Unemployment
Chapter Outline

A Stock-Flow Model of the Labor Market
  • Paths to Unemployment

Rates of Flow Affect Unemployment Levels

Frictional Unemployment
  • The Theory of Job Search
  • Effects of Unemployment Insurance Benefits

Structural Unemployment
  • Occupational and Regional Unemployment Rate Differences
  • International Differences in Long-Term Unemployment
  • Do Efficiency Wages Cause Structural Unemployment?
Chapter Outline

Demand-Deficient (Cyclical) Unemployment

• Downward Wage Rigidity
• Financing U.S. Unemployment Compensation

Seasonal Unemployment

When Do We Have Full Employment?

• Defining the Natural Rate of Unemployment
• Unemployment and Demographic Characteristics
• What is the Natural Rate?
Recall from Chapter 2 that the adult working age population (over 16 years) can be divided into those people who are:

- in the labor force \((L)\), which consists of those who are
  - employed \((E)\) plus
  - unemployed \((U)\) but “actively” searching for work, and
- not in the labor force \((N)\)

Based on the definition of the labor force: \(L = E + U\), the unemployment rate \((u)\) is measured/computed as:

\[
u = \frac{U}{L} = \frac{U}{E + U}
\]

(14.1)

Recall also that the national unemployment rate varies over time (month-to-month, quarter-to-quarter, and year-to-year), across geographic areas, and by age/race/gender/ethnic groups.
There are limitations with respect to the unemployment rate, $u$, data: $u$ does not tell us:

- about those who gave up and are no longer actively searching for work
- anything about the earning levels of those who are employed
- about the composition of those who are unemployed
- the substantial fraction of the unemployed who receive some income support while they are unemployed
- much about the fraction of the population that is employed

Recall also that the labor force participation rate ($LFPR$) is defined as:

$$LFPR = \frac{L}{POP}$$

and that the employment rate ($ER$) is defined as:

$$ER = \frac{E}{POP}$$

where $POP$ is the adult working age population over 16 years
<table>
<thead>
<tr>
<th>Year</th>
<th>Labor Force Unemployment Rate (UIL)</th>
<th>Participation Rate (L/POP)</th>
<th>Employment Rate (E/POP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948</td>
<td>3.8</td>
<td>58.8</td>
<td>56.6</td>
</tr>
<tr>
<td>1958</td>
<td>6.8</td>
<td>59.5</td>
<td>55.4</td>
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<tr>
<td>1968</td>
<td>3.6</td>
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<td>57.5</td>
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<tr>
<td>1991</td>
<td>6.8</td>
<td>66.2</td>
<td>61.7</td>
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<td>2000</td>
<td>4.0</td>
<td>67.1</td>
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</tr>
<tr>
<td>2015</td>
<td>5.3</td>
<td>62.7</td>
<td>59.3</td>
</tr>
</tbody>
</table>

*U* = the number of people unemployed

*L* = the number of people in the labor force

*E* = the number of people employed

*POP* = the total population over age 16

*Source:* U.S. Department of Labor, 2016 Employment and Earnings Online, Household Survey Data (March 18, 2016), Table 1, at www.bls.gov/opub/ee/2015/cps/annual.htm#empstat.
14.1 A Stock-Flow Model of the Labor Market

- The dynamics of the labor market can be captured by considering the *flows* between labor market states (that is, the *movements* and the *number* of people in and out of the labor market states: $E$, $U$, and $N$).
- Monthly flows between the labor market states are:
  - Flows/movements between $E$ and $U$
  - Flows/movements between $U$ and $N$
  - Flows/movements between $E$ and $N$
- Recall that the national Current Population Survey (CPS) provides the monthly data on $E$, $U$, and $N$ based on survey.
Figure 14.1 Labor Market Stocks and Flows: April to May, 2016

Employed: 151.0 million

EN: 3.9 million
NE: 4.0 million

Not in the Labor Force: 94.5 million

EU: 1.5 million
NU: 2.0 million

Unemployed: 7.4 million

UE: 1.8 million
$P_{ue} = 0.244$

UN: 1.8 million
$P_{un} = 0.249$
14.1 A Stock-Flow Model of the Labor Market

Paths to Unemployment

- In a typical year, half of the unemployed are job losers who are laid off temporarily or permanently discharged due to plant closure(s) or “downsizing”

- *New entrants* – those individuals who are entering into the labor markets for the first time

- *Reentrants* – those individuals with previous employment experiences who dropped out of the labor force/market for a time due to various reasons and are now back

- Voluntary job leavers who quit their jobs
### Table 14.2 Paths to Unemployment, United States, Various Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Unemployment Rate</th>
<th>Job Losers</th>
<th>Percent of Unemployed Who Were:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Job Leavers</td>
</tr>
<tr>
<td>1970</td>
<td>4.9</td>
<td>44.3</td>
<td>13.4</td>
</tr>
<tr>
<td>1974</td>
<td>5.6</td>
<td>43.5</td>
<td>14.9</td>
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<tr>
<td>1978</td>
<td>6.1</td>
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<td>9.7</td>
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<tr>
<td>2006</td>
<td>4.6</td>
<td>47.4</td>
<td>11.8</td>
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<tr>
<td>2010</td>
<td>9.6</td>
<td>62.4</td>
<td>6.0</td>
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<tr>
<td>2014</td>
<td>6.2</td>
<td>50.7</td>
<td>8.6</td>
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<tr>
<td>2015</td>
<td>5.3</td>
<td>49.0</td>
<td>9.9</td>
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</tbody>
</table>

14.2 Rates of Flow Affect Unemployment Levels

➢ To focus on the level of unemployment and to understand the determinants, we must analyze the flows/movements of individuals between the various labor market states.

➢ The unemployment rate for a group may be high due to a host of factors; and the appropriate policy prescriptions to reduce the unemployment rate will depend on which one of the labor market flows is responsible for the high rate.
If we assume that labor markets are roughly in balance, with flows into and out of unemployment equal; then the \( u \) for a group can be expressed as:

\[
    u = F \left( \frac{1}{P_{en} - P_{ne} + P_{un} + P_{nu} - P_{eu} - P_{ue}} \right)
\]  

(14.2)

- \( P_{en} \) = the fraction of employed who leave the labor force
- \( P_{ne} \) = the fraction of those not in the labor force who enter the labor force and find employment
- \( P_{un} \) = the fraction of unemployed who leave the labor force
- \( P_{nu} \) = the fraction of those not in the labor force who enter the labor force and become unemployed
- \( P_{eu} \) = the fraction of employed who become unemployed
- \( P_{ue} \) = the fraction of unemployed who become employed
The social concern over any given level of unemployment focuses on both the *incidence* of unemployment (or the fraction of people in a group who become unemployed) and the *duration* of the spells of unemployment.

The bulk of measured unemployment could be attributed to the fact that many people experience short spells of unemployment – quick flow through the unemployed state.

Evidence also suggests that prolonged spells of unemployment for a relatively small number of individuals characterize those found in the *stock* of the unemployed at any given time.
14.2 Rates of Flow Affect Unemployment Levels

- There is considerable difference in the incidence and duration of unemployment among countries.

<table>
<thead>
<tr>
<th>Table 14.3 Unemployment and Long-Term Unemployment, Selected European and North American Countries, 2005 and 2015</th>
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<tr>
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<td>--------------------------------</td>
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<tr>
<td>Belgium</td>
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<tr>
<td>Canada</td>
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<td>Denmark</td>
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<td>Netherlands</td>
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<td>Norway</td>
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<tr>
<td>United Kingdom</td>
</tr>
<tr>
<td>United States</td>
</tr>
</tbody>
</table>

14.3 Frictional Unemployment

- Even in a market-equilibrium or full-employment situation, there will still be some *frictional unemployment*, because some people will move between jobs – some workers will quit their jobs to search for other employment opportunities.

- Frictional unemployment occurs because the labor market is characterized by frictions:
  - information flows are imperfect – that is, information about the characteristics of those searching for work and the nature of job openings are unknown
  - it takes time and effort for unemployed workers and employers with job vacancies to find each other
  - random fluctuations in demand across firms will cause some firms to close or lay off workers at the same time that other firms are opening or expanding employment
In a market-equilibrium or full-employment situation, there will still be some frictional unemployment, because people will move between jobs.

If wages are downwardly rigid, shift from $D_0$ to $D_1$ will lead to a fall in employment from $E_0$ to $E_1$ thus $E_0 - E_1$ additional workers will be (cyclically) unemployed.
The level of frictional unemployment is determined by the flows of individuals into and out of the labor market and the speed with which unemployed individuals find and accept jobs.

Due to imperfect information about job opportunities and workers’ characteristics, it takes time and effort to match unemployed workers with potential employers.

- The lower the probability of unemployed workers finding jobs in a period (that is, $\downarrow P_{ue}$), the higher the expected duration of unemployment and the unemployment rate.
14.3 Frictional Unemployment

Given $P_{ue}$, it is important to know what can affect it; and to do so, we develop a model with the assumptions that:

- Wages ($W$) are associated with the characteristics of jobs and not the characteristics of the individuals.

- Employers differ in the set of minimum hiring standards they use
  - educational requirements
  - job training
  - work experience
  - performance on hiring tests, etc.

- The set of attributes/characteristics can be represented as $K$.

- Associated with each job is a wage, $W(K)$, which means that wage is a function of the required skill levels.

- $W$ is an increasing function of $K$, therefore, if two employers use the same $K$, they will offer the same $W$. 
14.3 Frictional Unemployment

- Different employers have different hiring standards ($K$), this implies that there will be a distribution of wage offers associated with job vacancies in the labor market, which is denoted as $[f(W)]$ – probability distribution of wage offers.

- The area of $f(W) = 1$ (100% of wage offers in the market)

- It is assumed that an employee knows the shape of the distribution of wage offers but does not know what each particular firm’s wage offer or hiring standard will be
  - Job search process will be random – visits to firms’ employment offices.
  - Hiring standard or skill levels ($K$) and wage ($W$) will be highly related as no firm will hire a worker that does not meet its hiring standards.
If job market information is imperfect and a firm’s hiring standard exceeds $K^*$, a person with skill level $K^*$ is rejected for the job.

If the hiring standard is $K^*$ or less, the person with skill level $K^*$ is offered the job.

Accepting a job offer depends on the number of job offers accumulated, the individual's reservation wage ($W_R$) as well as the match between $K$ and $W$ within the $W_R$ and $W^*(K^*)$ range.
14.3 Frictional Unemployment

The Reservation Wage

- Recall from Chapter 6 that the reservation wage is the value that a worker places on an hour of lost leisure time, that is, it is the wage below which a person will not work.

- A person who has skill level $K^*$ and whose reservation wage is $W_R$ will accept job offers that pay between $W_R$ and $W^*(K^*)$ – see Figure 14.3.

- The higher the probability of finding a job in the range between $W_R$ and $(W^*K^*)$, the lower the expected duration of unemployment and the expected average wage, $E(W)$, is weighted average of the job offers in the $W_R$ and $W^*(K^*)$ range.

- If the choice of $W_R$ is higher than that indicated in Figure 14.3:
  - The worker will reject more low-wage jobs and $E(W)$ would increase
  - Rejecting more job offers decreases the probability of finding a job, thus increasing the expected duration of unemployment.
14.3 Frictional Unemployment

Implications of the Model

- As long as $W_R$ is not set equal to the lowest wage in the market, the probability of finding a job will be less than 1; and hence some unemployment can be expected to result.

- Since $W_R$ will always be chosen to be less than the wage commensurate with the individual’s skill level, $W^*(K^*)$, virtually all individuals will be underemployed once they find a job, that is, their expected earnings, $E(W)$, will be less than $W^*$.

- Two unemployed individuals with the same skill level could choose the same $W_R$ and have the same expected post-unemployment wage, but the wage they actually wind up with will depend on pure luck.

- Anything that causes an unemployed worker to intensify their job search will reduce the duration of unemployment.

- If the cost to an individual of being unemployed were to fall, and the person’s $W_R$ increases, this would increase both the expected duration of unemployment and the expected post-unemployment wage rate.
14.3 Frictional Unemployment

Effects of Unemployment Insurance Benefits

- Virtually every advanced country offers varying forms of unemployment compensation to workers who have lost their jobs.
- In the U.S., the unemployment insurance (UI) system varies across states and for the unemployed workers, the eligibility for UI benefits is based on their previous labor market experience (or earnings level) and reason for unemployment.

- For work experience, each state requires unemployed individuals to demonstrate “permanent” attachment to the labor force.
- In all states, covered workers who are laid off and meet these labor market experience tests are eligible for UI benefits.
- In some states, workers who voluntarily quit their jobs are eligible for benefits in certain circumstances.
- New entrants or reentrants to the labor force and workers fired for cause are ineligible for benefits.
All eligible unemployed workers are entitled to at least a minimum benefit level $B_{\text{min}}$ given previous weekly wage $W_{\text{min}}$. After previous earnings rise above a critical level ($W_{\text{min}}$), benefits increase proportionately with earnings. In panel (b), the ratio of an individual's UI benefits to previous earnings varies according to his/her past earnings. This ratio or replacement rate shows the fraction of previous earnings that the UI benefits replace.
14.3 Frictional Unemployment

Do More Generous Benefits Increase Unemployment?

- More generous UI benefits should cause an increase $W_R$ of the unemployed workers, which will tend to reduce $P_{ue}$ and $P_{un}$, and thus lengthens the duration of unemployment and this will increase the unemployment rate.
- Evidence from empirical studies suggests that higher UI replacement rates are indeed associated with longer durations of unemployment for recipients.

Effects of Benefits Eligibility

- Mere eligibility of workers for unemployment compensation benefits has been found to influence workers’ job search behavior.
- In the U.S., there is a huge jump in the probability of a worker taking a job during the week his/her eligibility for UI benefits ends.

Do More Generous Benefits Improve Job Matches?

- Increased $W_R$ and more generous unemployment insurance benefits will tend to increase the duration of an unemployment spell, but it should also raise the expected post-unemployment wage.
14.4 Structural Unemployment

- *Structural unemployment* arises due to a mismatch between skills demanded and supplied in a given area or across areas.
  - Market adjustments would quickly eliminate this type of unemployment if wages were completely flexible and if costs of occupational or geographic mobility were low.

Occupational and Regional Unemployment Rate Differences

- We use a two-sector labor market model to illustrate how structural unemployment can arise by assuming that:
  - the sectors refer to markets for occupational classes of workers
  - they are two geographically separate labor markets.

Occupational Imbalances
  - Assume that market A is the market for production workers in the automobile industry, and
  - Market B is the market for skilled computer specialists.
Wages need not be equal in the two markets because of differences in training costs and nonpecuniary conditions of employment. If the demand for automobile workers falls to $D_{1A}$ due to foreign import competition, while the demand for computer specialists rises to $D_{1B}$ because of the increased use of computers, and since real wages are inflexible downward in market A because of union contract provisions, employment falls to $E_{1A}$. Employment and wages of computer specialists will rise to $E_{1B}$ and $W_{1B}$, respectively. Unemployment of $E_{1A} - E_{0A}$ will be created in labor market A in the short run. Can these unemployed workers move over to labor market B?
14.4 Structural Unemployment

Geographic Imbalances

- Assume that:
  - Market A is located in a Snowbelt city, and
  - Market B is located in a Sunbelt city; and that
  - Both markets employ the same type of labor

- If demand falls in the Snowbelt and unemployment increases because wages are not completely flexible, the unemployed workers will continue to wait for jobs in their home city for at least three reasons:
  - information flows are imperfect, hence workers are unaware of jobs that could be available elsewhere
  - the direct money costs of a move, including moving costs and the transaction costs involved in buying and selling a home, are high
  - the psychological costs of moving long distances are substantial because friends and neighbors and community support systems must be given up

- Structural factors can cause substantial differences in unemployment rates across states in a given year, but these differences usually do not persist indefinitely due to adjustments caused by movements of workers.
14.4 Structural Unemployment

International Differences in Long-Term Unemployment

- Structural unemployment exists when the unemployed workers have a small probability of finding work (that is, $P_{ue}$ is low), and the duration of unemployment is long.

- The percentage of the labor force that is unemployed for more than one year is typically much higher in most of Europe than the United States because:
  - While the United States spends much less on government training programs than most of Europe – training and retraining programs tend to accelerate movements from $U$ to $E$ – it has a relatively high rate of geographical mobility.
  - European countries typically have job-protection policies (notification to the government, consultation with worker representatives) that are intended to reduce layoffs – these policies discourage the creation of new jobs/hires and thus increase the duration of unemployment.
  - The United States requires some employers to notify their workers in advance of large-scale layoffs.

- A comparative study found that as the stringency of job-protection laws rose, so did the average duration of unemployment.
Do Efficiency Wages Cause Structural Unemployment?

- Recall from Chapter 11 that efficiency wages increase worker productivity for two reasons:
  - Gives workers the gift of a generous wage, and employers expect that employees will reciprocate through the gift of diligent work.
  - If the employee’s effort is not diligent, the employee can be fired and will be faced with earning a lower wage or with unemployment.

Efficiency Wages Affect Unemployment

- If some employers were to follow a strategy of paying \( W_{\text{Efficiency}} > W_{\text{Market}} \), then supply would exceed demand and unemployment would result.

Unemployment Affects Efficiency Wages

- The higher the unemployment rate in an area, the poorer are the alternative employment opportunities for workers and thus the less likely the workers are to risk losing their jobs by shirking – the employers, then, need not pay wage premiums \( W_E \) that are as high.
- Other factors held constant, there should be a negative association between average wage rates and the unemployment rates across areas.
14.4 Structural Unemployment

Efficiency Wages and the Wage Curve

- Studies of data on wages and regional unemployment rates within 12 countries (controlling for the effects of human capital characteristics of individual workers) found that there was a strong negative relationship between regional unemployment rates and wages in all countries.
  - Regions with higher rates of unemployment will experience lower wage levels for comparable workers
  - The negative relationship between regional unemployment rates and wages is shown by a downward-sloping wage curve – see Figure 14.6

- The negatively sloped wage curve depicted by these studies can be found in the efficiency-wage explanation of structural unemployment.
A wage curve seems to exist for every country for which enough data are available to estimate it.

The curves for each country are surprisingly similar; a 10 percent increase in a region’s unemployment rate is associated with wage levels that are lower by 0.4 to 1.9 percent in 11 of the 12 countries studied.

The wage curve appears to contradict the conventional demand-and-supply curve analysis, which suggests a positively sloped wage curve – a positive relationship between higher unemployment and higher wages.
14.5 Demand-Deficient (Cyclical) Unemployment

- Demand-deficient unemployment is associated with fluctuations in business activity ("business cycle").
  - Occurs due to the decline in aggregate demand in the output/product market or when firms temporarily lay off workers during recessions (remember that demand for labor is a derived demand).

- Demand-deficient unemployment affects labor market flows and wages:
  - Flows from $E$ to $U$ will increase, hence $\uparrow P_{eu}$
  - Retired positions and/or vacancies due to quits will not be filled immediately, thus:
    - flows from $N$ to $E$ will decrease, hence $\downarrow P_{ne}$.
    - flows from $U$ to $E$ will decrease, hence $\downarrow P_{ue}$.
  - With flexible wages, demand-deficient unemployment will decrease real wages to $W_2$ and employment to $E_2$ – see Figure 14.2.
14.5 Demand-Deficient (Cyclical) Unemployment

**Downward Wage Rigidity**

- Downward (nominal) wage rigidity is one of the factors thought to contribute to demand-deficient unemployment in the U.S. labor market.

- Real wages can fall due to rising prices or if nominal wages increase less than the increase in prices.

- Common cuts in workers’ nominal wages or forced wage concessions, which are normally common during business downturns, do lead to declining real wages of workers.

- Studies which suggested that nominal wages are not completely rigid in a downward direction also concluded that nominal wages are resistant to cuts, thus, employment adjustments during recessions are larger and more common than they would be with complete nominal-wage flexibility.
14.5 Demand-Deficient (Cyclical) Unemployment

- Why do firms find it more profitable to reduce employment than wages?
- Why are workers who face unemployment not more willing to take wage cuts to save their jobs?

**Wage Rigidity and Unions**

- Employers are not free to unilaterally cut nominal wages because of the presence of unions – only about 12 percent of U.S. workers are unionized.
- Nowadays, some unions make temporary wage cuts (which reduce the earnings for all workers) to save unionized workers from layoffs.

**Wage Rigidity and Specific Human Capital**

- Wage rigidity can also occur in *nonunion* firms, and layoffs do occur as well, but they occur less frequently than in unionized firms:
  - Employer investments in workers – firm-specific human capital or training – and the incentive to minimize voluntary turnover and to maximize their employees’ work effort and productivity.
  - Layoffs affect only the least-experienced workers – those in whom the firm has invested the smallest amount of resources.
14.5 Demand-Deficient (Cyclical) Unemployment

Wage Rigidity and Asymmetric Information

- Employers with internal labor markets frequently promise, at least implicitly, a certain path of earnings to employees over their careers.
  - This form of implicit labor contract involves some pay structure with the expectation of seniority over the employee’s career with the firm.

- The firm has more accurate information about the true state of its demand than do its workers, therefore, if employers ask employees to take a wage cut in periods of low demand and if employees do not believe that low demand exists, this will reduce employees’ productivity due to lack of trust or low morale.

- Temporarily laid-off workers may come to accept such an action as a signal that the firm is indeed in trouble – that is, the *asymmetry of information* between employers and employees may make layoffs the preferred policy.
14.5 Demand-Deficient (Cyclical) Unemployment

Wage Rigidity and Risk Aversion

- Firms with long employer–employee job attachments – internal labor markets – tend to have wage rigidity because they may be encouraged by the risk aversion of older employees to engage in seniority-based layoffs (LIFO) rather than wage cuts for all workers.

- With internal labor markets or implicit labor contracts, the risks of income/wage fluctuations are confined to the initial (junior) years of employment.

Wage Rigidity: Worker Status and Social Norms

- If we assume that large employers tend to have internal labor markets, rigid wages, and lay off workers during business downturns, why don’t the laid-off workers take jobs with smaller employers?

- Smaller employers pay lower wages and are not constrained, as much as the large firms, from reducing wages further during downturns.
14.5 Demand-Deficient (Cyclical) Unemployment

Wage Rigidity: Worker Status and Social Norms

- Unemployed workers (due to layoffs) do not flock to the low-wage employers due to their sense of *status* (their relative standing in society).
  - Individuals may prefer unemployment in a good job to employment in an inferior one.
  - The hesitance (due to their sense of *status*) of laid-off workers in taking jobs with low-wage employers prevents the expansion of jobs and further reduction of wages in the low-wage sectors during recessionary periods.

- Prevailing market wages paid by small, competitive firms, may be accepted as *social norms* that inhibit the unemployed from trying to undercut the wages of the employed workers to find employment.
  - Due to future considerations rather than with status, unemployed workers are apparently more willing to face unemployment than secure or accept employment at a reduced wage.
14.5 Demand-Deficient (Cyclical) Unemployment

Financing U.S. Unemployment Compensation

➢ The incentives for employers to engage in temporary layoffs are also affected by key characteristics of the U.S. unemployment insurance system: its methods of financing benefits.

The UI Payroll Tax

• Unlike the Social Security payroll tax paid solely by employers, the benefits paid out by the UI system are financed by a payroll tax.

• The UI tax payment \((T)\) that an employer pays for each employee is given by

\[
T - tW \quad \text{if} \quad W \leq W_B \quad (14.3a)
\]

and

\[
T - tW_B \quad \text{if} \quad W > W_B \quad (14.3b)
\]
14.5 Demand-Deficient (Cyclical) Unemployment

where

\[ t = \text{the employer’s UI tax rate} \]
\[ W = \text{an employee’s wage earnings during the calendar year} \]
\[ W_B = \text{the taxable wage base} \text{ (the level of earnings after which no UI tax payments are required)} \]

- For example, in 2010, \( W_B \) ranged from $7,000 to $14,000 in about two-thirds of the states in the U.S., and the other one-third of the states had higher \( W_B \).

- The employer’s UI tax rate \( (t) \) is determined by:
  - general economic conditions in the state
  - the industry the employer is operating
  - the employer’s layoff experience

- Since the UI system is an insurance system, employers who lay off workers frequently and make heavy demands on the system’s resources should be assigned a higher UI tax rate – experience rating.
14.5 Demand-Deficient (Cyclical) Unemployment

Imperfect Experience Rating

• Experience rating is typically *imperfect* in the sense that the marginal cost to an employer of laying off an additional worker is often less than the added UI benefits the system must pay out to that worker.

• Each state has a minimum UI tax rate \( t_{\min} \) below which a firm’s UI tax rate cannot fall and a maximum UI tax rate \( t_{\max} \) above which the UI tax rate cannot rise.

• When a firm’s layoff experience reaches some critical value \( l_{\min} \), the firm’s UI tax rate rises with increased layoff experience over some range until it reaches the maximum \( l_{\max} \) level at which the maximum UI tax rate \( t_{\max} \) is also reached.
  ▪ Each state has a ceiling on the UI tax rate \( t_{\max} \).
  ▪ Additional layoffs after \( l_{\max} \) will not alter the firm’s tax rate.

• The UI system is *imperfectly* experience-rated because for firms below \( l_{\min} \) or above \( l_{\max} \), variations in their layoff rate have no effect on their UI tax rate.
UI tax rate cannot fall below the minimum $t_{\text{min}}$ – that is, employers whose layoffs fall below $l_{\text{min}}$ will pay UI tax rate $t_{\text{min}}$.

As employers experience increased layoffs between $l_{\text{min}}$ and $l_{\text{max}}$, the UI tax rate will be in the range $t_{\text{min}}$ and $t_{\text{max}}$.

UI tax rate will not rise above $t_{\text{max}}$ for additional layoffs above $l_{\text{max}}$. Note that the UI tax rate ($t$) paid by employers in the $t_{\text{min}}$ and $t_{\text{max}}$ range is not large enough in most states, so $MC_{\text{Layoff}} < MB_{\text{Layoff}}$. 
Does the UI Tax Encourage Layoffs?

• The key characteristic of the UI system that influences the desirability of temporary layoffs is the *imperfect experience rating* of the UI payroll tax.
  - If the UI system were constructed in a way that its tax rate were perfectly experience-rated, a firm laying off a worker would have to pay added UI taxes equal to the full UI benefit received by the worker.
  - If the UI tax rate employers must pay is totally independent of their layoff experience (no experience rating), a firm saves a laid-off worker’s *entire* wages because its UI taxes do not rise as a result of the layoff.

• Empirical analyses of the effect of the imperfect experience rating on employer behavior suggest that it is substantial – these studies estimated that unemployment would fall by 10 percent to 33 percent if UI taxes in the United States were perfectly experience-rated.
14.6 Seasonal Unemployment

Seasonal unemployment is similar to demand-deficient unemployment because it is induced by fluctuations in the demand for labor during certain periods of the year.

- Fluctuations can be regularly anticipated and follow a systematic pattern over the course of a year.

Why do employers respond to seasonal patterns of demand by laying off workers rather than reducing wage rates or hours of work?

- A study showed that the expansion (in the early 1970s) of the UI system that led to the coverage of most agricultural employees was associated with a substantial increase in seasonal unemployment in agriculture.

- Studies of seasonal layoffs in nonagricultural industries also suggest that imperfect experience rating of the UI tax significantly increases seasonal unemployment.
14.6 Seasonal Unemployment

Why would workers accept jobs in industries in which they knew in advance they would be unemployed for a portion of the year?

- The existence of UI benefits and the knowledge by workers that they would be rehired as a matter of course at the end of the slack-demand season allowed them to view the layoff periods as paid vacations.
- Seasonal industries attract workers by paying higher wages to compensate them for being periodically unemployed.
14.7 When Do We Have Full Employment?

Governments constantly worry about:

• unusually high rate of unemployment because the unemployment rate is a handy barometer of an economy’s health.
• unusually low rate of unemployment because it reflects a situation in which there is excess demand in the labor market that could lead to rising wages and thus lead to inflationary pressures.

Governments will take steps to stimulate the demand for labor when they believe unemployment to be excessive.

Questions:

1. If both too much and too little unemployment are undesirable, how much is just right?

2. What unemployment rate represents full employment?
14.7 When Do We Have Full Employment?

Defining the Natural Rate of Unemployment

- The *full-employment* or *(natural)* rate of unemployment is difficult to define precisely:
  - the natural rate of unemployment *(NRU)* is defined as the rate at which wage and price inflation are either stable or at acceptable levels.
  - full employment is the rate of unemployment at which job vacancies equal the number of unemployed workers.
  - *NRU* is the level of unemployment at which any increases in aggregate demand will cause no further reductions in unemployment or unemployment is voluntary.
  - the *NRU* is affected by such factors as voluntary turnover rates among employed workers, movements in and out *(s)* of the labor force, and the length of time it takes for the unemployed to find *(f)* acceptable jobs.
14.7 When Do We Have Full Employment?

Unemployment and Demographic Characteristics

- Unemployment and its demographic characteristics tend to show consistent patterns over the recent years/decades.
- The demographic composition of the labor force has changed dramatically with the growth in the labor force participation rates of females and substantial changes in the relative size of the teenage, black, and Hispanic populations.
  - Between 1975 and 2015, the proportion of the labor force that was female grew from 40 percent to 47 percent.
  - The Hispanic labor force grew faster than the average – from 4 percent to 17 percent.
  - The teenage share of the labor force dropped from over 9 percent in 1975 to less than 4 percent by 2015.
- The overall unemployment rate reflects both the tightness of the labor market and the composition of the labor force.
Table 14.4 Unemployment Rates in 2015 by Demographic Group

<table>
<thead>
<tr>
<th>Age</th>
<th>White Male</th>
<th>White Female</th>
<th>Black Male</th>
<th>Black Female</th>
<th>Hispanic Male</th>
<th>Hispanic Female</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>16–17</td>
<td>18.1</td>
<td>14.8</td>
<td>33.1</td>
<td>26.3</td>
<td>23.8</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>18–19</td>
<td>15.3</td>
<td>12.3</td>
<td>29.5</td>
<td>26.5</td>
<td>18.9</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>20–24</td>
<td>9.4</td>
<td>7.0</td>
<td>18.3</td>
<td>14.6</td>
<td>10.6</td>
<td>9.4</td>
<td></td>
</tr>
<tr>
<td>25–54</td>
<td>3.8</td>
<td>3.9</td>
<td>8.4</td>
<td>8.0</td>
<td>4.8</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>55–64</td>
<td>3.5</td>
<td>3.5</td>
<td>7.4</td>
<td>4.5</td>
<td>5.5</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.7</td>
<td>4.5</td>
<td>10.3</td>
<td>8.9</td>
<td>6.3</td>
<td>7.1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

“Hispanic” refers to those of Hispanic origin; depending on their race, these individuals are also included in both the white and black population group totals.

14.7 When Do We Have Full Employment?

What Is the Natural Rate?

- The estimates of the natural rate of unemployment (NRU) have varied over time; it was about:
  - 5.4% in the 1960s
  - 7% in the 1970s
  - 6% to 6.5% in the 1980s
  - 5% in the last decade

- Milton Friedman, as a leader in the development of the NRU concept, cautioned against any attempts to forecast it.
  - Some level of unemployment is unavoidably associated with the frictions in a dynamic labor market burdened with imperfect information.
  - Arthur Okun pointed out that every 1-percentage-point decline in the aggregate unemployment rate was associated with a 3-percentage-point increase in output the United States produces.