

mankiw's macroeconomics modules

A PowerPoint Tutorial
to Accompany *macroeconomics*, 5th ed.
N. Gregory Mankiw

macroeconomics

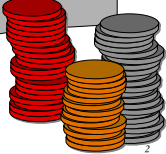
CHAPTER NINE

Introduction to Economic Fluctuations

macroeconomics

Mannig J. Simidian

Short-run fluctuations in output and employment are called the **business cycle**. In previous modules, we developed theories to explain how the economy behaves in the long run. Those theories were based on the **classical dichotomy**-- the premise that real variables, such as output and employment, are not affected by what happens to nominal variables, such as the money supply and the price level. Although, the classical model helps explain long-term trends, most economists agree that these theories can't explain short-term fluctuations in output and employment.



In this module, we will begin to explain these short-run fluctuations.

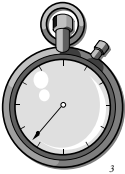
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Time Horizons in Macroeconomics

Classical macroeconomic theory applies to the long run but not to the short run-- WHY?

The short run and long run differ in terms of the treatment of prices. *In the long run, prices are flexible and can respond to changes in supply or demand. In the short run, many prices are "sticky" at some predetermined level.*

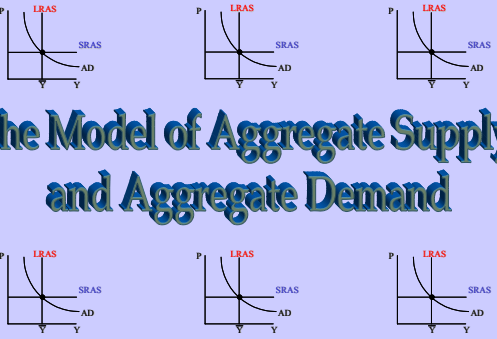
Because prices behave differently in the short run than in the long run, economic policies have different effects over different time horizons.




Let's see this in action.

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The Model of Aggregate Supply and Aggregate Demand



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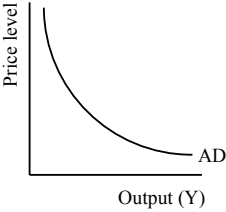
Aggregate Demand

Aggregate demand (AD) is the relationship between the quantity of output demanded and the aggregate price level. It tells us the quantity of goods and services people want to buy at any given level of prices. Recall the **Quantity Theory of Money** ($MV=PY$) where M is the money supply, V is the velocity of money, P is the price level and Y is the amount of output. It makes the not quite realistic, but very convenient assumption that velocity is constant over time. Also, recall that the quantity equation can be rewritten in terms of the supply and demand for real money balances: $M/P = (M/P)^d = kY$, where $k = 1/V$ is a parameter determining how much money people want to hold for every dollar of income. This equation states that supply of money balances M/P is equal to the demand and that demand is proportional to output.

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The Aggregate Demand Curve

The Aggregate Demand (AD) curve shows the relationship between the price level P and quantity of goods and services demanded Y . It is drawn for a given value of the money supply M . The aggregate demand curve slopes downward: the higher the price level P , the lower the level of real balances M/P , and therefore the lower the quantity of goods and services demanded Y .



As the price level decreases we'd move down *along* the AD curve. Any changes in M or V would *shift* the AD curve. Remember that the demand for real output varies *inversely* with the price level.

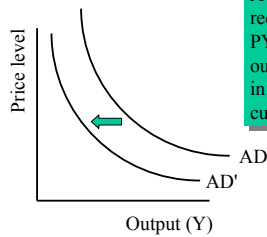
$$\uparrow Y = MV/\downarrow P$$

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Why the Aggregate Demand Curve Slopes Downward

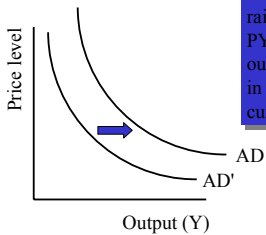
Think about the supply and demand for real money balances. If output is higher, people engage in more transactions and need higher real balances M/P . For a fixed money supply M , higher real balances imply a lower price level. Conversely, if the price level is lower, real money balances are higher; the higher level of real balances allows a greater volume of transactions, which means a greater quantity of output is demanded.

Shifts in Aggregate Demand



A decrease in the money supply M reduces the nominal value of output PY . For any given price level P , output Y is lower. Thus, a decrease in the money supply shifts the AD curve inward from AD to AD' .

Shifts in Aggregate Demand



An increase in the money supply M raises the nominal value of output PY . For any given price level P , output Y is higher. Thus, an increase in the money supply shifts the AD curve outward from AD to AD' .

Aggregate Supply



Aggregate supply (AS) is the relationship between the quantity of goods and services supplied and the price level. Because the firms that supply goods and services have flexible prices in the long run but sticky prices in the short run, the aggregate supply relationship depends on the time horizon.

There are two different aggregate supply curves: the long-run aggregate supply curve LRAS and the short-run aggregate supply curve (SRAS). We also must discuss how the economy makes the transition from the short run to the long run.

But, first, let's build the long run aggregate supply curve (LRAS).

The Long Run:

The Vertical Aggregate Supply Curve

Because the classical model describes how the economy behaves in the long run, we can derive the long-run aggregate supply curve from the classical model.

Recall the amount of output produced depends on the fixed amounts of capital and labor and on the available technology.

To show this, we write $Y = F(\bar{K}, \bar{L}) = \bar{Y}$

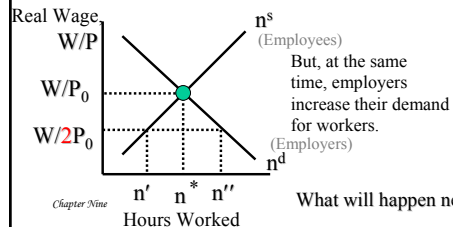
According to the classical model, output does not depend on the price level. Let's think about this considering the market clearing process in the labor market, the "L" component of the production function.

Market Clearing in the Labor Market

Let's begin at full employment, n^* , with a wage of W/P_0 .

Now let's see how workers will respond when there is a sudden increase in the price level.

At this new lower real wage, workers will cut back on hours worked.



But, at the same time, employers increase their demand for workers.

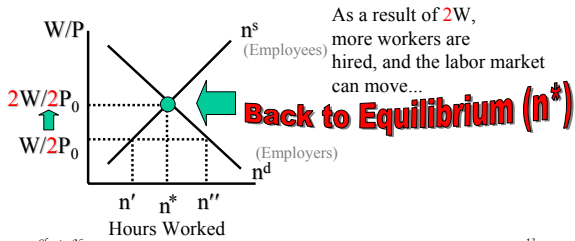
What will happen next?



So, right now the labor market is in “disequilibrium” where the quantity demanded exceeds the quantity supplied.

We’re now going to see how “flexible wages” will allow the labor market to come back to equilibrium, at full employment, n^* .

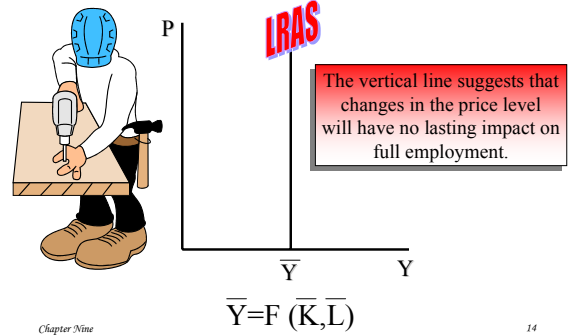
To hire more workers, the employer must raise the real wage to $2W$.



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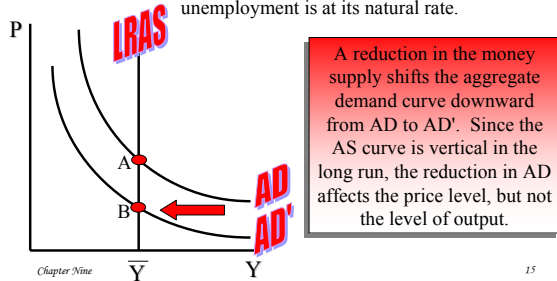
The mechanism we just went through will enable us to build our long run aggregate supply curve.



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The vertical aggregate supply curve satisfies the classical dichotomy, because it implies that the level of output is independent of the money supply. This long-run level of output, \bar{Y} is call the **full-employment** or **natural** level of output. It is the level of output at which the economy’s resources are fully employed, or more realistically, at which unemployment is at its natural rate.

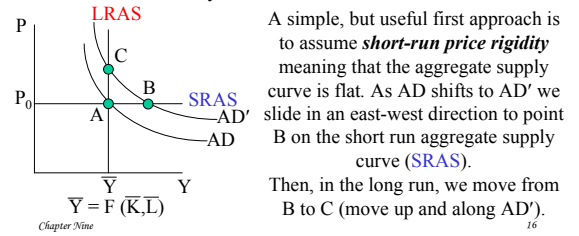


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The Short-Run: The Horizontal Aggregate Supply Curve

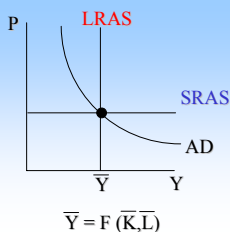
Remember that the the vertical LRAS curve assumed that changes in the price level left no lasting impact on Y (because of the market clearing process)-- that will be the model for examining the long-term. But we need a theory for the short-run, defined as the interval of time during which markets are not fully cleared.



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The Long-run Equilibrium

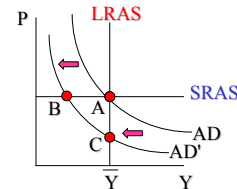


In the long run, the economy finds itself at the intersection of the long-run aggregate supply curve and aggregate demand curve. Because prices have adjusted to this level, the SRAS crosses this point as well.

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A Reduction in Aggregate Demand



The economy begins in long-run equilibrium at point A. A reduction in aggregate demand, perhaps caused by a decrease in the money supply M_1 , moves the economy from point A to point B, where output is below its natural level. As prices fall, the economy recovers from the recession, moving from point B to point C.

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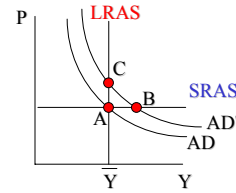
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Stabilization Policy

Exogenous changes in aggregate supply or aggregate demand are called **shocks**. A shock that affects aggregate supply is called a **supply shock**. A shock that affects aggregate demand is called a **demand shock**.

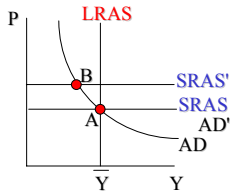
A goal of the aggregate demand/aggregate supply model is to help explain how shocks cause economic fluctuations. Economists use the term **stabilization policy** to refer to the policy actions taken to reduce the severity of short-run economic fluctuations. Stabilization policy seeks to dampen the business cycle by keeping output and employment as close to their natural rate as possible.

Shocks to Aggregate Demand



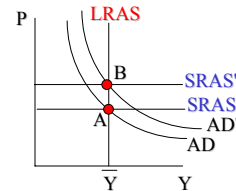
The economy begins in long-run equilibrium at point A. An increase in aggregate demand, due to an increase in the velocity of money, moves the economy from point A to point B, where output is above its natural level. As prices rise, output gradually returns to its natural rate, and the economy moves from point B to point C.

Shocks to Aggregate Supply



An adverse supply shock pushes up costs and prices. If AD is held constant, the economy moves from point A to point B, leading to stagflation-- a combination of increasing prices and declining output. Eventually, as prices fall, the economy returns to the natural rate at point A.

Accommodating an Adverse Supply Shock



In response to an adverse supply shock, the Fed can increase aggregate demand to prevent a reduction in output. The economy moves from point A to point B. The cost of this policy is a permanently higher level of prices.

Key Concepts of Ch. 9

- Aggregate demand
- Aggregate supply
- Shocks
- Demand shocks
- Supply shocks
- Stabilization policy