Course 6: The Labor Market

Intermediate Macroeconomics, Econ 102

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The Labor Market

- The first 5 lectures were concerned with the short run analysis of the macroeconomy.
- In the next 3 lectures, we will turn to an analysis of the macroeconomy over the medium run.
- Most macroeconomists think that in the medium run, the economy returns to a level of output associated with the natural rate of unemployment (there are no medium run effects of demand, even less so in the long run) – this is the theory put forward in the book:
  - in the IS-LM model, we never mentioned supply constraints. Output was demand determined.
  - most macroeconomists believe that supply constraints start mattering over the medium run.
  - in particular: more consumption leads to more demand, which leads to more output, etc. is true only to the extent that there is slack: idle labor (unemployment) which allows to produce that additional output.

The Labor Market

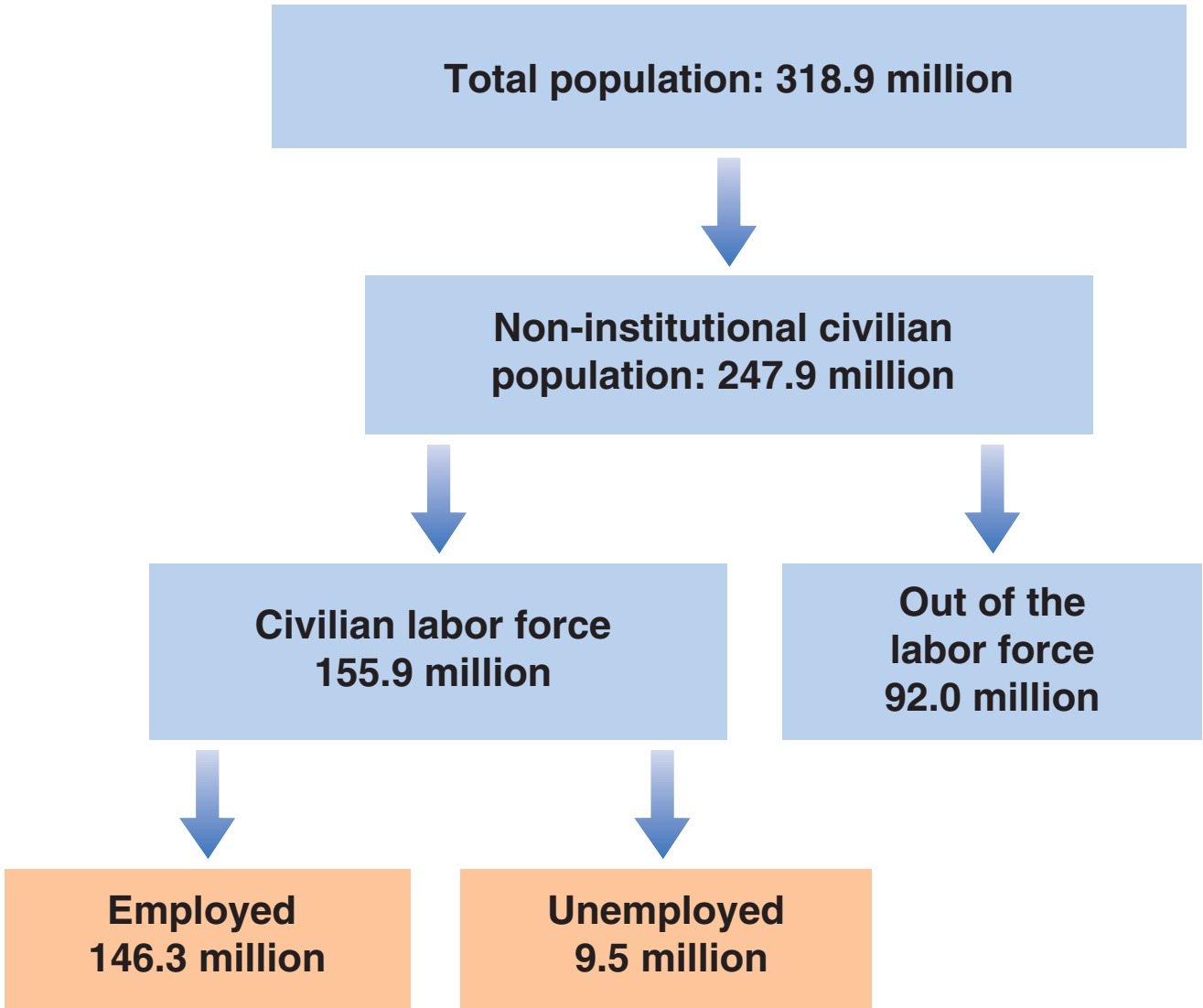
- In the IS-LM model, we never mentioned the role played by prices. Prices were assumed to be fixed, as in Hicks (1937). We in effect assumed that firms were able and willing to supply any amount of output at a given price level.
- However, when firms want to accommodate a given increase in demand:
  - They increase production.
  - Higher production leads to higher employment, so lower unemployment.
  - Lower unemployment leads to higher wages. (why?)
  - Higher wages increase production costs, leading to higher prices.
  - Higher prices lead workers to ask for higher wages.
  - etc.
- In order to understand this sequence of events, we know need to spend some time on the workings of the labor market.

Outline

A Tour of the Labor Market

- **Total US population** in 2014 was 318.9 million.
- **Non-institutional civilian population** excludes children younger than working age (under 16), in the armed forces, or behind bars. This was 247.9 million in 2014. This includes:
  - The **civilian labor force**: the sum of those either working or looking for a job. 155.9 million.
  - People **out of the labor force**: they are neither working in the market place nor looking for work.
- The **participation rate** is the ratio of the labor force to the non-institutional population, or $155.9/247.9 \approx 62\%$ in this example. This has steadily increased over time:
  - 1950: 1 woman out of 3 was in the labor force.
  - 2014: closer to 2 women out of 3 are in the labor force.
- The **unemployment rate** is the ratio of the unemployed to the labor force, in this example $9.5/155.9 \approx 6.1\%$.

A Tour of the Labor Market



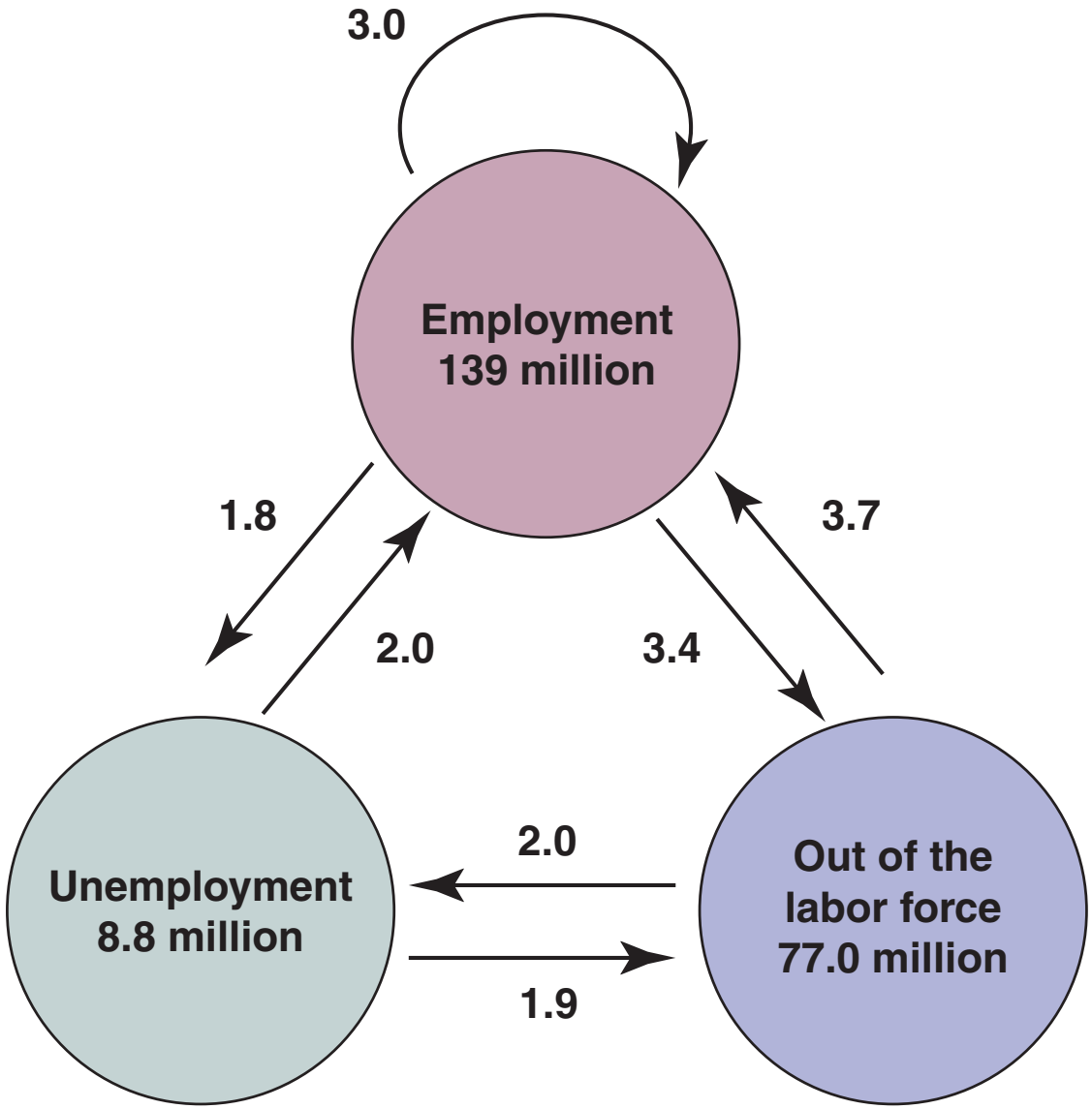
Two types of labor markets

- Take an airport full of passengers. It may be crowded because:
  1. many planes are coming and going, and many passengers are quickly moving in and out of the airport.
  2. Or it may be because bad weather is delaying flights and passengers are stranded, waiting for the weather to improve.
- The number of passengers in the airport will be high in both cases, but their plights are quite different.
- In the same way, a given unemployment rate may reflect either:
  1. An active labor market: Many **separations** and **hires**, that is, many workers entering and exiting unemployment.
  2. A sclerotic labor market: Few separations and hires, and a stagnant unemployment pool.
- One needs microeconomic data to know which situations we are in.

The Current Population Survey (CPS)

- Unemployment is actually much harder to measure than one thinks. And aggregate unemployment masks important reallocation which takes place all the time.
- In the US, the main data source is the **Current Population Survey (CPS)**, which is the main source of the Labor Department's statistics on labor force, employment, participations, and earnings in the US.
- It is based on about 60,000 households interviewed every month.
- Economists use these data to get snapshots of the economy at various points in time, and how the same people do in two consecutive months.
- If you are interested to see what this looks like: `https://www.bls.gov/cps/home.htm`.

Average Monthly Flows (1996-2014). Source: Link



In and out of employment

- The flows of workers in and out of employment are large.
- Total separations each month in the US are 8.2 million out of 139.0 million. The decomposition is as follows:
  - 3 million change jobs.
  - 3.4 million move from employment to out of the labor force.
  - 1.8 million move from employment to unemployment.
- 75% of all separations are **quits**, 25% are **layoffs**.
- Slowly changing aggregate employment numbers hide a reality of **continual job destruction and job creation across firms**.
- At any given time, some firms are suffering decreases in demand and decreasing their emplyment; other firms are enjoying decreases in demand and increasing employment.

In and out of unemployment

- The flows of workers in and out of unemployment are large relative to the number of unemployed.
- The average monthly flow out of unemployment each month is 3.9 million:
  - 2 million people get a job.
  - 1.9 million drop out of the labor force.
- Proportion of unemployed leaving unemployment equals 3.9/8.8 or about 44% each month.
- Average **duration of unemployment**: average length of time people spend unemployed is between 2 and 3 months.
- However the average duration of unemployment becomes larger when unemployment is high. (see later)

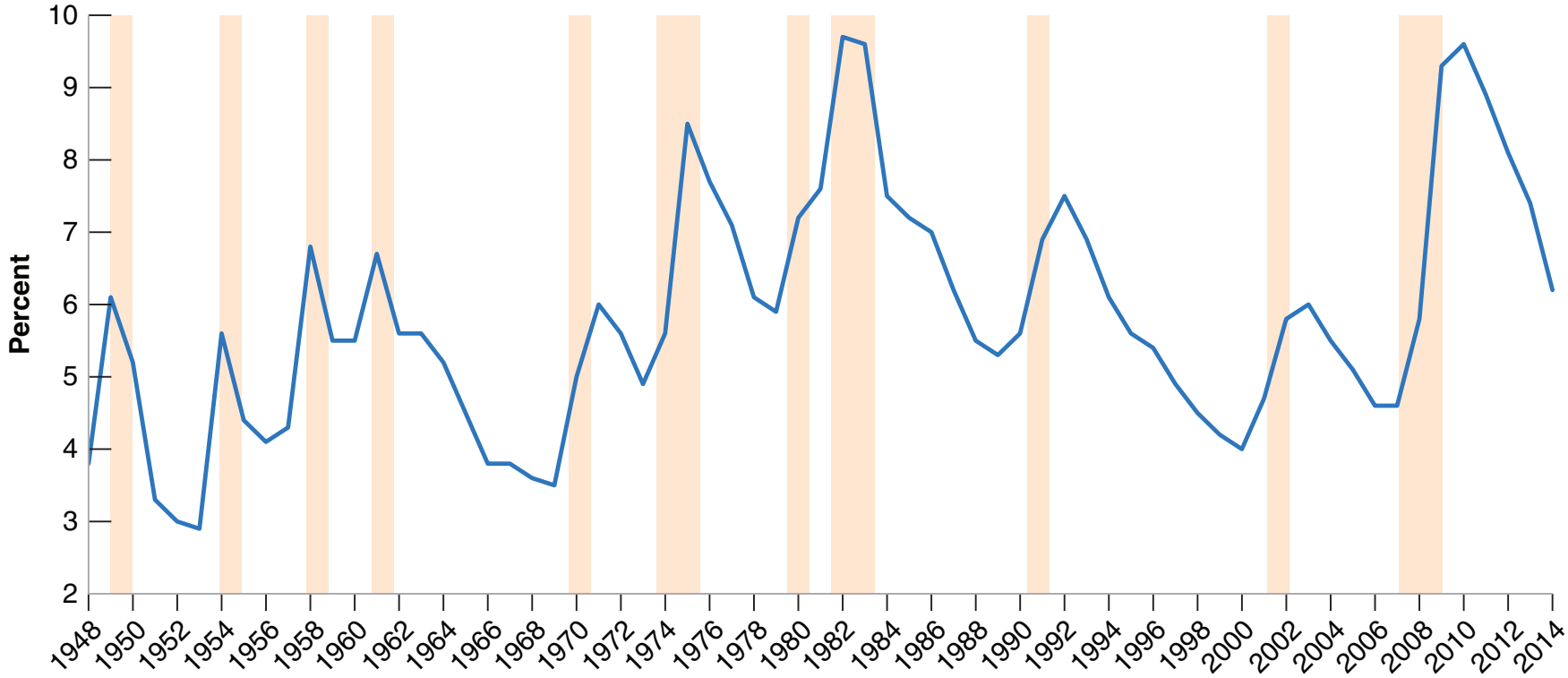
In and out of the labor force

- The flows in and out of the labor force are also surprisingly large:
  - each month, 5.3 million workers drop out of the labor force.
  - 5.7 million join the labor force.
- These are not mainly people completing school on one side, and workers entering retirement on the other side:
  - each month, 450,000 people enter the labor force.
  - 350,000 retire.
- Actual flows in and out of the labor force are thus about **14 times larger than this**.
- Many people classified as "out of the labor force" are in fact willing to work and move back and forth between participation and non-participation.

A cautionary note on unemployment numbers

- Many who are classified as "out of the labor force" are in fact **discouraged workers** – not actively looking for a job but they would take it if they were able to find one. They should really be counted as unemployed.
- So, rather than the unemployment rate, economists sometimes focus on the **employment rate** – the ratio of employment to the population.
- In the following, we shall focus on the **unemployment rate** as an indicator of the state of the labor market. However, you should keep in mind that the unemployment rate has its limitations.

Movements in Unemployment

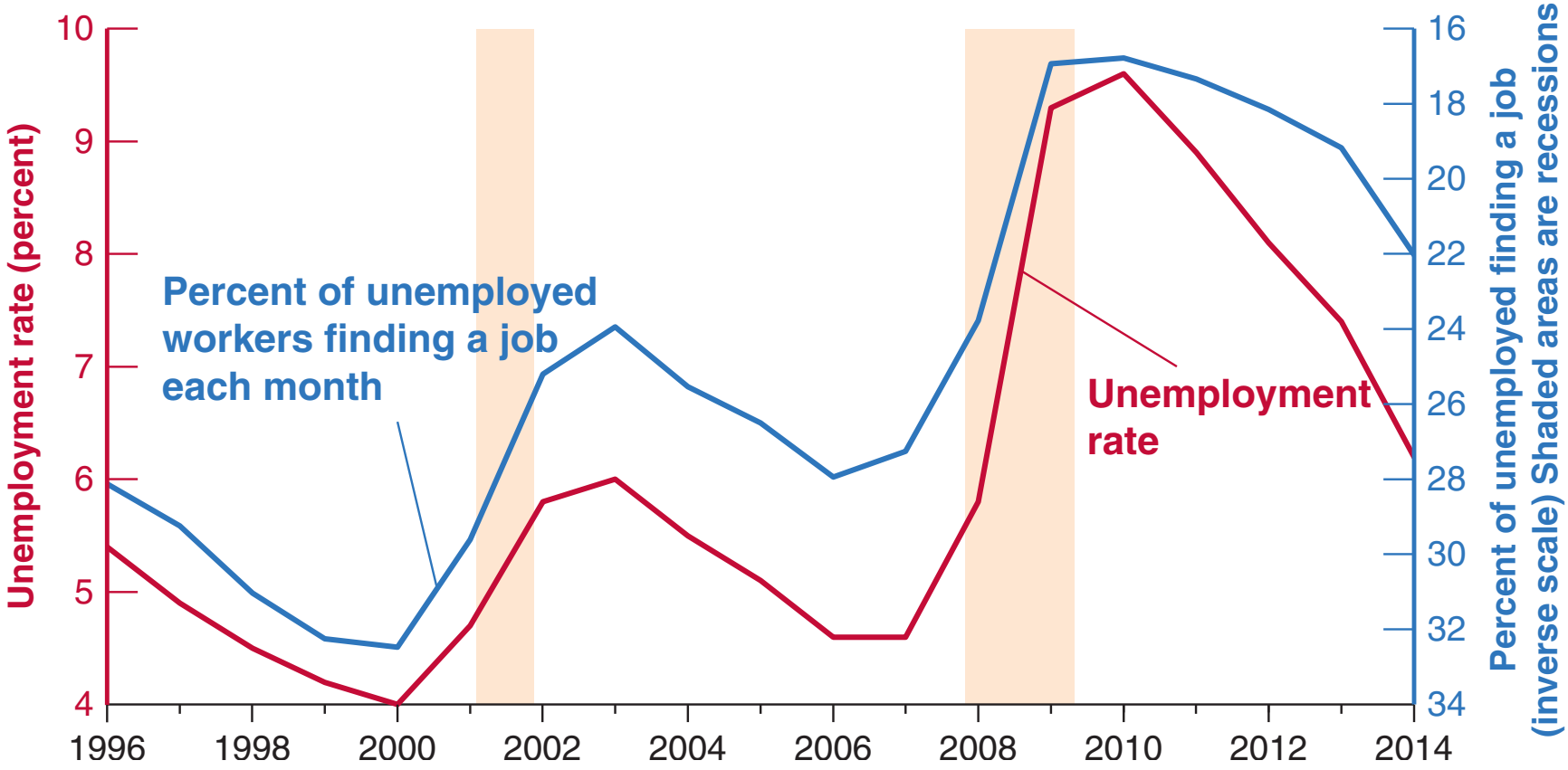


- Since 1948, the average yearly U.S. unemployment rate has fluctuated between 3 and 10%.

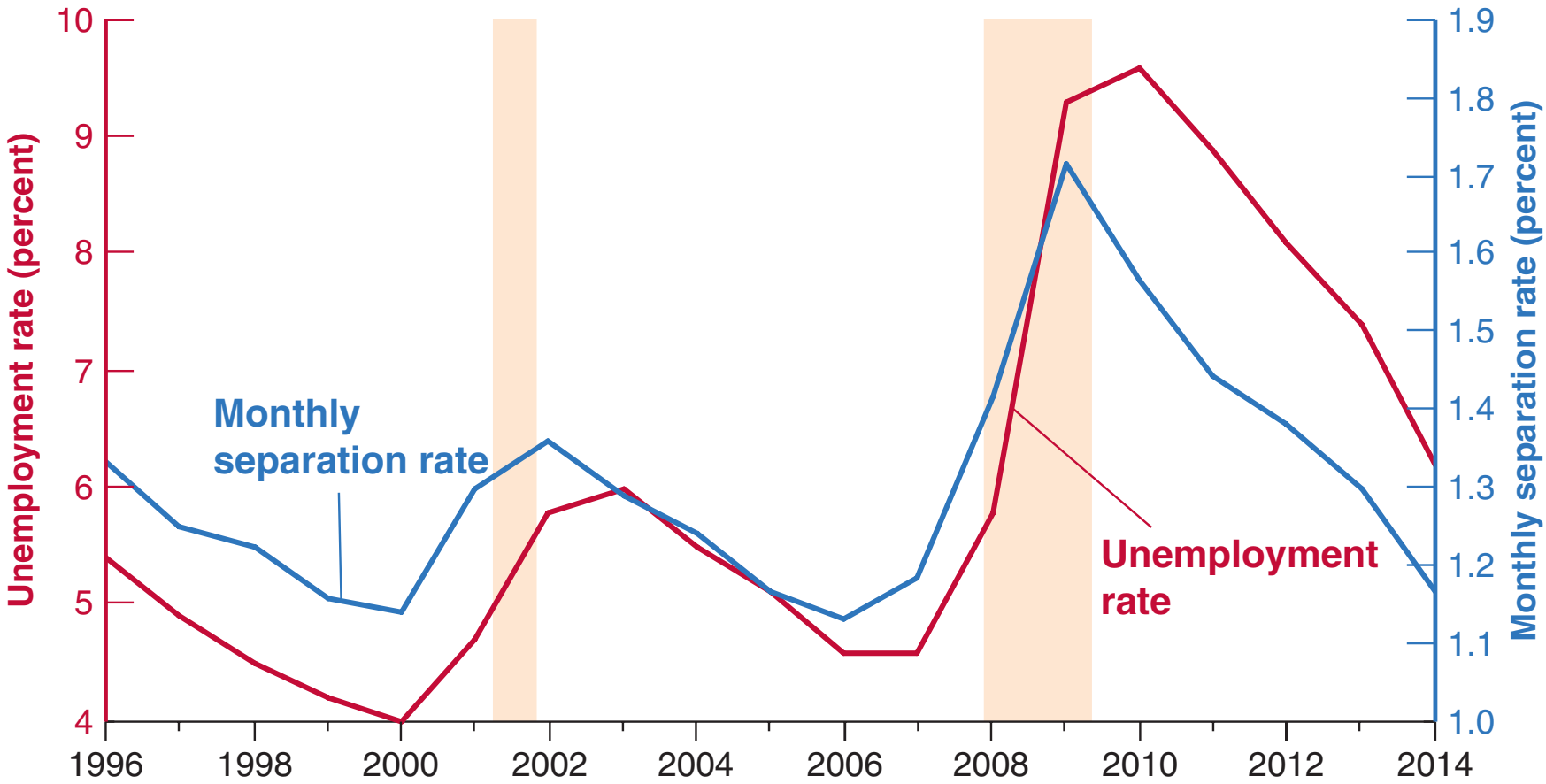
Decrease in demand

- How do firms decrease their employment in response to a decrease in demand? (say, because of lower government spending, or higher taxes which reduce disposable income) They are two options:
  - They can **hire fewer workers** $\Rightarrow$ it is harder for unemployed to find jobs.
  - They can **lay off the workers they currently employ** $\Rightarrow$ employed workers are at a higher risk of losing their jobs.
- Typically, firms prefer to slow or stop the firing of new workers first, relying on quits and retirements to achieve a decrease in employment.
- However, this is impossible if the decrease in demand is too large, so firms may then have to lay off workers.
- In general, firms do both.

Job Finding Rate



Separation rate



Movements in Unemployment

- From the two previous graphs, one can see that both phenomena are important. When unemployment is higher:
  - the proportion of unemployed finding jobs within one month is lower.
  - a higher proportion of workers lose their jobs.
- When unemployment is high, workers are in general worse off in two ways:
  - Employed workers face a higher probability of losing their job.
  - Unemployed workers face a lower probability of finding a job; or they can expect to remain unemployed for a longer time.
- Having looked at unemployment, let's now turn to wage determination, and to the relation between wages and unemployment.

Collective Bargaining

- Sometimes wages are set by **collective bargaining** – a bargaining between unions and firms.
- Slightly more than 10% of U.S. workers' wages are set by collective bargaining. Collective bargaining is however still more important in the manufacturing sector. (which is thus able to offer higher wages?)
- The higher the skills needed to do the job, the more likely there is to be bargaining between employers and individual employees. Wages offered for entry-level jobs at McDonald's are on a take-it-or-leave-it basis.
- 10% is a relatively low share, compared to other countries. Collective bargaining plays an important role in Japan and most European countries: negociations may take place at the firm level, at the industry level, or at the national level.

Determinants of wages

- Institutions matter. However, two things are generally valid across countries:
  1. Workers are typically paid a wage exceeding their **reservation wage** – the wage that would make them indifferent between working or being unemployed.
  2. Wages typically depends on **labor-market conditions**: The lower the unemployment rate, the higher the wages.

- Workers' **bargaining power** depends on:
  - How costly for the firm to find other workers
  - How hard for workers to find another job if they were to leave the firm.

Efficiency wages

- **Efficiency wage theories** link the productivity of the efficiency of workers to the wage they are paid.
- The idea is that firms may want to pay a wage above the reservation wage in order to decrease workers' turnover and increase productivity.
- Firms that see employee morale and commitment as essential to the quality of workers' work will pay more than those whose activities are routine.
- When unemployment is low, firms that want to avoid an increase in quits will increase wages to induce workers to stay with the firms.

Henry Ford and Efficiency Wages (Source: Raff and Summers (1987))

Table 1 Annual Turnover and Layoff Rates (%) at Ford, 1913–1915

	1913	1914	1915
Turnover rate (%)	370	54	16
Layoff rate (%)	62	7	0.1

- In 1914, Henry Ford, the builder of Model-T, announced that his company would pay all qualified employees a minimum of $5.00 a day for an eight-hour day, compared to previously an average $2.30 a day. (9 hours of work at the time)
- The turnover rate plunged from 370% in 1913 to 16% in 1915.
- The layoff rate collapsed from 62% to nearly 0%.

Wage Determination

- The aggregate nominal wage W depends on:
  - the expected price level P^e,
  - the unemployment rate u,
  - a catch-all variable z, which stands for all other variables (such as unemployment insurance, the minimum wage, employmebr protection).
- The function is:

$$W = P^e F(u, z), \quad \frac{\partial F}{\partial u} < 0, \quad \frac{\partial F}{\partial z} > 0.$$

- Both workers and firms care about real wages (W/P), not nominal wages.
- The nominal wage depends on the expected price level (rather than the actual price level) because when nominal wages are set, the relevant price levels are not yet known.

Wage Determination

- An increase in the unemployment rate decreases wages.
- Higher unemployment either weakens worker' bargaining power, or allows firms to pay lower wages and still keep workers willing to work.
- $z$stands for all the factors that affect wages given the expected price level and the unemployment rate, for example:
  - **unemployment insurance** as the payment of unemployment benefits to workers who lose their jobs.
  - **employment protection** makes it more expensive for firms to lay off workers.

Price Determination

- The prices set by firms depends on their costs, which in turn depends on the nature of the **production function**:

$$Y = AN$$

  where Y is output, N is employment and A is **labor productivity** (output per worker).

- The production function is the relation between the inputs used in production and the quantity of output produced, and on the prices of these inputs.

- This production function is a crude simplification: it ignores capital and raw materials, for example.

Price Determination

- Assume that A is constant and $A = 1$, then:

$$Y = N$$

  which implies that the cost of producing one more unit of output is the cost of employing one more worker at W.

- The marginal cost of production is equal to W.
- Now assume firms set their price according to a **markup** m over the cost so that:

$$P = (1 + m)W.$$

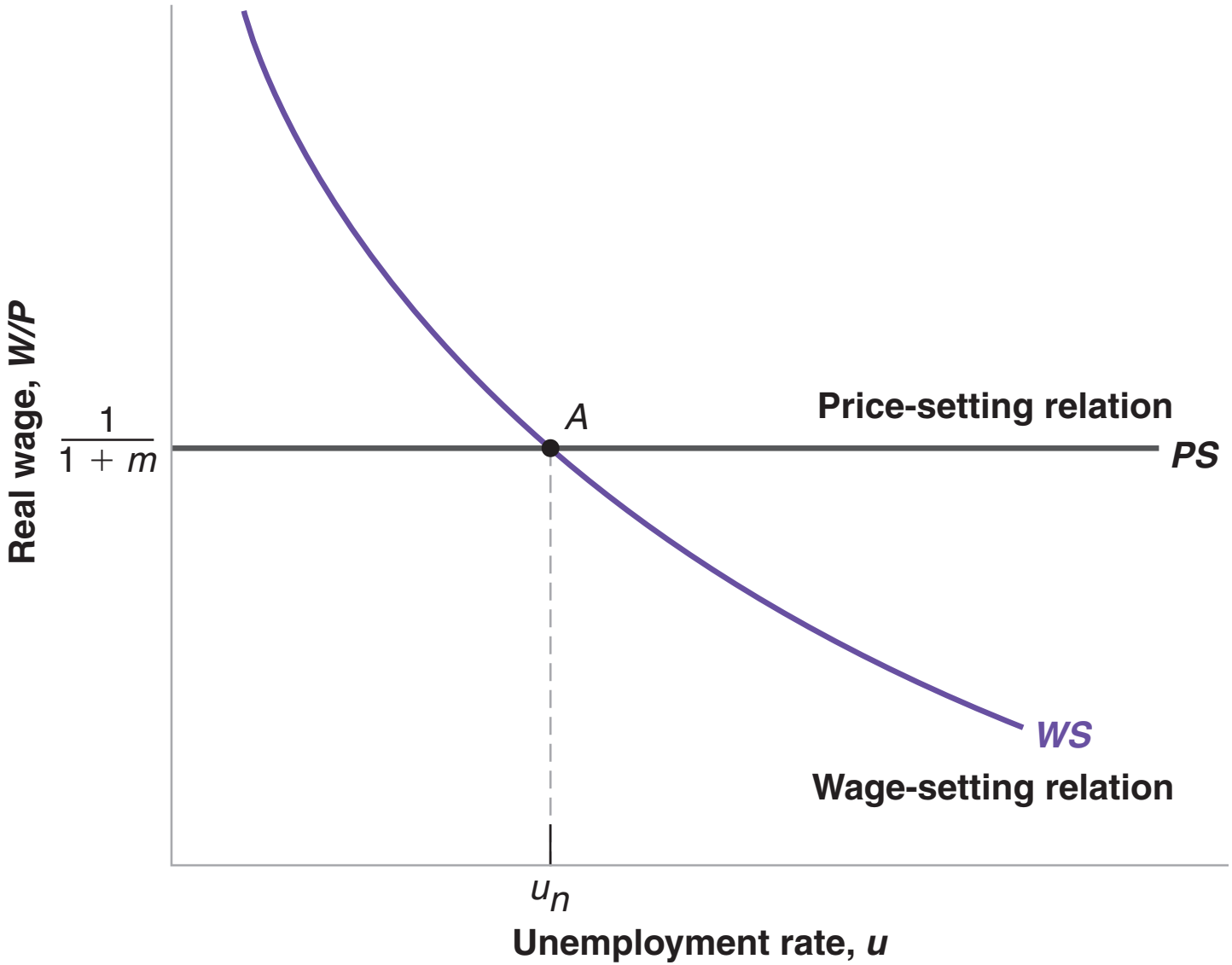
The Natural Rate of Unemployment

- Assume that W depends on the actual price level (P) rather than the expected price level (P^e) then:

$$\frac{W}{P} = F(u, z), \quad \frac{\partial F}{\partial u} < 0, \quad \frac{\partial F}{\partial z} > 0.$$

- The higher the unemployment rate, the lower the real wage chosen by wage setters.
- The wage-setting relation is the relation between the real wage and the rate of unemployment.

Wages, Prices, and the Natural Rate of Unemployment



The Natural Rate of Unemployment

- The natural rate of unemployment is the unemployment rate such that the real wage chosen in wage setting is equal to the real wage implied by price setting.
- Now divide both sides of the price-determination equation by the nominal wage:

$$\frac{P}{W} = 1 + m$$

- Inverting both sides gives the implied real wage, or the price-setting relation:

$$\frac{W}{P} = \frac{1}{1 + m}$$

- Price-setting decisions determine the real wage paid by firms.

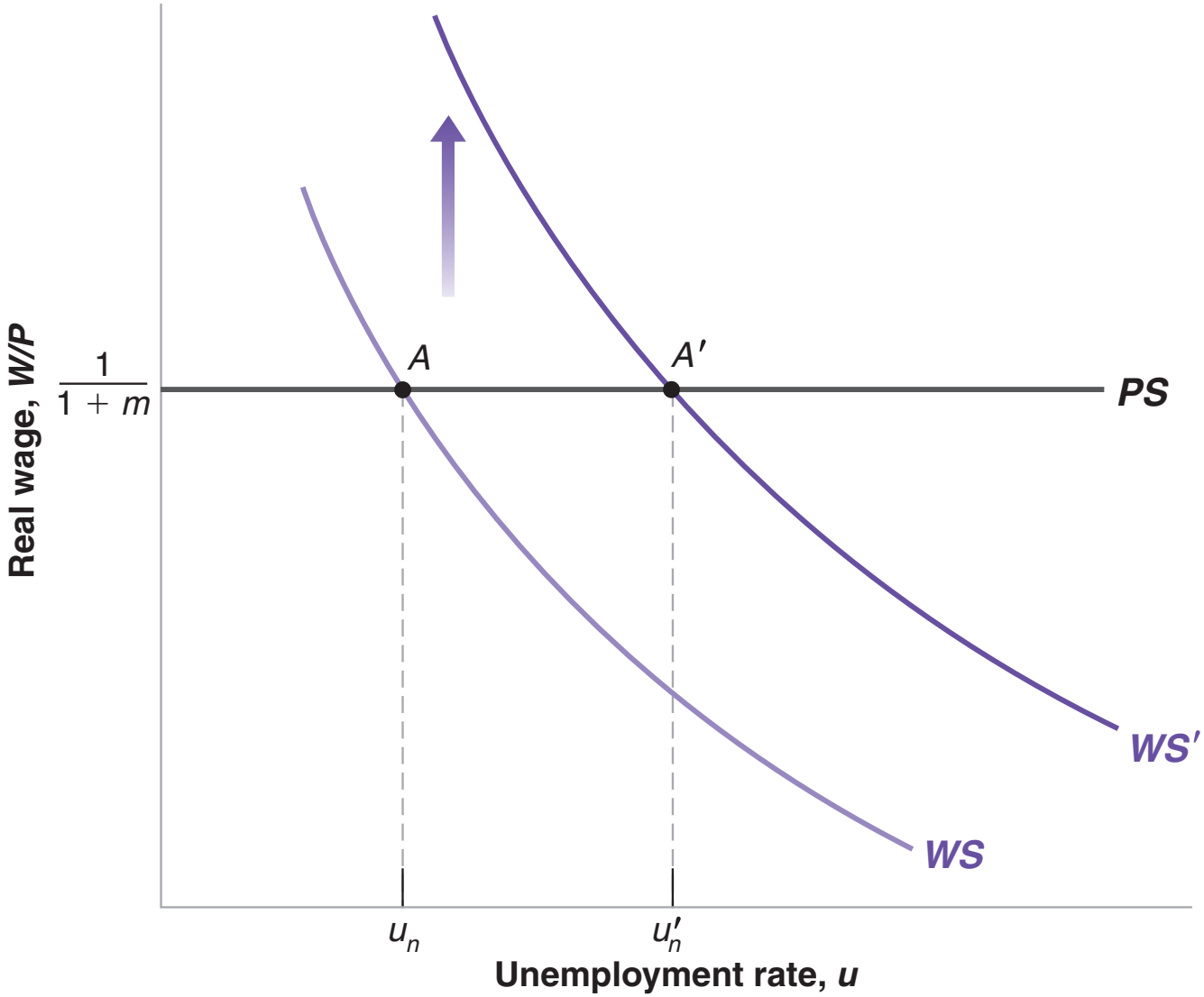
The Natural Rate of Unemployment

- The equilibrium unemployment rate un can be derived by eliminating W/P between equations:

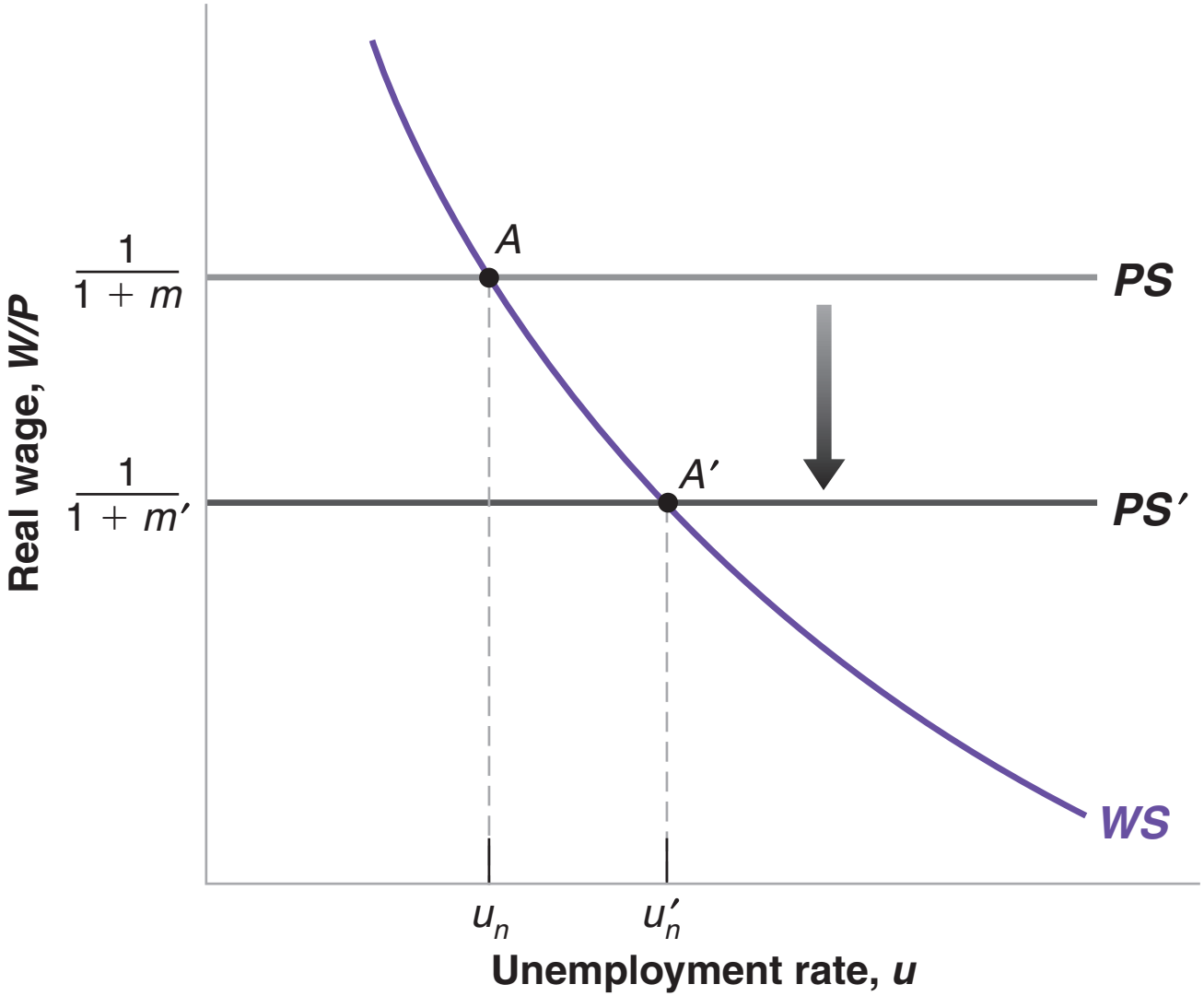
$$F(u_n, z) = \frac{1}{1+m}$$

- u_n depends on z and m.
- u_n is also called the **natural rate of unemployment** or the **structural rate of unemployment**.

Unemployment Benefits and the Natural Rate of Unemployment



Markups and the Natural Rate of Unemployment



Comparative statics

- An increase in unemployment benefits leads to an increase in the natural rate of unemployment.
- An increase in the markup leads to an increase in the natural rate of unemployment.

Where We Go from Here

- We have assumed that the **price level is equal to the expected price level**.
- *In the short run*, the price level may well turn out to be different from what is expected when nominal wages are set, so that unemployment is not necessarily equal to the natural rate or output equal to its natural level.
- Because expectations are unlikely to be systematically wrong, in the *medium run*, output tends to return to its natural level.
- The next chapter will relax the assumption that the price level is equal to the expected price level.

Suggested Readings / Exercises

☞ Chapter 7, *Macroeconomics*, 7th Edition, Olivier Blanchard.

✎ Blanchard Olivier, and Wolfers Justin. "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence." The Economic Journal 110, no. 462 (December 25, 2001): 1–33. Link

What We Know About the 92 Million Americans Who Aren't in the Labor Force, *Wall Street Journal*, Oct 21, 2015. Link

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Raff, Daniel M. G. and Lawrence H. Summers, "Did Henry Ford Pay Efficiency Wages?," *Journal of Labor Economics*, 1987, *5* (4), S57–S86.