CHAPTER 15

Aggregate Demand & Aggregate Supply

Sasan Fayazmanesh

Summary

What is the relationship between equilibrium output and price level?

This chapter deals with such a relationship. It does so by introducing the neo-Keynesian concepts of aggregate demand and aggregate supply.

Keynes's Missing Equation: Price Level Changes

In Keynes's *General Theory* there is no discussion of the price level and its impact on output and employment.

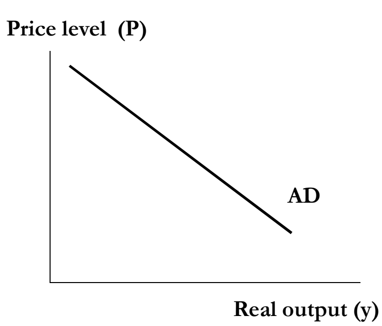
The lack of discussion left a vacuum that was filled later (in the 1950s and 60s) by the neo-Keynesian theories of **aggregate demand** and **aggregate supply.**

Aggregate Demand Curve (AD)

What is the relation between the **price level** and output of **goods and services demanded**?

The relation is supposed to be inverse.

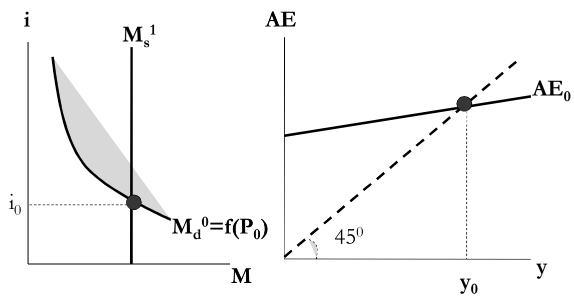
Aggregate Demand Curve (AD)



How can we develop such a relation?

We can do so by looking at the money market and "Keynesian cross."

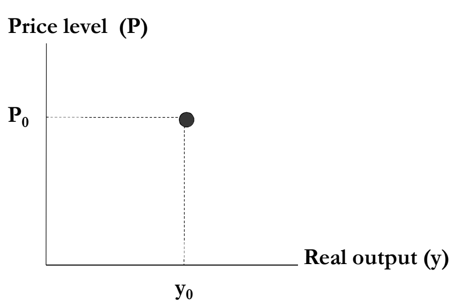
Derivation of AD



Money market Keynesian cross

The two graphs tell us that if price is at P_0, the output of goods and services demanded is y_0.

This gives us one point on the Aggregate Demand function, AD.



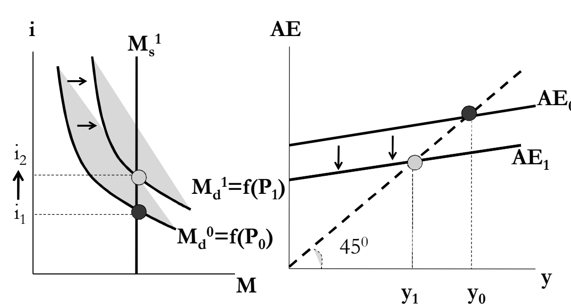
We need more than one point for a relation.
What do we do to get a second point?

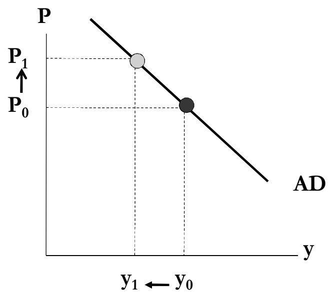
> Change the price level and look at what happens to the output of goods and services demanded.

Suppose the price level increases.
What happens to the money demand, interest rate, spending and equilibrium level of income?

$M_d\uparrow \Rightarrow i\uparrow \Rightarrow C, I\downarrow \Rightarrow y\downarrow$

Price level increases





Def. **Aggregate Demand** (**AD**): is a relationship between the price level and goods and services demanded in the economy.

Everything else remaining the same, as price level rises, goods and services demanded will decrease.

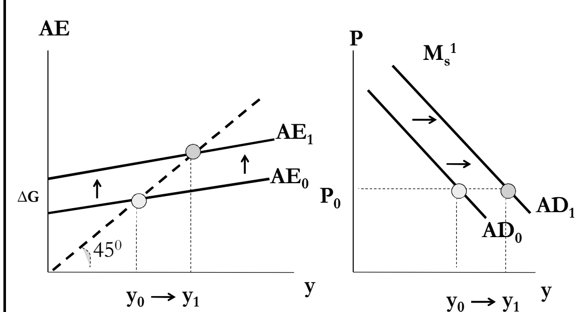
Shifts or "Shocks" in AD

Def. **Demand shock**: any event that causes AD to shift at the same price level.

Example:

An increase in government expenditures, G

Shift in AD: An increase in G



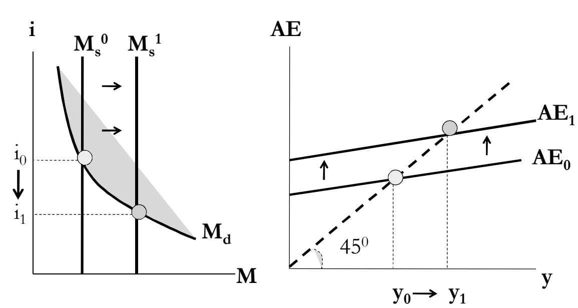
Another example

An increase in the supply of money (M_s):

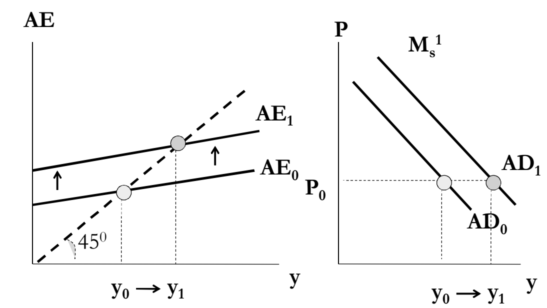
Interest rate falls, interest rate sensitive expenditures rise and y at equilibrium increases.

The result is a shift in the AD.

An increase in money supply



An increase in money supply



Aggregate Supply Curve (AS)

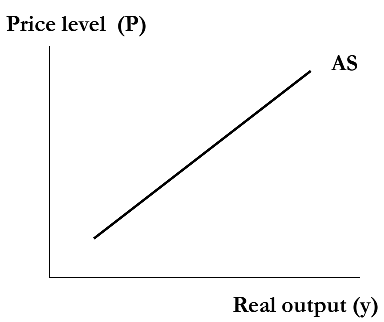
What is the relation between the **price level** and output of goods and services **supplied**?

The usual Keynesian derivation of AS is different than the derivation in your textbook.

We will look at both derivations.

In either case, graphically we will have:

Aggregate Supply Curve (AS)



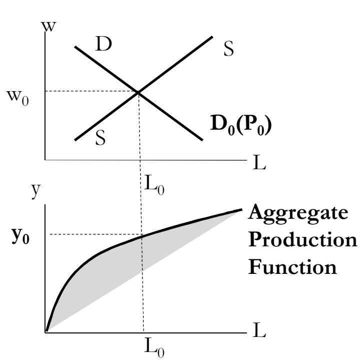
1) AS Curve: Keynesian Explanation

The Keynesian derivation of AS relies on the labor market theory and the aggregate production function.

It assumes that when price level rises, firms produce more output and demand more labor.

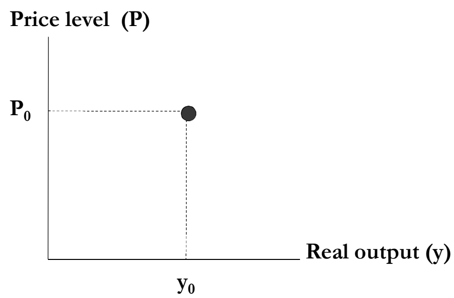
But as prices rise and real wage falls, workers don't withdraw from the labor market.

Recall the labor market and aggregate production function

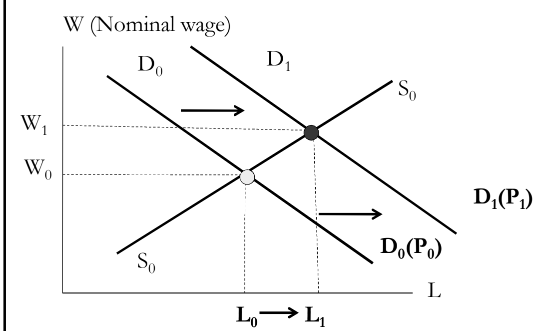


The two graphs tell us that if price is at $\mathbf{P_0}$, the output of goods and services **supplied** is $\mathbf{y_0}$.

This gives us one point on the Aggregate Supply function, AS.

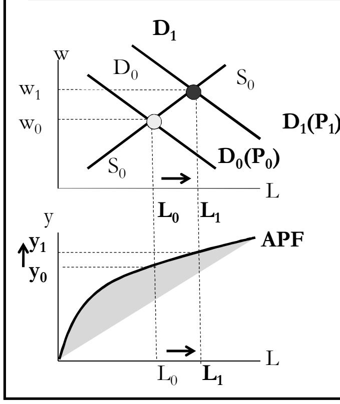


Price level increases: Demand shifts to the right

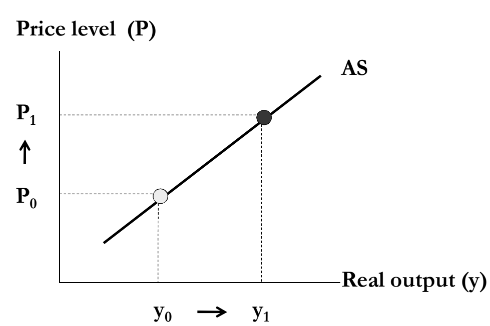


If the workers don't notice that real wages have fallen and don't withdraw from the market, then output of goods and services rises.

Price level rises: But workers don't respond



Keynesians: Aggregate Supply Curve (AS)



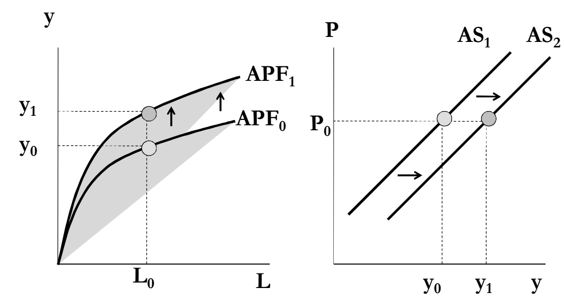
Def. **Aggregate Supply** (**AS**): is a relationship between the price level and goods and services supplied in the economy.

Everything else remaining the same, as price level rises, goods and services supplied will increase.

Shifts in the Keynesian AS Curve

AS curve will shift if technological changes shift the aggregate production function.

Shift in AS: Technological Improvement



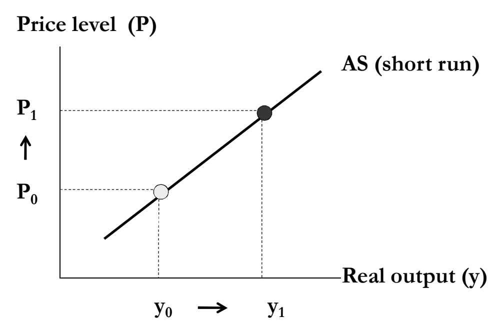
Monetarist Argument:

Monetarists argue that in the **short-run**:

1) Keynesian argument might be right.
2) Workers might not see rising prices and falling real wages.
3) AS curve is as Keynesians argue

But not in the long-run!

Monetarists: Short-run **AS**



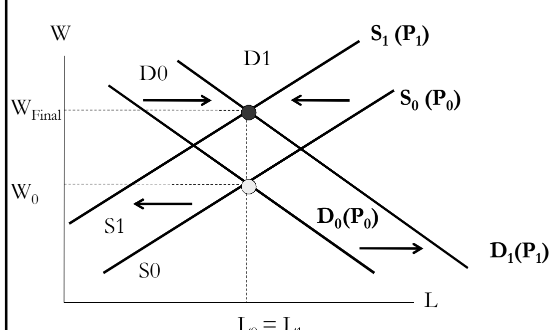
In the long run, Monetarists argue, workers:

1) Realize the price hikes
2) Realize falling real wages
3) Withdraw from the labor market

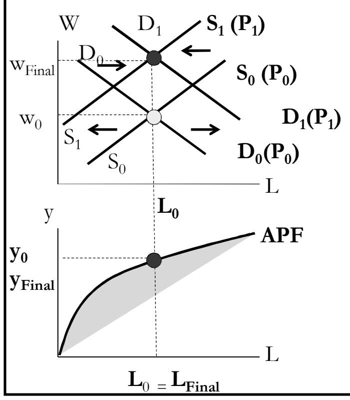
This means

1) Supply of labor will shift to the left
2) Employment and output will return to what they were initially
3) **AS curve will be vertical!**

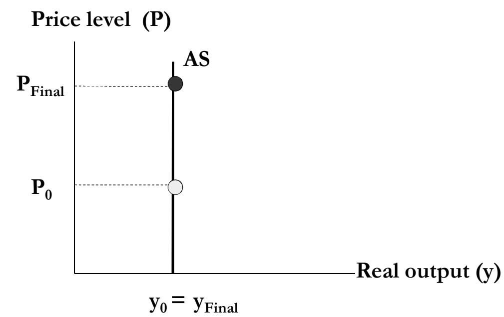
Price level increases: Workers respond



Price level rises: Output returns to original state



Monetarists: Long-run **AS Curve**



2) AS Curve: Textbook Explanation

Your textbook relies on the **markup pricing** theory to reach the same Monetarist conclusion.

What is markup pricing?

Example: A car dealer sells a car costing him \$8000 at a 10% markup:

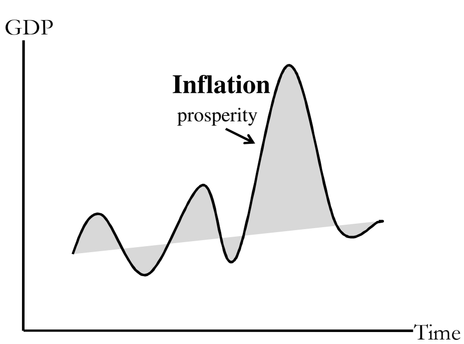
Price of the car = \$8000 +10% (8000) = \$8000 +\$800 = \$8800

Mark up pricing:

Price per unit = cost per unit + % markup (cost per unit)

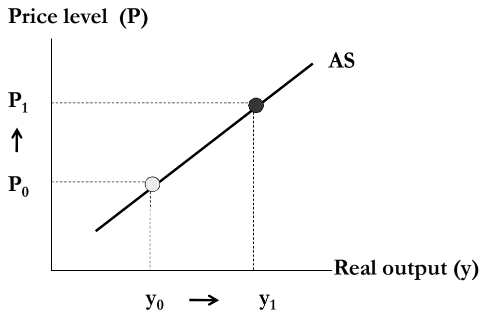
Your textbook assumes that over the business cycle as output of goods and services rises, cost per unit increases, pushing the average prices up:

$y\uparrow \Rightarrow P\uparrow$



Note: Text assumes that price of most inputs rise, but **wage increases lag behind in the short-run**.

Textbook: Short-run **AS**



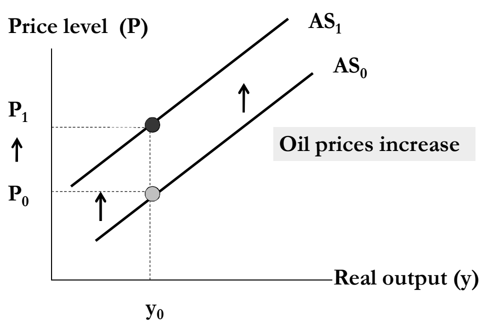
Shifts in the textbook AS Curve

AS curve will shift in your textbook if there is a "shock" in the economy, causing the price level to change at the same level of output.

Example of such "shocks":

Oil price changes

Textbook: Shift in Short-run AS

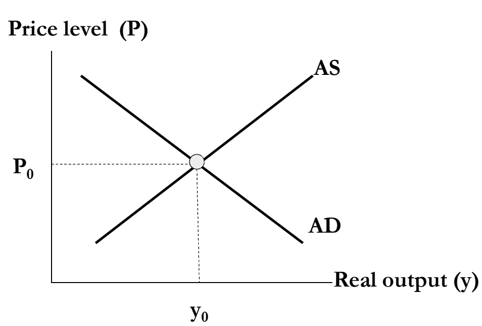


AD/AS: Macroeconomic Equilibrium

Macroeconomic equilibrium occurs when the aggregate demand equals the aggregate supply at some price level.

Output of goods and services is neither expanding nor contracting at this price level.

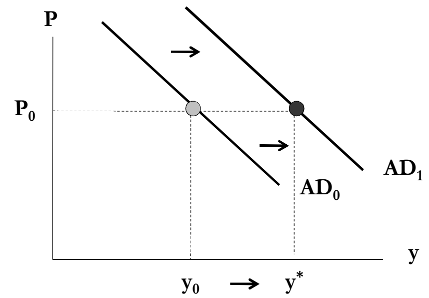
Macroeconomic Equilibrium



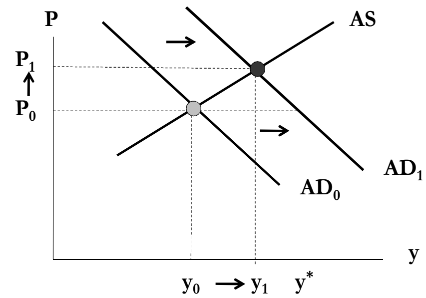
Changes in the Aggregate Demand: Short-run Analysis

Both fiscal and monetary policies will shift the demand curve.

Fiscal policy (not considering AS)



Fiscal policy: Short-run



Fiscal policy: Short-run

G ↑ ⇒ y ↑ ⇒ P ↑

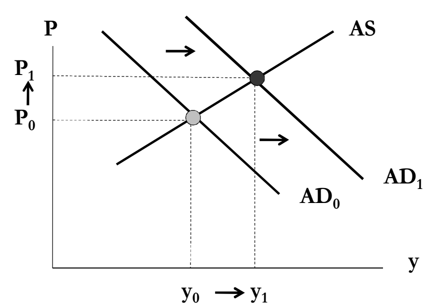
M_d ↑ ⇒ i ↑ ⇒ C, I ↓ ⇒ y ↓

Monetary policy: Short-run

Ms ↑ ⇒ i ↓ ⇒ C , I ↑ ⇒ y ↑ ⇒ P ↑ ⇒

M_d ↑ ⇒ i ↑ ⇒ C, I ↓ ⇒ y ↓

Monetary policy: Short-run



Changes in the Aggregate Demand:
Long-run Analysis (Monetarists)

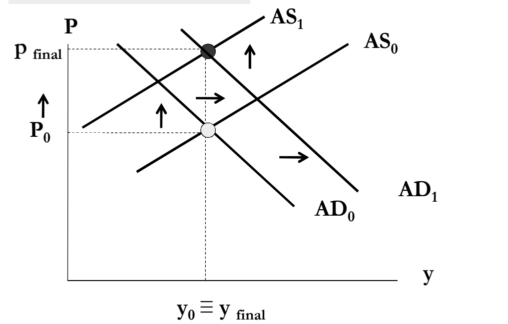
- In the long-run, the Monetarists assume, the workers realize that their real wages have declined as a result of inflation.
- They will ask for higher nominal wages to match rising prices.
- AS curve will shift up.

Fiscal Policy: Long-run

AD ↑ ⇒ P and y ↑ ⇒ W ↑ ⇒ AS ↑ ⇒ P ↑ ⇒

y ↓ until we return to the original level of output.

Fiscal policy: Long-run

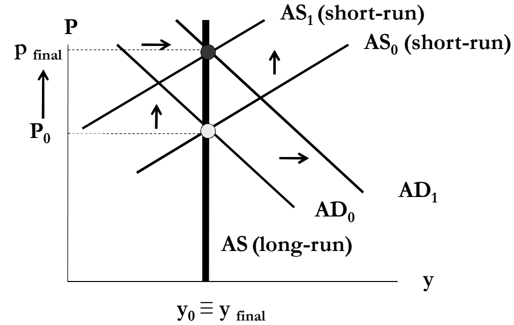


The long-run AS will be vertical for a monetarist!

This means, once again, that neither fiscal policy nor monetary policy will have any effect on output and employment in the long-run.

This is the same as "complete crowding out."

Long-run AS

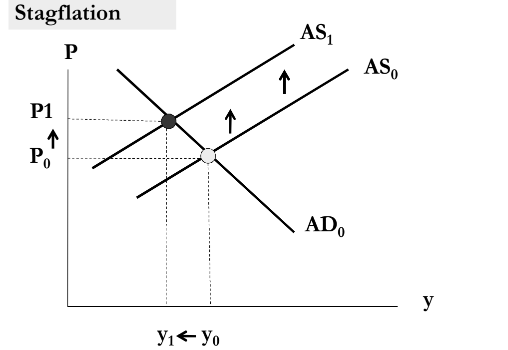


Stagflation

In the case of stagflation prices rise, output declines and unemployment rises.

This, as far as textbook is concerned, could be the result of an input "shock" to the economy, such as oil price increases.

Stagflation



Is there a way to stabilize prices following a "shock" like this?

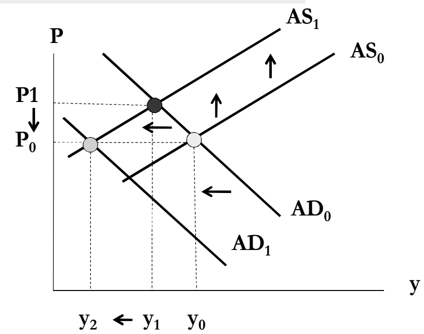
What should the fiscal policy be?

Reduce government spending

What should the monetary policy be?

Tight money policy

Stagflation: Stabilizing Prices



Next stop: Chapter 16!