate 0%? In fact, economists consider an economy at full employment if the unemployment rate is around 4% to 5% because not every unemployed person results in social harm. This is partly due to frictional unemployment, which results mainly from people switching jobs. When people leave a job for another one, technically they remain unemployed for the period during which they receive no income, but this does not cause any social harm. Policymakers are concerned about involuntary unemployment, which is the kind that stretches the social fabric. For most people, being unemployed without a social or family safety net is usually a traumatic economic event. Public authorities rarely come under any more pressure than during recessions with increasing unemployment.

Unemployment is defined as the ratio between persons who cannot find a job and the entire labor force. Unfortunately, as we can see from the figures for the United States, there is rarely a period in which unemployment is both low and

stable. National economies are dynamic by nature, and the unemployment rate rises and falls in accordance with the business cycle.

In the United States, the unemployment rate is calculated by the Bureau for Labor Statistics (BLS), and like all other macroeconomic variables, it is estimated through a survey. The Current Population Survey (CPS) has been conducted in the United States every month since 1940.[10] Today, there are about 60,000 eligible households in the sample for this survey. Similar procedures are in place for most countries in the world. The unemployment rate is not the only measure that is useful to understand labor dynamics. Researchers extrapolate the strength of the economy and general social welfare from complementary measures such as the growth in labor force participation, the inflows and outflows, and the number of individuals collecting unemployment insurance.

Unemployment Dynamics

If labor markets were fully flexible, there would not be involuntary unemployment, and excess supply of labor would be only frictional. In perfectly competitive microeconomic markets, prices rise and fall with changes in demand and supply, clearing whatever amount of excess they might have. Figure 14.7 shows the analysis presented in chapter 2. Given a perfectly competitive market, the quantity demanded of labor (Q^{DL}) would be equal to the quantity supplied (Q^{SL}) at the prevailing nominal wage (w). Any worker looking for a job at the prevailing market wage would get it; there would not be structural unemployment. Some
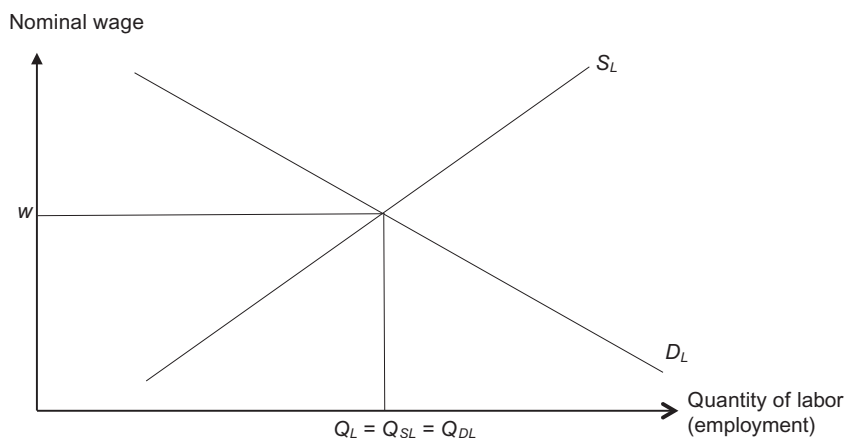

Figure 14.7

10. For more information on the Current Population Survey, see https://www.bls.gov/cps/cps_htgm.htm.

people would choose not to work at the current wage, but this would not decrease social welfare. There would also be a lot of precarious employment, with many people earning very little ~~with bad working conditions~~.

There is one main difference between the labor market and the market for, say, tomatoes. Tomatoes are almost homogeneous in nature, and it is much easier to match tomato supply to demand than it is to match people to jobs. Even with differentiated products (like cars), it is still much simpler to match consumers to different types of cars than it is to match employers and employees. Increasingly, job descriptions are fluid, and people accrue different skills at different rates. Although it is easier to check all features of a car, it is impossible to know beforehand all the skills and the level of effort that people will put into their jobs. Job interviews are a symptom of how difficult it is to match people to jobs efficiently. A program to hire employees requires time and money, and firms still may hire individuals who are not suitable for the job. ~~On the flip side~~, there are many underappreciated employees around the world who are generating far more value than they could claim if the market was operating efficiently.

Additionally, some occupations attract an excess supply of candidates, and others involve little competition. For instance, the world is facing an excess demand for computer programmers, something ~~that should persist in the next decades~~. If markets were truly efficient, the higher wages for this kind of work should attract people until the relative wage of a computer programmer fell to the national average. But this is unlikely to happen. Acquiring skills is expensive, and access to education is heterogeneous across the ~~world~~. ~~Moreover~~, people do not choose careers based solely on the monetary returns. Businesses and people are not fully mobile. There may be excess demand for some particular ~~kind of labor~~ in one part of the country or continent and excess supply in others. Language barriers act as deterrents in a~~n increasingly~~ globalized world. There are many transaction costs, and unemployment above full employment is a structural feature in most countries ~~around the world~~. ~~Even so~~, true involuntary and persistent unemployment is one of the main measures of economic welfare, and most politicians promise jobs, especially during downturns in the business cycle.

As noted above, the full employment rate is also known as the nonaccelerating inflation rate of employment (NAIRU). Structural unemployment happens when the actual rate of unemployment is persistently higher than the NAIRU. For many reasons, most countries suffer from structural unemployment. Regulations, shocks, and institutions that work poorly contribute to ~~persistent~~ unemployment. Labor dynamics are much more complicated than a clearing market where the quantity supplied of homogeneous labor equals the quantity demanded and where freely moving nominal wages guarantee that the economy is always at full employment.
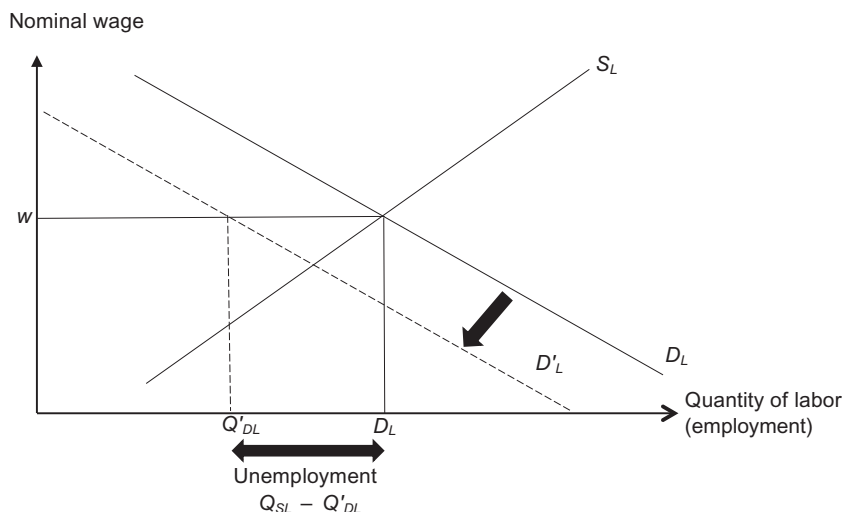
Figure 14.8

Using a very simple microeconomic framework, it is easy to see that if the minimum wage is set at a value that is "too high," then unemployment follows. The number of people willing to work at the minimum wage is higher than the supply of work available for them. The argument is similar in the case of nominal wages that are rigid. In many countries, companies cannot negotiate or impose lower nominal wages, and the result is that any shock that reduces labor demand creates structural unemployment.

Let's assume a labor market that is in complete equilibrium (figure 14.8). There is no unemployment ($Q^{SL} = Q^{DL}$) at the prevailing market wage (w). If there is nominal rigidity (for simplicity, wages are fully immobile), a shock that shrinks labor demand (from D^L to $D^{\prime L}$) causes structural unemployment ($Q^{SL} - Q^{\prime DL}$). Unless the economy recovers, real wages will be higher than they would be under contractual flexibility, and there are going to be more people looking for work than the companies can employ. Positive economic shocks should bring the economy back to full employment, but unless that happens, structural unemployment can be persistent.

Another feature of labor-market dynamics is hysteresis. Successive recessions or persistent stagnations should be counterbalanced by periods of economic buoyancy. Economies do not grow linearly. But over time, the unemployment rate should be close to full employment. Positive economic shocks should balance out negative ones. The rate of unemployment would increase in a recession, but the economy would come back to full employment as economic activity picks up.

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Sadly, this rarely happens in most countries. One explanation, first devised by Olivier J. Blanchard and Lawrence H. Summers in 1986, is that if the economy does not recover quickly, many workers lose skills that are not easily recouped.[11] After the economy recovers, they do not necessarily share in the prosperity, especially if the labor market has other rigidities that create incentives for companies to screen the candidates by looking at the amount of time that a worker was unemployed. Hysteresis is one possible reason that structural unemployment can become persistent over time, and it is one of the reasons that European countries face high and persistent rates of unemployment.

Labor dynamics are much more complicated in real life than they are in any stylized model. Numerous regulations, actions of trade unions, and many other factors make the labor outcomes uncertain. It is fair to assume that when comparing the United States and France, the relative lack of regulations in the US ~~engenders an average US~~ unemployment rate that is lower than ~~the French rate~~. At the same time, there are many more ~~working poor~~ working in bad conditions in the United States than in France.

Minimum wages are a feature of labor markets in many countries and can have employment and distributive effects. In the United States, for example, the minimum wage is relatively lower than it is in France. It is hard to make predictions of what would happen with the US economy if authorities decided to ~~increase~~ the minimum wage significantly for most occupations. In every microeconomic textbook, students learn that price caps do not work. When governments try to control prices by fiat, there are two possible outcomes—rationing or the emergence of black markets. These were common features when governments decided on the prices of goods and services in the Soviet Union in the twentieth century and in Venezuela in the twenty-first century. A minimum wage is just another price cap set by policymakers to influence markets—in this case, the labor market. If the minimum wage is set below the prevailing market wage, it has no effect; if it is above it, it generates unemployment. This is basic microeconomics. But in macroeconomics, context dependency rules.

The impact of a minimum wage on employment depends on several variables, including a country's level of development, the conditions of local labor markets, and the size of informal markets. In the 2000s, for instance, increasing minimum wages was important to combat poverty in Latin American countries and China. In these countries, higher minimum wages affected income and not unemployment because of their low levels, a buyer's labor market, and enforcement capa-

11. Olivier J. Blanchard and Lawrence H. Summers, "Hysteresis and the European Unemployment Problem," in *NBER Macroeconomics Annual*, ed. Stanley Fischer, 15–90 (Cambridge, MA: MIT Press, 1986).

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bilities.[12] For these countries and other emerging nations, raising the minimum wage affected formal and informal workers alike. In fact, informal workers—workers without social security contributions—experienced significant wage increases when the minimum wage was raised.[13]

Even for developed countries, there is evidence that minimum wages can have a significant impact on general wages but almost no discernible impact on jobs.[14] Evidence from the United Kingdom shows that there is some profitability reduction for companies but no effect on bankruptcies.[15] More important, the minimum wage is a powerful redistributive tool.[16]

Given all the evidence, it is clear that the US federal government should mandate a US$15 minimum wage immediately. But this is where context dependency kicks in. It is one thing to mandate rising wages in developing economies with tight labor markets and soaring aggregate demand. It is another to do so in a flexible labor market in the United States, where firms are more nimble when adjusting factors of production. This does not mean that it cannot be done, but it would be difficult to model all possible and secondary effects of wage gains by decree. For a precise answer, a researcher would need short- and long-run estimates on several variables, including the elasticity of unemployment, the rate of substitution between capital and labor (in other words, the rate at which companies would replace costlier workers with investments in automation), and potential increases in productivity from higher living standards. It is easier to campaign for improved living standards by fiat when labor productivity is rising in emerging countries. It is harder to do so in developed countries where productivity is stagnant or unevenly distributed. The result can be unemployment of lower-skilled workers, exactly the group that was targeted by the policy in the first place. It is also a matter of degree. Although moderate increases will most likely have little effect on unemployment rates, a steep increase can most certainly introduce rigidities in markets that have been until now mostly free of them. The minimum wage debate of the mid-2010s in the United States became a major point in Bernie

12. Jinlan Ni, Guangxin Wang, and Xianguo Yao, "Impact of Minimum Wages on Employment: Evidence from China," *Chinese Economy* 44, no. 1 (2011): 18–38.
13. Melanie Khamis, "Does the Minimum Wage Have a Higher Impact on the Informal Than on the Formal Labour Market? Evidence from Quasi-Experiments," *Applied Economics* 45, no. 4 (2013): 477–495.
14. Arindrajit Dube, T. William Lester, and Michael Reich, "Minimum Wage Effects across State Borders: Estimates Using Contiguous Counties," *Review of Economics and Statistics* 92, no. 4 (2010): 945–964.
15. Mirko Draca, Stephen Machin, and John Van Reenen, "Minimum Wages and Firm Profitability," *American Economic Journal: Applied Economics* 3, no. 1 (2011): 129–151.
16. Richard B. Freeman, "The Minimum Wage as a Redistributive Tool," *Economic Journal* 106, no. 436 (1996): 639–649.

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Sanders's campaign for the Democratic Party nomination in the 2016 presidential election. He was not necessarily right.

This analysis of unemployment reinforces once again our main tenet: there are no unequivocally good policies. ~~Policymaking is usually bereft of low-hanging fruit.~~

Labor Markets and Social Welfare

The rate of unemployment does not capture all of the labor-market dynamics that influence social welfare. The use of unemployment rate as the only macroeconomic variable related to the labor market comes down to the tradeoff between simplicity and sophistication. It is easier to point out that ~~increasing~~ unemployment hurts society and that falling unemployment improves its well-being. In most instances, simply using the rate of unemployment as the main outcome of labor-market interactions would suffice. But in the United States in 2016, most of the narrative for the presidential election was based on the discontent of many groups. When the election was held in November 2016, the unemployment rate was at 4.6%. The American economy was at or very close to full employment, and yet people felt well-being slipping through their fingers. Complaints about jobs moving to China and the death of the American dream were common. Yet the country was experiencing full employment.

Labor-market outcomes other than the official unemployment rate are relevant to economic well-being. Some of these outcomes include underemployment and discouraged workers, formal versus informal employment, temporary versus permanent employment, and regional patterns.

Underemployment, for instance, describes the situation in which the employment of an individual is incomplete, either in terms of the hours worked or his or her skills not being fully matched. Recent immigrants face many difficulties in adapting to foreign countries. Engineers, for example, might drive cabs, a job that requires skills very different from those of an engineer. The vacuum created by departing manufacturing companies may also result in underemployed workers as blue-collar individuals cannot find a similar occupation, do not move to look for better jobs, and instead are stuck in positions not matching their abilities. This pattern of underemployment creates social tension and reduces social welfare. It also drives up the value of nostalgia—the love of simpler times when underemployment affected other kinds of individuals while blue-collar workers thrived.

Another kind of underemployment is due to discouraged workers—individuals who stop looking for work and drop out of the labor force. If somebody cannot find a good enough job and simply stops looking for one, the unemployment rate is unchanged because it counts only the people who are actively looking for a job. A higher number of discouraged workers has a significant impact on social
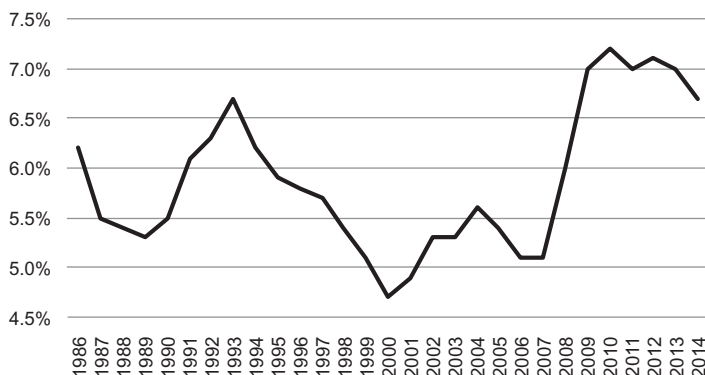
Figure 14.9
Percentage of working poor over the entire working population in the United States, 1986 to 2014
Source: Bureau of Labor and Statistics, "A Profile of the Working Poor, 2015," https://www.bls.gov/opub/reports/working-poor/2015/home.htm,2017.

welfare, even as the unemployment rate is steady. Finally, the concept of under-employment includes those who work full-time but live below the poverty level—the working poor.[17] The numbers for the United States reveal the extent of welfare destruction generated by the great financial crisis. In the United States, the working poor are people who spent at least twenty-seven weeks in the labor force (that is, working or looking for work) but whose incomes still fell below the official poverty level. The percentage of working poor people went from approximately 5% of the working population before 2008 to over 7% after the financial crisis (a 40% increase) (figure 14.9). The number of poor people with steady work has totaled more than 10 million for every year after 2008. It was 7.5 million in 2007.

Another important labor-market outcome related to social welfare that is not captured by a single unemployment rate is the degree of informality in a national economy. Informality is the scourge of emerging countries. Informal workers earn less, enjoy reduced access to public services, and suffer from instability in their employment and careers. There is a negative correlation between informality and health. For instance, researchers found that in Chile there was a positive and statistically significant association between informal employment and mental health in all genders.[18]

17. Kimberly Amadeo, "What Is Underemployment? Its Causes, Effects and the Current Rate," *The Balance*, April 20, 2017, https://www.thebalance.com/underemployment-definition-causes-effects-rate-3305519.
18. Marisol E. Ruiz, Alejandra Vives, Èrica Martínez-Solanas, Mireia Julià, and Joan Benach, "How Does Informal Employment Impact Population Health? Lessons from the Chilean Employment Conditions Survey," *Safety Science* 100, pt. A (December 2017): 57–65.

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The size of the informal sector depends on many variables, including the relative costs of formal and informal workers and the strength of institutions meant to enforce the rule of law and curb corruption. Even constitutional reforms can influence the flow of people from and to informal sectors.[19] Yet informal working arrangements are not entirely bad for society. Many kinds of informal work arrangements increase social welfare. For example, many workers in highly paid positions in emerging countries prefer flexible contracts, especially if there are gray areas in terms of tax implications for informal workers. This happens even in developed countries, and many workers in the service sector (like waiters and waitresses) have informal arrangements in which their social welfare does not necessarily decrease. Some restaurant workers are happily making six-figure salaries in New York City, but those putting up with precarious employment arrangements in the distant suburbs probably would prefer more stability.

Another example of flows from formal to informal sectors that did not decrease social welfare comes from Colombia. Adriana Camacho, Emily Conover, and Alejandro Hoyos analyzed the link between the Colombian government's expansion of social programs in the early 1990s, particularly formal employment and the publicly provided health insurance.[20] They found an increase in informal employment of 4 percentage points after the introduction of publicly provided health insurance. As in the case of the Patient Protection and Affordable Care Act (also known as Obamacare) in the United States, many individuals choose formal employment instead of flexible labor contracts due to the benefits (such as access to subsidized health care) embedded in formal labor contracts. After access to health is funded by the public purse (as in Colombia) or healthcare subsidies shift from employers to employees (as in Obamacare), individuals who were holding on to formal jobs just for access to the healthcare subsidies drop out, reducing the labor force but without any change in social welfare. If anything, social welfare increases because some people are able to change their decisions to improve their well-being. As with most of macroeconomics, there is no easy, simple, comprehensive, and direct explanation for a single data point. Full employment may hide underemployed workers and huge informal sectors that depress social cohesion, and flows from formal to informal sectors may not be bad for society.

Regional patterns also can make it more difficult to define the social welfare effect of labor-market outcomes. The national economy may be at full employment and have many pockets of tight labor markets that create local labor shortages.

19. Mariano Bosch, Edwin Goñi-Pacchioni, and William Maloney, "Trade Liberalization, Labor Reforms and Formal-Informal Employment Dynamics," *Labour Economics* 19, no. 5 (2012): 653–667.
20. Adriana Camacho, Emily Conover, and Alejandro Hoyos, "Effects of Colombia's Social Protection System on Workers' Choice between Formal and Informal Employment," *World Bank Economic Review* 28, no. 3 (2013): 446–466.

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Yet regional disparities should not affect social welfare if people are willing to move freely from areas with an excess supply of labor to those with a lack of workers. People are not goods and services that can simply be hauled from low-paying markets to better ones, however, and although some citizens are truly mobile and even global in their attitudes, others prefer being able to build a stable life with a guaranteed income. If families do not really want to move but have to follow the developments in labor markets, they are experiencing social harm. The unemployment rate is a national aggregate that does not reveal much about regional patterns. Many variables—including technology, trade, and transactions costs—affect labor-market outcomes countrywide and drive the regional markets. Detroit in the mid-2010s is a good example of a dysfunctional labor market that does not find an equilibrium in the same way as in the rest of the United States. The city has been in decline since its heyday in the mid-twentieth century, when its population hit 1.8 million (it fell to around 700,000 in the mid-2010s). In the 2010 census, the city had a 24.8% unemployment rate, which was the highest among the fifty largest US cities (and the distance between Detroit and the city with the second-highest rate, Fresno at 18%, was greater than the rate of Omaha, which was at the bottom of the ranking at 5%). Detroit filed for bankruptcy on July 18, 2013. Some people did move away to greener pastures, so it is hard to explain the lack of adjustment in the labor market. The decline in job opportunities should be matched by the number of people leaving the city, and the unemployment rate should not be different from the national average. Unfortunately, labor-market dynamics are far from clear. Regional disparities are another source of discontent, even if on average the national economy is at full employment.

Another source of social dissatisfaction is the increase in the ratio of part-time to full-time work. Social welfare is maximized when people can choose and move freely between part-time and full-time employment. When labor markets are not functioning well, however, people may be stuck in part-time occupations even when they would prefer full-time jobs. As with informal workers, many workers who can find only part-time work resent it and tend to be poorer. In 2014, the Bureau of Labor and Statistics showed that for the United States, the working poor are more likely to be part-time workers than full-time workers.[21] Among people in the labor force for twenty-seven weeks or more, the working poor included only 4.1% of those usually employed full-time but were 13.5% of part-time workers.

Although the path of the unemployment rate has a direct relationship with social welfare, other labor-market outcomes also influence the quality of life of society.

21. "A Profile of the Working Poor, 2015," BLS Reports, Report 1068, April 2017, https://www.bls.gov/opub/reports/working-poor/2015/home.htm.

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Uber Drivers, Unemployment, and Informal Contracting   Are Uber drivers employees? How are they counted in the Bureau of Labor Statistics surveys? Uber is a perfect example of the economies of scale provided by the combination of the shared economy and deep financial markets of the United States. Alongside other unicorns (recent Internet private companies with valuations of over US$1 billion), Uber has disrupted established transportation markets in many cities around the world, using a business model in which the company is the intermediary between drivers and consumers.

Although the company is ferocious in pursuing growth, cities around the world have revised their regulations regarding the competition between Uber cars and taxis (and other forms of transport) and the employment situation of Uber drivers. The company contends that all Uber drivers are independent contractors who own their cars. In late 2015, Uber drivers in California pursued a class action suit in which they claimed they should be considered regular employees instead of independent contractors. In April 2016, the company and the drivers reached a settlement, in which Uber agreed to pay US$100 million but did not recognize its drivers as regular employees.

The battle between Uber and its drivers in California is representative of the changes in labor markets around the world. Individuals are increasingly finding a fragmented labor market where occupations are fluid and skills are constantly adjusted. Labor contracts all over the world are becoming more flexible. Until the late 1980s, workers in Japan had an implicit guarantee of long-term job security in private companies, but that seems like ancient history now. Even the tenure system in high education is changing as the requirements become more stringent and more teachers compete for fewer positions. There are relevant implications of these changes for employment data. Flexible contracting reduces unemployment but also increases underemployment. As markets become more flexible, high-skilled employees are able to benefit disproportionately, which increases income inequality. Meanwhile, job security is lower, and many people are forced to work part-time in suboptimal arrangements. The unemployment rate tends to display a lower correlation with social welfare than it did in the past. Macroeconomic indicators such as GDP and unemployment rate are not as good a proxy of well-being as they used to be. The case of Uber drivers is a result of this new dynamic. Although statistically every Uber driver is employed, the question of their underemployment remains open.

Informal Workers in India   In many emerging markets, labor markets are far from perfect. Regulations designed to protect workers end up increasing the costs for businesses to hire workers formally. Weak institutions create incentives for employers to hire people informally. The result is a large informal side of the economy where contracts are more flexible but abuses are common.

India is an example of a country where most workers are employed in the informal sector. Informality has many dimensions, and Rina Agarwala and Geert De Neve capture some of them in two excellent books about informal labor in a country where almost 90% of workers toiled in the informal sector until the mid-2010s.[22]

The impact of informality on unemployment is also far from clear, and in the case of India, it varies across regions. Labor in the informal sector is casual, insecure, and unprotected.[23] Yet regulations that try to augment the number of formal workers may have the opposite effect if they increase the relative cost of formal versus informal occupations. As always in economics, solutions are context-dependent. Informality that destroys social welfare in developed countries may, for a time, increase well-being in developing countries. Finding the right balance is always difficult, especially in a dynamic world.

Sclerotic Labor Markets

Although economists try to communicate efficiently and minimize their use of jargon, economic models include plenty of words with strange meanings. One instance of this is sclerotic models. The word *sclerosis* is a medical term referring to the hardening of tissue. In the disease called multiple sclerosis, tissue around the nerves hardens, slowly injuring the brain and the spinal cord. In labor markets, the word *sclerosis* refers the hardening of the unemployment rate and other labor-market outcomes.

In sclerotic labor markets, flows decrease, and both individual unemployment duration and the proportion of long-term unemployed increase. Olivier Blanchard's simple model of sclerotic labor markets helps explain persistent unemployment in Europe.[24] In his model, jobs are constantly created and destroyed. Workers who lose their jobs become unemployed and look for new jobs. Companies that create new jobs look for workers by posting vacancies. In a situation of equilibrium, there is positive unemployment, positive vacancies, and flows of workers into and out of employment. Job destruction happens for many reasons, including technological changes, shifts in demand, and changes in the quality of the match between job and worker on the job. If the shock is bad enough, companies terminate the job and lay off the worker.

22. Rina Agarwala, *Informal Labor, Formal Policies, and Dignified Discontent in India* (New York: Cambridge University Press, 2013); Geert De Neve, *The Everyday Politics of Labour: Working Lives in India's Informal Economy* (New Delhi: Social Science Press, 2005).
23. Jan Breman, *At Work in the Informal Economy of India: A Perspective from the Bottom Up* (Oxford: Oxford University Press, 2016).
24. Olivier Blanchard, "Employment Protection, Sclerosis and the Effect of Shocks on Unemployment," lecture 3, Lionel Robbins Lectures, London School of Economics, London, 2000.

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The main advantage of Blanchard's model is that it shows the relationship between employment protection and the unemployment rate: higher protection leads first to sclerosis and later to hysteresis. It does not explain all structural unemployment, but it is a significant factor in the difference of unemployment rates across countries.

Employment protection is born out of the important goal of protecting workers from the whims of corporations, especially when oligopolies are the norm. But there is a delicate balance between too little and too much employment protection. Too little regulation may generate underemployment and scores of working poor, and too much regulation may lead to sclerosis and hysteresis or to flows from formal to informal markets.[25]

The US recovery after the great financial crisis was slower than its recoveries after earlier recessions, something to be expected after a once-in-a-generation event. Nevertheless, the painful recovery process made some academics wonder if labor markets in the US were becoming sclerotic.[26] They were not. Sclerosis usually follows dysfunctional regulation that put an unnecessary burden on employees and employers. The United States is still a pro-business environment in which most employees work in at-will arrangements. Job stability is mostly the consequence of labor negotiations instead of being mandated by federal and state laws. After the crisis, flows of workers to the labor eventually increased, and the unemployment rate reached full employment in 2016—eight years after the peak of the crisis but still much sooner than in most countries in Europe.

Unemployment in South Africa   Unemployment rates in some countries are high because of informal workers. In Spain, for example, surveys should show informal workers as employed, but sometimes the survey design falls short. In South Africa, however, unemployment is persistently high and, unlike in other countries, does not change even with adjustments for informal labor.

According to a *Statistics South Africa* report, "between 2009 and 2015 employment increased from 14.2 million to 15.7 million. This rise, however, did not keep pace with the increase in the working age population and as such the absorption rate at 43.7% in 2015 was still 2.2 percentage points below the 2008 prerecessionary high."[27] According to Kevin Lings in *BIZ News*, in 2015, 35.9 million people

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25. A great analysis of differences in labor market dynamics is Olivier Blanchard and Pedro Portugal, "What Hides behind an Unemployment Rate: Comparing Portuguese and US Labor Markets," *American Economic Review* 91, no. 1 (2001): 187–207.

26. Pedro S. Amaral, "Is the U.S. Labor Market Becoming More Sclerotic? And Does It Matter?," Federal Reserve Bank of Cleveland, July 5, 2011, https://www.clevelandfed.org/newsroom-and-events/publications/economic-trends/2011-economic-trends/et-20110705-is-the-us-market-becoming-more-sclerotic-and-does-it-matter.aspx.

27. See "Labour Market Dynamics in South Africa, 2015," Statistics South Africa, October 11, 2016, http://www.statssa.gov.za/?p=8615.
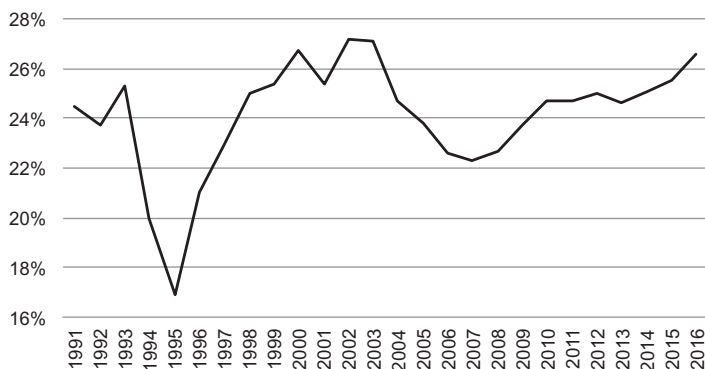
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Figure 14.10
Unemployment in South Africa, 1991 to 2016
Source: World Bank, 2017, https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS.

between ages fifteen and sixty-four lived in South Africa.[28] This group had 20.8 million people who were economically active, 15.6 million who were employed, and 5.2 million who were unemployed. If the numbers were to reflect discouraged workers, the unemployment rate would be 34.9% (not 25%), and the unemployment rate for people under age twenty-five would be 63.1%.

In 1994, South Africa had 1.8 million skilled workers, 4.2 million semi-skilled workers, and 2.9 million low-skilled workers. By 2014, the number of skilled workers had doubled to 3.8 million, increasing faster than the number of semi-skilled (7 million) and low-skilled (4.3 million) workers. Since 1991, South Africa's unemployment rate has been lower than 20% only once—in 1995 (figure 14.10). Otherwise, the rate has averaged 24%, or one in four South Africans.

When Geeta Gandhi Kingdon and John Knight looked for the reasons for this pattern, they found that even the informal sector presents barriers to entry by ~~laborers.~~ On average, participating in informal employment in South Africa leads to higher well-being than being unemployed.[29] Being unemployed is horrible, especially in developing countries. For example, Kingdon and Knight show that per capita monthly household income (expenditure) for the unemployed is only 48.2% of the corresponding figure for the informally employed. Living conditions—in terms of living space and access to drinking water, sanitation, and electricity—are also far worse for the unemployed than for the informally employed. Insofar as the unemployed take account of their own individual income rather than

28. Kevin Lings, "In SA One in Four Still Unemployed: Youth Crisis as 63.1% Remain Jobless," *BIZ News*, July 29, 2015, http://www.biznews.com/thought-leaders/2015/07/29/sa-q2-unemployment-eases-to-25-but-63-1-of-youth-remain-jobless.
29. Geeta Gandhi Kingdon and John Knight, "Unemployment in South Africa: The Nature of the Beast," *World Development* 32, no. 3 (2004): 391–408.

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household income per capita, unemployment insurance is very limited in scope. The benefit lasts for only the first six months of unemployment and is received by only 1.3% of the unemployed. This pattern does not change for people in informal self-employment or in informal wage employment, such as domestic workers.

Some of the barriers to informal employment in South Africa are peculiar to that country, and others are shared by most emerging countries. Beginning in 1948, for example, the apartheid system in South Africa repressed the informal activities of black South Africans through restrictive laws (like the Group Areas Act), harsh licensing requirements, strict zoning regulations, and the effective detection and prosecution of offenders. Such barriers did not immediately collapse after the end of apartheid in 1991. But the enforcement of minimum wage laws and other labor contract stipulations is strong and applied to all companies in the region, irrespective of size. This imposes a burden of high labor costs on small firms and makes it more difficult for informal arrangements to emerge. Self-employment should ensue but is limited by restrictions on and insecurity in credit, land, and capital. In South Africa, the institutional arrangement and economic environment suppress even survival entrepreneurship, resulting in extremely high levels of unemployment in comparison with other emerging markets.

As is shown in chapter 3, long-run growth and declines in unemployment rates can be achieved only by a combination of stronger institutions and increased productivity. Like most emerging countries, South Africa brims with potential that is wasted on the search for short-term solutions to long-run issues.

14.3   Inflation

One of the few unanimities in economics is that inflation is bad. People who grow up in a country with hyperinflation continue to fear inflationary processes. Because hyperinflation was widespread in the developing world in the 1980s and 1990s, most people age forty and older in Latin America, Africa, and some former Soviet bloc countries have been left traumatized. Even if developed countries have not experienced hyperinflation in decades, they participated in the fight against widespread inflation in the 1970s and 1980s. The battle to tame it left the US economy reeling in the early 1980s. Germany still suffers from hyperinflation phobia, even though its last bout was almost a hundred years ago. Regardless of their backgrounds, almost all citizens in the world know that inflation is bad. But what exactly is inflation?

Inflation is an increase in the prices of goods and services. Statistical agencies measure it as the weighted average price of a basket of goods and services that is representative for the typical consumer. It is supposed to be simple: rising prices

destroy social welfare, and price stability is an important element of sound governments. Nevertheless, as with other macroeconomic variables, nobody can observe the real inflation rate. Instead, statistical agencies around the world use a similar methodology to estimate the inflation rate:

1. Define the goods and services that comprise the typical basket of goods.
2. Establish the weight of each product.
3. Investigate the price changes in the marketplace.
4. Calculate the index.

There is an almost infinite combination of weights and baskets and thus of possible price indexes. For economic analyses, the two main indexes in the United States are the Consumer Price Index (CPI), which is a proxy for rising costs of living for the average household, and the Producer Price Index (PPI), which describes the average increase in costs for the producers of goods and services. The price of imported machinery, for instance, will affect disproportionately the PPI and will result in CPI changes only if the producers are able to pass on their higher costs to consumers. The price of fruits, however, will affect consumers more than producers and thus result in a higher CPI but not necessarily a higher PPI.

The simplest way to calculate a consumer price index is as follows. Assume that a country has only three final goods—housing, transportation, and foodstuffs. In this country, people only work, eat, and come home to do it again the next day. The prices of these goods over two years are shown in table 14.2.

Here, weights are constant, and the CPI would be a weighted average of price increases:

$$CPI = \sum w_i p_i \ ,$$

where w^i is the weight of product i, and p^i is the change in price of product i. Then,

$$CPI = 0.4*0.1 + 0.2*0.2 + 0.4*(-0.05) = 0.06 = 6\%$$

A CPI of 6% a year is high for developed countries but average for emerging markets. In essence, the calculation of inflation indexes is simple, as the example demonstrates. In real life, many of the following issues complicate the matter.

Table 14.2
Calculating inflation (consumer price index)

Good	Weight	Year 1	Year 2
Housing	40%	5000	5500
Transportation	20%	200	240
Foodstuff	40%	2000	1900

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Core versus Noncore Goods and Services

Most economists use core instead of general inflation indexes to estimate the strength of an economy or forecast future inflation.[30] The division between core and noncore goods and services comes from differences in volatility. The core CPI excludes some food and energy categories. The volatility of food and energy prices comes from a ~~globalized market~~ in which commodities are traded globally, and their prices respond to worldwide demand and supply variables. In Great Britain in 2016, for example, the economy was performing moderately well, but in some months, the economy experienced a deflation, which usually is associated with a weak economy. The reason for the deflation was a sharp decline in the price of oil that the country imports. As the oil prices rebounded later in the year, the overall CPI climbed back into positive territory. Excluding volatile items such as oil prices yields a more precise measure of the cost of living over time.

Technology, Quality, and Cost of Living

One dimension that CPI does not capture well is the evolution in the quality of goods and services. In the 1950s, for instance, cars were death traps that consumed huge amounts of fuel. Today they are much safer, have more computer processors than the average laptop, and are continuing to evolve. Yet in real terms, the price of a car has been constant for a long time.

The methodology of CPI and PPI changes over time to take into account some quality changes, but the updates are minimal. Given the rise in the quality for goods and services, the CPI overstates the true inflation. Over time, costs of living decrease in real terms as the quality and the technology improve. A computer's price may be the same as it was twenty years ago, but its processing power is thousands of times faster and larger.

Perceived versus Real Inflation

Whatever the official inflation index is, there is a widespread perception that the actual inflation rate is much higher. Although many media articles point out that the CPI understates the true inflation, they are wrong. People persist in perceiving inflation to be higher because the individual basket of goods is different than the one used in the CPI's calculation and a psychological bias leads us to concentrate on the goods that became expensive and ignore the goods with constant or declining prices.

30. The Federal Reserve Bank of San Francisco has a series of primers on basic definitions, including "What Is 'Core Inflation,' and Why Do Economists Use It Instead of Overall or General Inflation to Track Changes in the Overall Price Level?," Federal Reserve Bank of San Francisco, October 2004, http://www.frbsf.org/education/publications/doctor-econ/2004/october/core-inflation-headline.
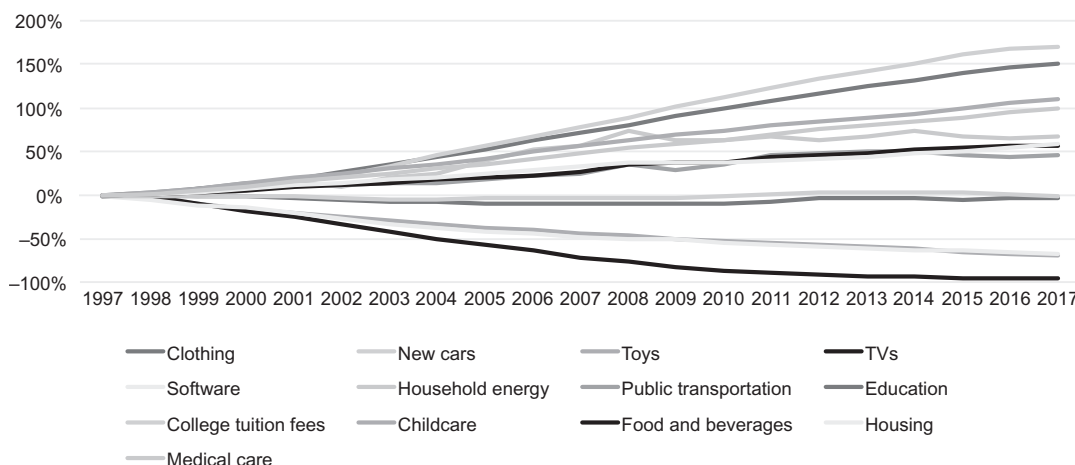
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Figure 14.11
Price changes in consumer goods and services in the United States, 1997 to 2017
Source: OurWorldinData, 2017, https://ourworldindata.org/grapher/price-changes-in-consumer-goods-and-services-in-the-usa-1997-2017.

Figure 14.11 illustrates the price changes of goods and services over twenty years in the United States. Education became much more expensive, relatively, but clothing became cheaper. Today it is easier to find somebody complaining about high college costs than celebrating low-cost clothes.

In our earlier simple example of CPI calculation, the CPI was 6%. Now let's assume two consumers, Etienne and Laurie. Etienne works from home (she spends 20% of her income on rent) and is a foodie (80% on food). The CPI overstates Etienne's personal inflation, which was much lower that the announced rate. Laurie likes traveling (she spends 50% of her income on travel), rents two apartments in two different cities (40% on housing), and spends relatively little on foodstuffs (10% on food). Here the perception of inflation is much higher for Laurie than Etienne, who has a much bigger incentive to complain that the CPI is "wrong." In fact, because of loss aversion and other sources of psychological biases, we tend to focus our attention on the goods and services that become more expensive over time and ignore those that are relatively cheaper.[31] We tend to create a mental model of the CPI in which we ascribe a larger weight to goods and services that are more relevant and have the highest price bumps. Whenever

31. Daniel Kahneman's major work is on prospect theory, explaining deviations from pure rational behavior. An accessible introduction is *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011).

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relevancy and high price bumps coincide, we tend to complain that our costs of living are getting out of control, even if that is far from the truth.

Purchasing Power Parity

Purchasing power parity (PPP) is the main tool for economists to compare prices and income in different countries. After all, a family earning US$ 10,000 per year will be poor in the United States but middle class in Bangladesh.

Angus Deaton and Bettina Tten, explain how PPP works:

Purchasing power parity exchange rates are international multilateral price indexes that measure, for the various components of GDP, the amount of local currency required to purchase the same real amount in that country relative to a numeraire, which is typically the United States. Non-traded goods are typically cheaper in poorer economies, so that PPPs are typically lower than exchange rates for poor countries, and are more so the poorer the country: for example, in 2011 the market exchange rate for India was 46.7 rupees to the dollar, while the PPP exchange rate for consumption was 15.0 rupees to the dollar.[32]

PPP is particularly important for estimating the number of poor people in the world. Most economists rely on the World Bank poverty line to determine who is above the line. The poverty line was US$ 1.90 PPP per day in 2017. That means that family in the world in which income per capita was higher than US$ 1.90 per day cannot be considered poor, by the standards of the day. Of course, poverty is a relative and not absolute term: many people in rich countries consider themselves poor when they are not, in comparison with the rest of the world, and being a lower middle-class family in a poor country is probably worse than being poor in a rich one. Nevertheless, we do need a measure to compare income and prices around the world, and the purchase parity power methodology allows us to do so.

14.4   Income Inequality

Income inequality is usually measured by the Gini coefficient, although other measures give a more intuitive notion of how income is distributed within a country. The Gini coefficient varies in a 0 to 1 interval, with 0 implying complete equality (all people receive the same income) and 1 implying total inequality (one person receives all the income generated by society). The Gini coefficient is the area (calculated by taking an integral) under a Lorenz curve of ordered income from all persons, from poorest to richest. The curve represents the distribution of income in an economy. A point (x, y) on a Lorenz curve shows the percentage y

32. Angus Deaton and Bettina Tten, "Trying to Understand the PPPs in ICP 2011: Why are the Results so Different?," *American Economic Journal: Macroeconomics* 9, no. 1 (2017): 243–264.
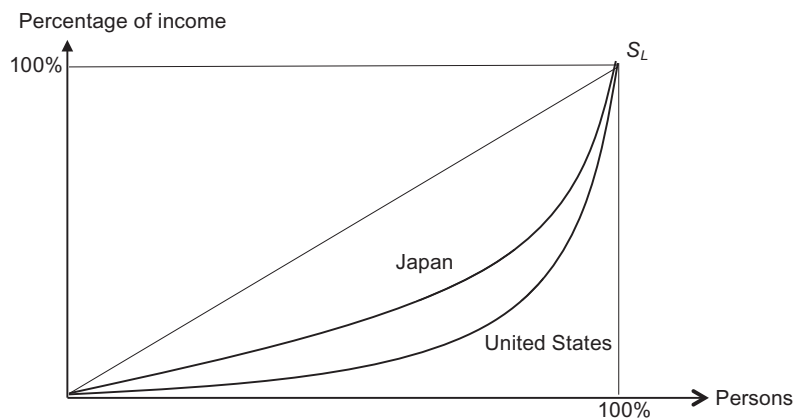
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Percentage of income

Figure 14.12
Hypothetical Gini indexes for the United States and Japan, 2014

of total income of the poorest x% of the population. In figure 14.12, Japan has a better income distribution than the United States. In 2014, the Gini coefficient for Japan was 0.33 and for the United States, 0.39.[33]

Another way to measure income inequality is with a simple ratio between the top x% of the richest and poorest. Some interesting findings can be made based on table 14.3's data on inequality and poverty in OECD countries for the latest available year:

• The two Latin American countries in the sample, Chile and Mexico, are the only countries in which the 20% richest individuals earn more than ten times the amount the poorest individuals earn.
• One pattern seen in most of Western Europe is that younger individuals are poorer than older individuals, displaying an intergenerational conflict that is at the heart of the welfare state in most countries in Europe.
• The myth of the Scandinavian egalitarian society is confirmed in the data, with Denmark, Sweden, and Norway presenting relatively low Gini coefficients and low ratios between poor and rich individuals. Nevertheless, the intergenerational conflict remains. Other countries with similar political systems, such as Iceland and Finland, are similar in terms of income equality and the differences between young and old adults.
• Inequality in the Pacific Rim countries (Japan, South Korea, Australia, and New Zealand) is relatively low but not as low as it is in the countries in Scandinavia.

33. The OECD publishes data on Gini coefficients for its members at http://www.oecd.org/social/income-distribution-database.htm.

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Table 14.3
Income inequality in OECD countries, latest year available

OECD country	Ratio between the top 20% and the bottom 20%	Percentage in poverty	Gini coefficient	Percentage in poverty, ages 18–25 ty 18–25	Percentage in poverty, ages 65+ty 65+
Australia	5.7	12.8	0.337	8	25.7
Austria	4.2	9	0.280	10.4	9.7
Belgium	4	10	0.268	11.1	9.1
Canada	5.5	12.6	0.322	17.1	6.2
Switzerland	4.4	8.6	0.295	7.1	19.7
Chile	10.6	16.8	0.465	15.3	15
Czech Republic	3.7	6	0.262	4.9	3
Germany	4.4	9.1	0.292	13.2	8.4
Denmark	3.6	5.4	0.254	21.4	3.8
Spain	6.7	15.9	0.346	20.1	5.5
Estonia	6.7	16.3	0.361	12.8	23.5
Finland	3.8	7.1	0.262	15.9	6.6
France	4.4	8	0.294	12.6	3.5
United Kingdom	6	10.4	0.358	10.5	13.5
Greece	6.3	15.1	0.343	21.5	8.6
Hungary	4.5	10.1	0.288	11.9	8.6
Ireland	4.8	8.9	0.309	16.4	7
Iceland	3.4	4.6	0.244	6.4	3
Israel	7.6	18.6	0.36	16.6	22.6
Italy	5.8	13.3	0.325	16	9.3
Japan	6.1	16.1	0.33	19.7	19
Korea	5.4	14.6	0.302	9	48.8
Lithuania	6.2	12.4	0.353	11.8	13.1
Luxembourg	4.2	8.4	0.281	8.6	3.6
Latvia	6.3	14.1	0.352	8.7	19.6
Mexico	10.4	16.7	0.459	12	25.6
Netherlands	4.2	7.9	0.28	21.7	2.1
Norway	3.8	7.8	0.252	24.4	4.3
New Zealand	5.3	9.9	0.333	10.4	8.2
Poland	4.7	10.5	0.300	12.2	7.4
Portugal	6.1	13.6	0.342	17.7	10.2
Slovak Republic	4.1	8.4	0.269	8.5	3.7
Slovenia	3.8	9.5	0.255	7.9	12.2
Sweden	4.2	8.8	0.281	17	7.6
Turkey	7.6	17.2	0.393	14.1	18.9
United States	8.6	17.2	0.394	19.2	20.6

Source: Organization for Economic Cooperation and Development, "Income Distribution and Poverty," OECD Income Distribution Database, 2017.

• Income inequality in the United States is higher than in every other OECD country except for Chile and Mexico.

Inequality is not always bad, but extreme inequality ~~destroys social welfare~~. Analyzing income inequality data can be far from straightforward. Some increase in inequality may be acceptable as countries develop. Some facts remain: income equality in Scandinavia and the Pacific Rim solidifies the social fabric and generates social welfare, and intergenerational inequality is likely to remain a problem for most rich countries in the near future.

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15 Economics of Global Business: Integration, Limits, and Open Questions

In this chapter,

- The integration of all macro markets
- The effects of shocks on short and long run growth
- Establishing the correct context for designing economic policies
- The main constraints for sustainable prosperity and how to deal with them
- The limits of economic policy

15.1   Integrating All the Macroeconomic Markets

The main difficulty with macroeconomic analysis is the complexity of markets. Economic systems are dynamic, hypersensitive to initial conditions, and computationally impossible to forecast with significant predictive power. For these reasons, most macroeconomic prognoses are context-dependent and conditional. In other words, economic models are good for answering questions like "What happens to growth when the central bank increases interest rate in the United States?" and "What is the impact of the higher Federal Reserve funds rate on net exports?" In the first case, the contraction in money supply slashes growth rates, and in the second, a stronger dollar reduces net exports.

Conditional predictions are important for understanding economic policies, which is why previous chapters analyze the functioning of distinct markets and the ways that they determine the main macroeconomic variables that affect quality of life (GDP growth, inflation, and unemployment, with less focus on inequality and sustainability). Integrating all markets necessitates clear transmission mechanisms among macro markets, with a clear hierarchy between start and end processes.

Macroeconomics is the science of shocks—of everything that jolts economic agents out of their placid and tranquil equilibrium. Another way to view shocks

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