

**Unemployment, Job Creation and Job Destruction**  
 ECON 3133  
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**Answers**

1. *In a particular month, the labor force is 130 million, there are 9.1 million unemployed workers, the job-separation rate is 3 percent per month, and the job-finding rate is 40 percent per month.*

- a. *How many people will be unemployed next month?*

Job-separation rate (s) is 0.03

Job-finding rate (f) is 0.40

Unemployed is 9.1 million

Labor force is 130 million

Jobs found =  $0.4 \times 9.1$  million = 3.64 million

Jobs lost =  $0.03 \times 130$  million = 3.9 million

Newly unemployed =  $9.1 + 3.9 - 3.64 = 9.36$  million

- b. *At what unemployment rate would the number of unemployed remain the same from one month to the next?*

Find the unemployment rate ( $u^*$ )

For this condition to hold,  $s - u^* \times f = 0$ ;

$$0.03 - u^* \times 0.4 = 0$$

$$u^* = 0.03 / 0.4 = 0.075.$$

$$u^* = 7.5\%.$$

2. *Suppose that Okun's Law relating unemployment and GDP is given by*

$$(Y - Y^*) / Y^* = -2 \times (U - U^*),$$

*where  $U$  is the unemployment rate,  $U^*$  is the natural rate of unemployment,  $Y$  is GDP, and  $Y^*$  is potential GDP. Unemployment is measured as a fraction. Suppose that the natural rate of unemployment,  $U^*$ , is 6 percent. First, calculate the GDP gap,  $(Y - Y^*) / Y^*$ , for each of the years in 2015-2020 using the following unemployment rate,  $U$ , data: 5.6, 6.8, 7.5, 6.9, 6.1 and 5.6 percent, respectively. Second, if GDP,  $Y$ , for these same years is as follows: \$5,670, \$5,904, \$6,091.6, \$6,481.2, \$6,936.1, and \$7,207.2 billion, calculate potential GDP,  $Y^*$ , for each of these years. What is the average growth rate of potential GDP?*

<u>Year</u>	<u>GDP Gap</u>	<u>Potential GDP</u>
2015	0.8%	5,625
2016	-1.6	6,000
2017	-3.0	6,280
2018	-1.8	6,600
2019	-0.2	6,950
2020	0.8	7,150

Example for calculating potential GDP for 2015.

$$(Y - Y^*)/Y^* = -2 \times (U - U^*)$$

$$(Y - Y^*)/Y^* = -2 \times (0.056 - 0.06)$$

$$(5,670 - Y^*)/Y^* = -2 \times (-0.004)$$

$$5,670 - Y^* = 0.008 \times Y^*$$

$$5,670 = 1.008 \times Y^*$$

$$Y^* = 5,670/1.008$$

$$Y^* = 5,625$$

The average growth rate of potential GDP is  $[(7,150/5,625)]^{1/5} - 1 \approx 4.91\%$ .

3. *Discuss briefly how each of the following changes would affect the natural rate of unemployment.*

a. *The economy enters a period of little structural change and all industries are growing at about the same rate.*

The natural rate of unemployment falls as the rate of job destruction decreases due to less structural change and the flow into unemployment decreases.

b. *Schools operate for the full year, so there are no students looking for summer work.*

The natural rate of unemployment falls as fewer students enter the labor force during the summer and the flow into unemployment decreases.

c. *The internet lists all the jobs available in the whole country, so it is easier for job seekers to locate potential job.*

The natural rate of unemployment falls as search time decreases and the job finding rate increases.

d. *People who quit their jobs are drafted into low-wage community service jobs.*

The natural rate of unemployment falls as the job-separation rate decreases as a result of the government's conscription activities.

e. *In addition to unemployment insurance, the unemployed receive a bonus for finding new jobs; the bonus is greater if the job is found in the first few weeks of search and declines with the duration of search.*

The natural rate of unemployment falls as the job-finding rate increases.