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<u>Contacts</u>

<u>andreybbrv@gmail.com</u> <u>andreybbrv@yandex.ru</u> Skype: andreybbrv

Chapter 3 UNEMPLOYMENT, INFLATION, AND NATIONAL INCOME

IN THIS CHAPTER:

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- Changes in Aggregate Output
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Gross Domestic Output

Gross domestic product (GDP) measures total output in the domestic economy. Nominal GDP, real GDP, and potential GDP are three different measures of aggregate output. *Nominal GDP* is the market value of all final goods and services produced in the domestic economy in a one-year pe-



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riod *at current prices*. By this definition, (1) only output exchanged in a market is included (do-it-yourself services such as cleaning your own house are not included); (2) output is valued in its final form (output is in its final form when no further alteration is made to the good which would change its market value); and (3) output is measured using current-year prices.

Because nominal GDP values are inflated by prices that increase over time, aggregate output is also measured holding the prices of all goods and services constant over time. This valuation of GDP *at constant prices* is called *real GDP*.

The third measure of aggregate output is *potential GDP*, the maximum production that can take place in the domestic economy without putting upward pressure on the general level of prices. Conceptually, potential GDP represents a point on a given production-possibility frontier.

The U.S. economy's potential output increases at a fairly steady rate each year while actual real GDP fluctuates around potential GDP. These fluctuations of real GDP are identified as business cycles. The GDP gap is the difference between potential GDP and real GDP; it is positive when potential GDP exceeds real GDP and negative when real GDP exceeds potential GDP. A positive gap indicates that there are unemployed resources and the economy is operating inefficiently within its productionpossibility frontier. It therefore follows that an economy's rate of unemployment rises as its GDP gap increases, and falls when the gap declines. An economy is operating above its normal productive capacity when there is a negative gap.

Aggregate Demand, Aggregate Supply, and Equilibrium Output

The economy's equilibrium level of output occurs at the point of intersection of aggregate supply and aggregate demand. In microeconomics, equilibrium price exists where quantity demanded equals quantity supplied. The supply and demand schedules in macroeconomics differ in that they relate the aggregate quantity supplied and the aggregate quantity demanded to the price level.

Important Things to Remember

Supply and demand curves may appear similar to aggregate supply and aggregate demand curves in graphs, but they are substantially different.

An aggregate demand curve represents the collective spending of consumers, businesses, and government, as well as net foreign purchases of goods and services, at different price levels. An aggregate demand curve, like the demand curve in microeconomics, is negatively related to price, holding constant other factors that influence aggregate spending decisions.

Price, presented as *price level* in macroeconomics, affects aggregate spending because of an interest rate effect, a wealth effect, and an inter-

national purchasing power effect. The interest rate effect traces the effect that interest rate levels have upon aggregate spending. The nominal rate of interest is directly related to the price level, *ceteris paribus*. Increases in the price level push up interest rates, which usually will depress interest-sensitive spending. The wealth effect relates changes in wealth to changes in aggregate spending. The market value of many financial assets falls as price lev-



el and interest rates increase. A higher price level will decrease the household sector's net wealth, lower consumer spending, and cause lower aggregate spending. A country's imports and exports are also affected by a changing price level, i.e., by an international purchasing power effect. When the price level increases in the home country and is unchanged in foreign countries, foreign-made commodities become relatively less expensive, the home country's exports fall, its imports increase, and there is less aggregate spending on the home country's output.

An aggregate demand curve shifts when there is a change in a variable (other than price level) that affects aggregate spending decisions. Outward shifts (to the right) occur when consumers become more willing to spend or there are increases in investment spending, government expenditures, and net exports. Determinants of these factors will be taken up in the next chapter.

An aggregate supply schedule depicts the relationship of aggregate output and price level, holding constant other variables that could affect supply. There is some disagreement among economists on the shape of the aggregate supply curve. Three distinct curves can characterize this disagreement. The Keynesian aggregate supply curve is horizontal until it reaches the economy's full-employment level of output, at which point it becomes positively sloped. Others view the aggregate supply curve as always being positively sloped. The classical aggregate supply curve is vertical at the full-employment level, indicating there is no relationship between aggregate output and the price level.

Changes in economy-wide resource availability, resource cost, and technology shift the aggregate supply curve. The aggregate supply curve shifts rightward when (1) improved technology increases the potential output of a given quantity of resources; (2) the quantity of economic resources increases; or (3) the cost of resources declines.

Changes in Aggregate Output

The effect of changes in aggregate demand and/or aggregate supply upon equilibrium output and the price level depends upon the shape of the aggregate supply curve. With a Keynesian aggregate supply curve, an increase in aggregate demand affects only output as long as the economy is below full-employment output, whereas an increase in aggregate supply has no effect upon either the price level or output. Increases in aggregate demand and/or aggregate supply affect both the price level and real output when aggregate supply is positively sloped, as can be seen in Figure 3-1. For a classical aggregate supply curve, increases in aggregate demand result in only a higher price level, whereas increases in aggregate supply result in a higher level of output and a lower price level.

Example 3.1

Equilibrium real output is y_1 and the price level is p_1 for aggregate supply and aggregate demand curves AS' and AD' in Figure 3-1. Increased government spending shifts the aggregate demand curve outward to AD", and the point of equilibrium changes from E_1 to E_2 . Equilibrium output increases from y_1 to y_2 as the price level rises from p_1 to p_2 . When aggregate supply increases to AS" and aggregate demand remains at AD',



y₁ Figure 3-1

 y_2

Real output (y)

the equilibrium point changes from point E_1 to E_3 . Equilibrium output increases from y_1 to y_2 and the price level falls from p_1 to p_0 .

There are two approaches to measuring aggregate output: an expenditure approach, which measures the value of final sales, and a cost approach, which measures the value added in producing final output. The expenditure or final sales approach consists of summing the consumption spending of individuals (*C*), investment spending by businesses (*I*), government expenditures (*G*), and net exports (X_n). [GDP = $C + I + G + X_n$]. The cost approach consists of summing the value added to final output at each stage of production. Gross domestic product consists of all output produced within the country's boundaries.

Business Cycles

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A business cycle is a cumulative fluctuation in aggregate output that lasts for some time. Although recurrent, the duration and intensity of each fluctuation varies. Points at which aggregate output changes direction are marked by peaks and troughs. A *peak* is a point which marks the end of economic expansion (rising aggregate output) and the beginning of a recession (decline in economic activity). A *trough* marks the end of a re-

cession and the beginning of economic recovery. The time span between troughs and peaks is classified as an expansionary period (trough to peak) or a contractionary period (peak to trough).



There are a number of explanations for the cyclical behavior of aggregate output. The central focus of many of these theories is investment spending and consumer purchases of durable goods. These expenditures consist of large-ticketed items whose purchase, in most cases, can be postponed. For example, an individual can repair an existing car rather than purchase a new one. Thus, purchases of such items occur when credit (borrowing) is more readily available or less costly, individuals are more optimistic about the future, and/or cash flows are more certain. However no one theory is able to explain why some business cycles are more severe than others. This suggests that there are numerous causes and that the importance of each cause varies.

Unemployment and the Labor Force

The U.S. labor force does not include the entire population but only those who are at least 16 years old, employed, or unemployed and looking for work. A working-age person who is not looking for work is considered voluntarily unemployed and is not included in the labor force. Thus, the size of the labor force and the number of people unemployed can be understated when a significant number of workers, after some searching, become discouraged and stop looking for work.

The unemployment rate is the percent of the total labor force that is unemployed. Unemployment arises for frictional, structural, and cyclical reasons. Frictional unemployment is temporary and occurs when a person (1) quits a current job before securing a new one, (2) is not immediately hired when entering the labor force, or (3) is let go by a dissatisfied employer. Workers who lose their jobs due to a change in the demand for a particular commodity or because of technological advance are structurally unemployed; their unemployment normally lasts for a longer period since they usually possess specialized skills which are not demanded by other employers. Cyclical unemployment is the result of insufficient aggregate demand. Workers have the necessary skills and are available to work, but there are insufficient jobs because of inadequate aggregate spending. Cyclical unemployment occurs when real GDP falls below potential GDP.



In the economist's definition of unemployment, not everyone that is without a job is unemployed.

Full employment exists when there is no cyclical unemployment but normal amounts of frictional and structural unemployment; thus, full employment exists at an unemployment rate greater than zero. This is referred to as the natural rate of unemployment. It may change when there is a change in the normal amount of frictional and structural unemployment. The cyclical unemployment rate can be negative when real GDP exceeds potential GDP and the economy is producing beyond its normal full-employment level. This negative cyclical unemployment rate indicates that the normal job search period for the frictionally and structurally unemployed is shortened because of an abnormally large number of job openings. Cyclical unemployment imposes costs upon both society and the person unemployed. Society's opportunity cost is the amount of output which is not produced and therefore is lost forever. The personal costs that occur during an economic downturn are unevenly distributed between different types of workers.

Example 3.2

Table 3.1 presents the unemployment rate by sex, age, and race in 1992, when U.S. real GDP was considerably below potential output, and in 1987, when U.S. real GDP equaled potential GDP. Note that the unemployment rate is always higher for teenagers than for those older, and higher for blacks and others than for whites. This difference worsens when the economy is below its potential GDP.

Inflation

A price index relates prices in a specific year, month, or quarter to prices during a reference period. For example, the *consumer price index* (CPI), the most frequently quoted price index, relates the prices that urban consumers paid for a fixed basket of approximately 400 goods and services

Demographic Group	1992	1987	
All civilian workers	7.4	6.2	
By age:			
16–19	20.0	16.9	i
All males 16–19	21.5	17.8	
All females 16–19	18.5	15.9	
Males 20 and older	6.9	5.4	
Females 20 and older	6.3	5.4	
By race:			
White	6.5	5.3	
Black and other	12.7	11.6	ł
By sex:			
Female	6.9	6.2	
Male	7.8	6.2	

Table 3.1

SOURCE: Economic Report of the President, 1994

in a given month to the prices that existed during a reference period. The *producer price index* (PPI) and GDP deflator are the other two major price indexes. The PPI measures the prices for finished goods, intermediate materials, and crude materials at the wholesale level. Because wholesale prices are even-



tually translated into retail prices, changes in the PPI are usually a good predictor of changes in the CPI. The *GDP deflator* is the most comprehensive measure of the price level since it measures prices for net exports, investment, and government expenditures, as well as for consumer spending.

Inflation is the annual rate of increase in the price level. *Disinflation* is a term used to denote a slowdown in the rate of inflation; deflation exists when there is an annual rate of decrease in the price level. While there have been some monthly decreases in the price level, the U.S. economy has not experienced deflation since the 1930s.



Inflation refers to an increase in the general price level, not the price of a specific good or service.

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Economists identify two distinct causes of inflation. *Demand-pull inflation* is inflation that occurs when aggregate spending exceeds the economy's normal full-employment level of output, i.e., when aggregate demand is pushed too far to the right along a given aggregate supply curve. Demand-pull inflation is normally characterized by both a rising price and output level. It often results in an unemployment rate lower than the natural rate. *Cost-push inflation* originates from increases in the cost of producing goods and services, such as wages or the prices of raw materials. Aggregate supply is pushed to the left, which is referred to as *stagflation*. It is associated with increases in the price level, decreases in aggregate output, and an increase in the unemployment rate above the natural rate.

Inflation can slow economic growth, redistribute income and wealth, and cause economic activity to contract. Inflation impairs decision making since it creates uncertainty about future prices and/or costs and distorts economic values. For example, a business may postpone the purchase of equipment because of increasing uncertainty about the purchasing power of future money streams. Such postponed capital outlays slow capital formation and economic growth.

True or False Questions

1. Increases in nominal GDP always result in increases in real GDP.

2. Increases in a positive GDP gap are associated with increases in the unemployment rate.

3. All economists agree that an increase in aggregate demand will result in an increase in both the price level and real output.

4. A business cycle occurs every two years.

5. Unemployment only imposes a cost upon those who are unemployed.

6. Cyclical unemployment is unevenly distributed among members of the labor force.

Answers: 1. False; 2. True; 3. False; 4. False; 5. False; 6. True

Solved Problems

Solved Problem 3.1

a. Distinguish between a final good and an intermediate good.

b. Is a loaf of bread a final or an intermediate good?