

## 7.17: The Natural Rate of Unemployment

### Learning Objectives

- Explain natural unemployment
- Assess relationships between the natural rate of employment and potential real GDP, productivity, and public policy

### Natural Unemployment and Potential Real GDP

Let's close our introduction to unemployment with another look at the natural rate. The **natural rate of unemployment** is the unemployment rate that would exist in a growing and healthy economy. In other words, the natural rate of unemployment includes only frictional and structural unemployment, and not cyclical unemployment.

The natural rate of unemployment is related to two other important concepts: full employment and potential real GDP. The economy is considered to be at full employment when the actual unemployment rate is equal to the natural rate. When the economy is at full employment, real GDP is equal to potential real GDP. By contrast, when the economy is below full employment, the unemployment rate is greater than the natural unemployment rate and real GDP is less than potential. Finally, when the economy is above full employment, then the unemployment rate is less than the natural unemployment rate and real GDP is greater than potential. Operating above potential is only possible for a short while, since it is analogous to workers working overtime.

### Try It

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### Productivity Shifts and the Natural Rate of Unemployment

Unexpected shifts in productivity can have a powerful effect on the natural rate of unemployment. Over time, the level of wages in an economy will be determined by the productivity of workers. After all, if a business paid workers more than could be justified by their productivity, the business will ultimately lose money and go bankrupt. Conversely, if a business tries to pay workers less than their productivity then, in a competitive labor market, other businesses will find it worthwhile to hire away those workers and pay them more.

However, adjustments of wages to productivity levels will not happen quickly or smoothly. Wages are typically reviewed only once or twice a year. In many modern jobs, it is difficult to measure productivity at the individual level. For example, how precisely would one measure the quantity produced by an accountant who is one of many people working in the tax department of a large corporation? Because productivity is difficult to observe, wage increases are often determined based on recent experience with productivity; if productivity has been rising at, say, 2% per year, then wages rise at that level as well. However, when productivity changes unexpectedly, it can affect the natural rate of unemployment for a time.

The U.S. economy in the 1970s and 1990s provides two vivid examples of this process. In the 1970s, productivity growth slowed down unexpectedly. For example, output per hour of U.S. workers in the business sector increased at an annual rate of 3.3% per year from 1960 to 1973, but only 0.8% from 1973 to 1982. The interactive graph below (Figure 1) illustrates the situation where the demand for labor—that is, the quantity of labor that business is willing to hire at any given wage—has been shifting out a little each year because of rising productivity, from  $D_0$  to  $D_1$  to  $D_2$ . As a result, equilibrium wages have been rising each year from  $W_0$  to  $W_1$  to  $W_2$ . But when productivity unexpectedly slows down, the pattern of wage increases does not adjust right away. Wages keep rising each year from  $W_2$  to  $W_3$  to  $W_4$ . But the demand for labor is no longer shifting up. A gap opens where the quantity of labor supplied at wage level  $W_4$  is greater than the quantity demanded. The natural rate of unemployment rises; indeed, in the aftermath of this unexpectedly low productivity in the 1970s, the national unemployment rate did not fall below 7% from May, 1980 until 1986. Over time, the rise in wages will adjust to match the slower gains in productivity, and the unemployment rate will ease back down. But this process may take years.

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### Figure 1 (Interactive Graph): Productivity rises, and then stops rising

The late 1990s provide an opposite example: instead of the surprise decline in productivity in the 1970s, productivity unexpectedly rose in the mid-1990s. The annual growth rate of real output per hour of labor increased from 1.7% from 1980–1995, to an annual

rate of 2.6% from 1995–2001. Let’s simplify the situation a bit, so that the economic lesson of the story is easier to see graphically, and say that productivity had not been increasing at all in earlier years, so the intersection of the labor market was at point E in the interactive graph (Figure 2) below, where the demand curve for labor ( $D_0$ ) intersects the supply curve for labor. As a result, real wages were not increasing. Now, productivity jumps upward, which shifts the demand for labor out to the right, from  $D_0$  to  $D_1$ . At least for a time, however, wages are still being set according to the earlier expectations of no productivity growth, so wages do not rise. The result is that at the prevailing wage level ( $W$ ), the quantity of labor demanded ( $Q_1$ ) will for a time exceed the quantity of labor supplied ( $Q_0$ ), and unemployment will be very low—actually below the natural level of unemployment for a time. This pattern of unexpectedly high productivity helps to explain why the unemployment rate stayed below 4.5%—quite a low level by historical standards—from 1998 until after the U.S. economy had entered a recession in 2001.

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### Figure 2 (Interactive Graph): Productivity doesn’t change, and then rises.

Average levels of unemployment will tend to be somewhat higher on average when productivity is unexpectedly low, and conversely, will tend to be somewhat lower on average when productivity is unexpectedly high. But over time, wages do eventually adjust to reflect productivity levels.

## Public Policy and the Natural Rate of Unemployment

Public policy can also have a powerful effect on the natural rate of unemployment. On the supply side of the labor market, public policies to assist the unemployed can affect how eager people are to find work. For example, if a worker who loses a job is guaranteed a generous package of unemployment insurance, welfare benefits, food stamps, and government medical benefits, then the opportunity cost of being unemployed is lower and that worker will be less eager to seek a new job.

What seems to matter most is not just the amount of these benefits, but how long they last. A society that provides generous help for the unemployed that cuts off after, say, six months, may provide less of an incentive for unemployment than a society that provides less generous help that lasts for several years. Conversely, government assistance for job search or retraining can in some cases encourage people back to work sooner. Reference the following section to learn how the U.S. handles unemployment insurance.

### HOW DOES U.S. UNEMPLOYMENT INSURANCE WORK?

Unemployment insurance is a joint federal–state program, established by federal law in 1935. The federal government sets minimum standards for the program, but most of the administration is done by state governments. The funding for the program is a federal tax collected from employers. The federal government requires that the tax be collected on the first \$7,000 in wages paid to each worker; however, states can choose to collect the tax on a higher amount if they wish, and 41 states have set a higher limit. States can choose the length of time that benefits will be paid, although most states limit unemployment benefits to 26 weeks—with extensions possible in times of especially high unemployment. The fund is then used to pay benefits to those who become unemployed. Average unemployment benefits are equal to about one-third of the wage earned by the person in his or her previous job, but the level of unemployment benefits varies considerably across states.

Bottom 10 States that pay the Lowest Benefit per Week		Top 10 States that pay the Highest Benefit per week	
Georgia	\$330	Massachusetts	\$653
South Carolina	\$326	Washington	\$604
Missouri	\$320	New Jersey	\$600
South Dakota	\$295	Minnesota	\$585
Florida	\$275	Pennsylvania	\$573
Tennessee	\$275	Rhode Island	\$566
Alabama	\$265	Hawaii	\$560
Louisiana	\$258	Connecticut	\$555

Arizona	\$240	Ohio	\$524
Mississippi	\$235	Oregon	\$507

Table 1. Average Weekly Unemployment Benefits by State in 2013(Source: [jobsearch.about.com/od/unemployment/a/weekly-unemployment-benefits.htm](http://jobsearch.about.com/od/unemployment/a/weekly-unemployment-benefits.htm))

One other interesting thing to note about the classifications of unemployment—an individual does not have to collect unemployment benefits to be classified as unemployed. While there are statistics kept and studied relating to how many people are collecting unemployment insurance, this is not the source of unemployment rate information.

On the demand side of the labor market, government rules social institutions, and the presence of unions can affect the willingness of firms to hire. For example, if a government makes it hard for businesses to start up or to expand, by wrapping new businesses in bureaucratic red tape, then businesses will become more discouraged about hiring. Government regulations can make it harder to start a business by requiring that a new business obtain many permits and pay many fees, or by restricting the types and quality of products that can be sold. Other government regulations, like zoning laws, may limit where business can be done, or whether businesses are allowed to be open during evenings or on Sunday.

Whatever defenses may be offered for such laws in terms of social value, these kinds of restrictions impose a barrier between some willing workers and other willing employers, and thus contribute to a higher natural rate of unemployment. Similarly, if government makes it difficult to fire or lay off workers, businesses may react by trying not to hire more workers than strictly necessary—since laying these workers off would be costly and difficult. High minimum wages may discourage businesses from hiring low-skill workers. Government rules may encourage and support powerful unions, which can then push up wages for union workers, but at a cost of discouraging businesses from hiring those workers.

### The Natural Rate of Unemployment in Recent Years

The underlying economic, social, and political factors that determine the natural rate of unemployment can change over time, which means that the natural rate of unemployment can change over time, too. Estimates by economists of the natural rate of unemployment in the U.S. economy in the early 2000s run at about 4.5% to 5.5%. This is a lower estimate than earlier. Three of the common reasons proposed by economists for this change are outlined below.

1. The Internet has provided a remarkable new tool through which job seekers can find out about jobs at different companies and can make contact with relative ease. An Internet search is far easier than trying to find a list of local employers and then hunting up phone numbers for all of their human resources departments, requesting a list of jobs and application forms, and so on. Social networking sites such as LinkedIn have changed how people find work as well.
2. The growth of the temporary worker industry has probably helped to reduce the natural rate of unemployment. In the early 1980s, only about 0.5% of all workers held jobs through temp agencies; by the early 2000s, the figure had risen above 2%. Temp agencies can provide jobs for workers while they are looking for permanent work. They can also serve as a clearinghouse, helping workers find out about jobs with certain employers and getting a tryout with the employer. For many workers, a temp job is a stepping-stone to a permanent job that they might not have heard about or gotten any other way, so the growth of temp jobs will also tend to reduce frictional unemployment.
3. The aging of the “baby boom generation”—the especially large generation of Americans born between 1946 and 1963—meant that the proportion of young workers in the economy was relatively high in the 1970s, as the boomers entered the labor market, but is relatively low today. As noted earlier, middle-aged workers are far more likely to keep steady jobs than younger workers, a factor that tends to reduce the natural rate of unemployment.

The combined result of these factors is that the natural rate of unemployment was on average lower in the 1990s and the early 2000s than in the 1980s. The Great Recession of 2008–2009 pushed monthly unemployment rates above 10% in late 2009. But by late 2015, the unemployment rate was back to 5%.

### The Natural Rate of Unemployment in Europe

By the standards of other high-income economies, the natural rate of unemployment in the U.S. economy appears relatively low. Through good economic years and bad, many European economies have had unemployment rates hovering near 10%, or even higher, since the 1970s. European rates of unemployment have been higher not because recessions in Europe have been deeper, but

rather because the institutional conditions underlying supply and demand for labor have been different in Europe, in a way that has created a much higher natural rate of unemployment, as you saw in the video on structural unemployment.

Many European countries have a combination of generous welfare and unemployment benefits, together with rules that impose additional costs on businesses when they hire. In addition, many countries have laws that require firms to give workers months of notice before laying them off and to provide substantial severance or retraining packages after laying them off. The legally required notice before laying off a worker can be more than three months in Spain, Germany, Denmark, and Belgium, and the legally required severance package can be as high as a year's salary or more in Austria, Spain, Portugal, Italy, and Greece. Such laws will surely discourage laying off or firing current workers. But when companies know that it will be difficult to fire or lay off workers, they also become hesitant about hiring in the first place.

The typically higher levels of unemployment in many European countries in recent years, which have prevailed even when economies are growing at a solid pace, are attributable to the fact that the sorts of laws and regulations that lead to a high natural rate of unemployment are much more prevalent in Europe than in the United States.

## A Preview of Policies to Fight Unemployment

We will discuss more details about how to fight unemployment in future modules, but let's take a quick look at the main issues concerning policies to fight unemployment.

The remedy for unemployment will depend on the diagnosis. Cyclical unemployment is a short-term problem, caused because the economy is in a recession. Thus, the preferred solution will be to avoid or minimize recessions. This policy can be enacted by stimulating aggregate (or total) demand in the economy, so that firms perceive that sales and profits are possible, which makes them eager to hire.

Dealing with the natural rate of unemployment is trickier. There is not much to be done about the fact that in a market-oriented economy, firms will hire and fire workers. Nor is there much to be done about how the evolving age structure of the economy, or unexpected shifts in productivity, will affect the natural rate of unemployment for a time. However, as the example of high ongoing unemployment rates for many European countries illustrates, government policy clearly can affect the natural rate of unemployment that will persist even when GDP is growing.

Structural unemployment is particularly difficult to address. For skilled workers who have become structurally unemployed, they could seek retraining for jobs that are in demand. For unskilled workers, e.g. high school dropouts, the prospects are worse. Government programs exist for retraining workers, or for basic adult education (e.g. the GED or General Education Diploma), but such programs have had mixed results at returning people to the work force.

When a government enacts policies that will affect workers or employers, it must examine how these policies will affect the information and incentives employees and employers have to seek each other out. For example, the government may have a role to play in helping some of the unemployed with job searches. The design of government programs that offer assistance to unemployed workers and protections to employed workers may need to be rethought so that they will not unduly discourage the supply of labor. Similarly, rules that make it difficult for businesses to begin or to expand may need to be redesigned so that they will not unduly discourage the demand for labor. The message is not that all laws affecting labor markets should be repealed, but only that when such laws are enacted, a society that cares about unemployment will need to consider the tradeoffs involved.

### Try It

<https://assessments.lumenlearning.co...sessments/7489>

<https://assessments.lumenlearning.co...sessments/7490>

### Watch It

Watch this short clip to review the concept of natural unemployment. (Note that the video will only play a selected clip within the video from the five- to seven-minute mark).

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## THE MYSTERIOUS CASE OF THE MISSING CANDIDATES

After reading the module you might think the current unemployment conundrum may be due to structural unemployment. Indeed, there is a mismatch between the skills employers are seeking and the skills the unemployed possess. But Peter Cappelli has a

slightly different view on this—it is called the purple squirrel. The what?

In human resource parlance, a purple squirrel is a job candidate who is a perfect fit for all of the many different responsibilities of a position. A purple squirrel candidate could step into a multi-faceted position with no training and permit the firm to higher fewer people because the worker is so versatile. During the Great Recession, Human Resources (HR) positions were reduced. This means today's hiring managers are drafting job descriptions and requirements without much, if any HR feedback. "It turns out it's typically the case that employers' requirements are crazy, they're not paying enough, or their applicant screening is so rigid that nobody gets through," Cappelli stated in a 2012 Knowledge@Wharton interview about the findings in his book, *Why Good People Can't Find Jobs: Chasing After the Purple Squirrel*. In short, managers are searching for "purple squirrels" when what they really need are just versatile workers. There really is not a shortage of "normal squirrels"—candidates who are versatile workers. The managers just cannot find them because their requirements, screening processes, and compensation will filter out all but the "purple" ones.

## Glossary

[glossary-page]

[glossary-term]frictional unemployment: [/glossary-term]

[glossary-definition]unemployment that occurs as workers move between jobs[/glossary-definition]

[glossary-term]natural rate of unemployment: [/glossary-term]

[glossary-definition]the unemployment rate that would exist in a growing and healthy economy from the combination of economic, social, and political factors that exist at a given time; the sum of frictional plus structural unemployment[/glossary-definition]

[glossary-term]structural unemployment: [/glossary-term]

[glossary-definition]unemployment that occurs because individuals lack skills valued by employers[/glossary-definition]

[/glossary-page]

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