

Monetary Theory AD/AS

Chapter 24

Aggregate Demand

The AD curve shows the relationship between prices and the demand for output in an economy. We can derive the AD curve in the following way.

1. The Monetarist View of AD

Monetarists believe that shifts in AD are caused primarily by changes in the money supply.

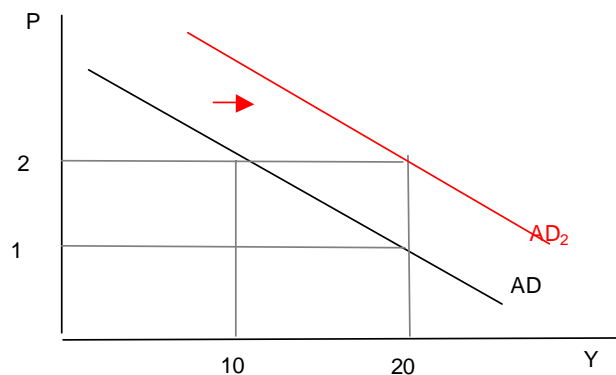
Using the equation of exchange: $MV \equiv PY$

We can relate the money supply to aggregate spending. (Recall, aggregate demand = expenditure = income.)

Suppose initially the price level is 1, the money supply is 10, velocity is 2, and income is 20.

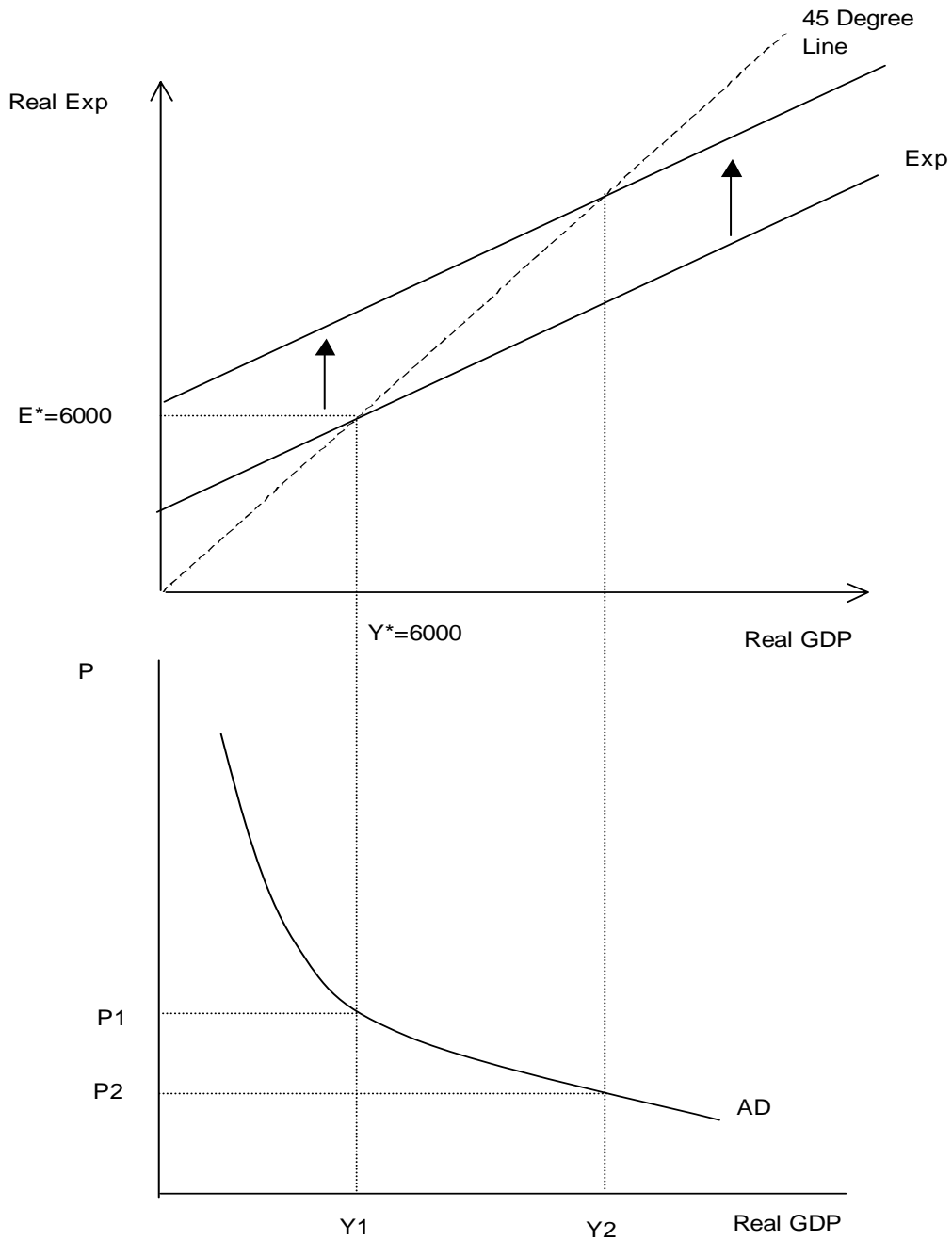
We have: $10 \times 2 = MV \equiv PY = 1 \times 20$

Now suppose the price level increases to 2. What happens to output when M and V do not change? Output, Y, falls to 10. Changes in the price level cause *movements along* the AD curve.



Now suppose M increases to 20, $P=2$, $V=2$. What happens to Y? Y will increase to 20. What happens to the AD curve? It will shift to the right to AD_2 . Changes in the money supply cause *shifts* in the AD curve.

2. The Keynesian view of AD



- Recall, the expenditure function (Y^{AD}) is derived for a fixed price level. Therefore, each exp function is drawn for a specific price level.
- Investment and NX moves *inversely* with the price level. So, the exp line moves inversely with the price level.

- If $P \uparrow \rightarrow (M/P) \downarrow \rightarrow M^D > M^S \rightarrow$ sell bonds $\rightarrow \downarrow P_b \rightarrow \uparrow i \rightarrow \downarrow I, \downarrow NX \rightarrow \downarrow \text{Exp} \rightarrow \downarrow Y$. Likewise, the opposite applies. As the general price level falls, output rises.

Factors that shift AD are:

- Changes in the money supply: $\uparrow M \rightarrow \uparrow AD \rightarrow \uparrow Y$
- Changes in G: $\uparrow G \rightarrow \uparrow AD \rightarrow \uparrow Y$
- Changes in T: $\uparrow T \rightarrow \downarrow AD \rightarrow \downarrow Y$
- Change in NX: $\uparrow NX \rightarrow \uparrow AD \rightarrow \uparrow Y$
- Changes in C, consumer optimism: $\uparrow C \rightarrow \uparrow AD \rightarrow \uparrow Y$
- Changes in I, business confidence: $\uparrow I \rightarrow \uparrow AD \rightarrow \uparrow Y$

- **The Crowding out debate**

Monetarists and Keynesians believe that the AD curve is downward sloping. Monetarists believe that shifts in the AD curve are caused by changes in the money supply. Keynesians believe that change in G shift the AD curve.

Q: Why does this difference in opinion exist?

A: Crowding-out.

Monetarists believe that an increase in G causes crowding out of I. Why? The interest rate increases causing C, I and NX to fall.

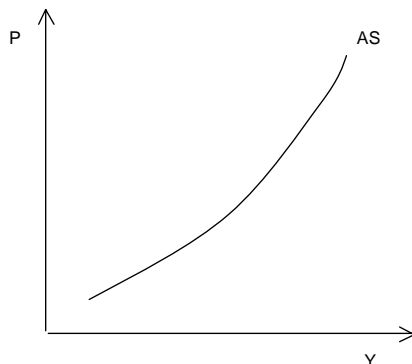
Q: Why does the interest rate increase when the government spending money?

A: The government finances its spending by issuing bonds. This competes with other private bonds for funds. An excess supply of bonds, causes bond prices to fall and interest rates to rise. The increase in interest rates means that it is more expensive for investors and consumers to borrow money. Also, the exchange rate appreciates causing NX to fall. So, AD may not increase.

Keynesians disagree. Only partial crowding-out.

Aggregate Supply

The AS curve shows the relationship between price and the quantity of real GDP supplied, holding all other determinants of quantity supplied constant.



The AS curve is upward sloping because we assume that when prices rise, wages and other costs do not keep pace, at least in the short run. This is what Keynes envisioned and this is sometimes called a Keynesian AS curve.

Factors that shift AS are:

- The money (nominal) wage rate (wage push): when the nominal wage increases, AS shifts left b/c costs of production increases, which lowers profits.
- Prices of other inputs (changes in production costs other than wages—supply shocks): when the nominal wage increases, AS shifts left b/c costs of production increases. For example, the increase in the price of electricity or oil would increase costs for producers and lower their profits (so they produce less).
- Technology and productivity: when technology and productivity increases, AS shifts right b/c firms can produce more output with the same amount of resources (increases in efficiency). An example is computers.
- Available supplies of capital and labor: when L and K increase, AS shifts right b/c more resources are available (recall PPF).

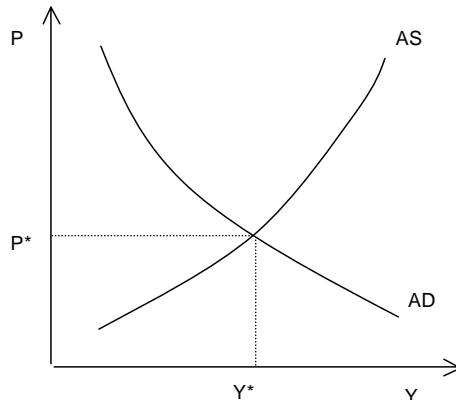
When prices adjust, and other costs also adjust by the same amount, we would get a vertical AS curve. A vertical AS curve is often called a long run AS curve. Classical economists believe that this is how the economy functions.

Which one do you think is more realistic? K or C? Why? [Unions and wage contract, price contract especially in construction, menu costs, imperfect information etc....]

AS and AD

- **Equilibrium in the SR**

As with all D/S diagrams, equilibrium occurs where $AS=AD$, where the two curves intersect:



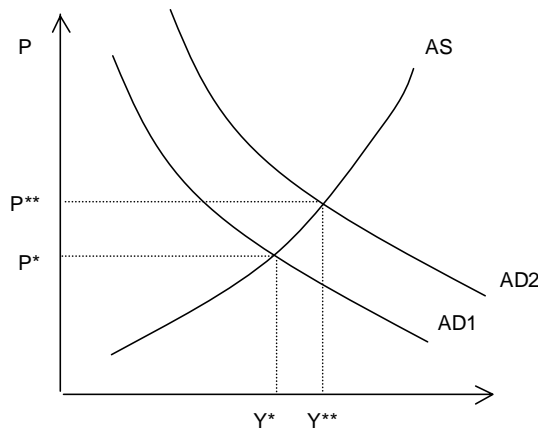
- Above the equilibrium price, we have excess supply. XSS implies that inventories are building up. So firms begin to cut prices (sales) to move inventories and production fall as profit margins fall. As prices fall, the quantity demanded increases.

- Below the equilibrium price we have excess demand

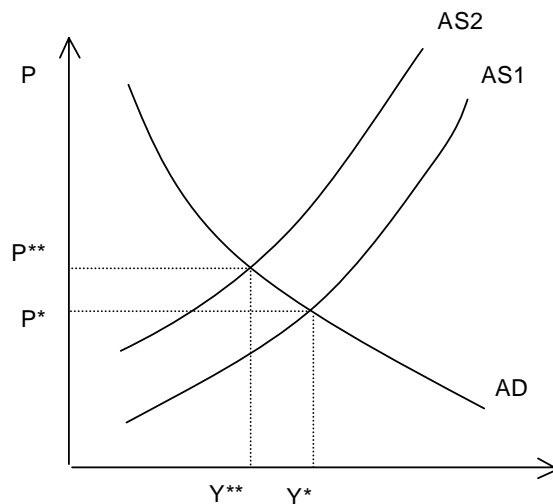
XSD implies that inventories are declining for firms. Firms begin to increase prices and profit margins. As prices are bid up, firms increase output and the quantity demanded falls.

Examples:

Suppose government spending/investment/money supply increases



Suppose the nominal wage/price of oil/emigration increases



- Equilibrium in the LR**

In the LR, the AS curve is vertical since all prices and wages change.

The slope of the AS curve depends on how flexible wages and prices are. Recall, the AS curve is upward sloping because we assume that when prices rise, wages and other costs do not keep pace, so profits increase, causing output to increase (at least in the short run). When prices adjust, and other costs also adjust by the same amount, we would get a vertical AS curve because profit do not increase and output does not increase.

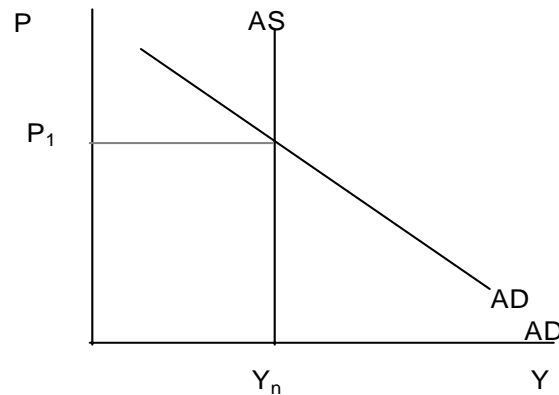
Where does the AS curve settle? Wages are an important cost in production (approx 70% in the aggregate).

- If the economy is booming, the labor market is tight and employers will have difficulty finding workers e.g. in Silicon Valley during 1999-2000 issuing F1B visas to Indians and Chinese. Wages will begin to increase causing inflationary pressure.
- Likewise, if the economy is in recession, firms will be able to hire workers easily—the labor market is slack. Wages fall, causing recessionary pressures.
- These factors limit Y .
- The point at which the output settle when there are no inflationary or recessionary pressures is known as the *natural rate of unemployment or the non-accelerating rate of unemployment (NAIRU)*. At this employment level, we have the *natural rate of output, Y_n* .

The LR AS curve is vertical at Y_n .

- When current $Y < Y_n$, recessionary pressures, wages fall, the SRAS curve shifts right until Y_n is reached.
- When current $Y > Y_n$, inflationary pressures, wages rise the SRAS curve shifts left until Y_n is reached.

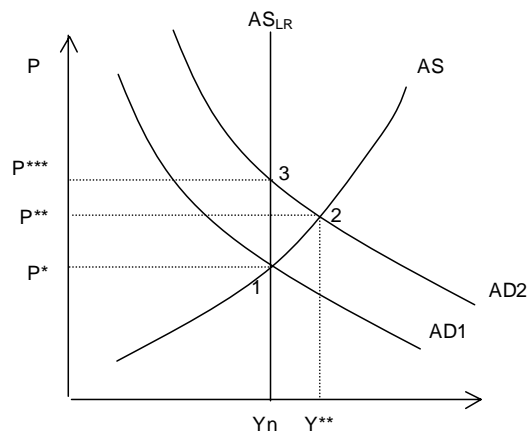
==>Self-Correcting Mechanism



Examples:

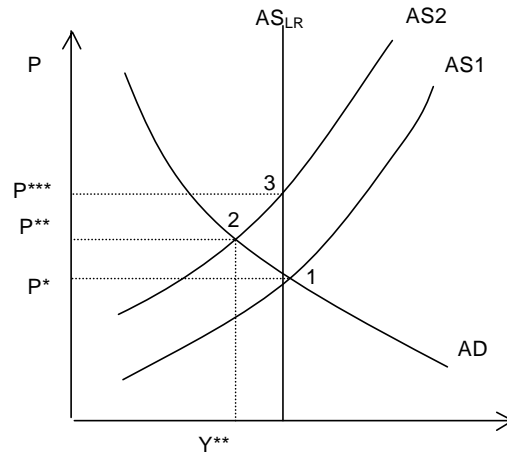
Suppose government spending/investment/money supply increases

In the SR, output increases to Y^{**} . $Y^{**} > Y_n \rightarrow$ wages rise \rightarrow SRAS shifts left. In the LR output goes back to the natural rate and the price level is permanently higher.



Suppose the nominal wage/price of oil/ increases

In the SR, output falls to Y^{**} . $Y^{**} < Y_n \rightarrow$ wages fall \rightarrow SRAS shifts right. In the LR, output remains at Y_n . However, the price level is permanently higher.



What Shifts the LRAS Curve?

- **Supply-Side Shocks**

- An increase in workforce: e.g. emigration will shift the LR AS to the left. Workforce is smaller.
- Increases in technology: Shifts LRAS Curve right \rightarrow increases output.
- Changes in Health care: healthier workforce shifts LRAS curve right.