

Lecture 23: An Integrated Approach: The AD-AS Model

Reading Assignment: Chapter 13

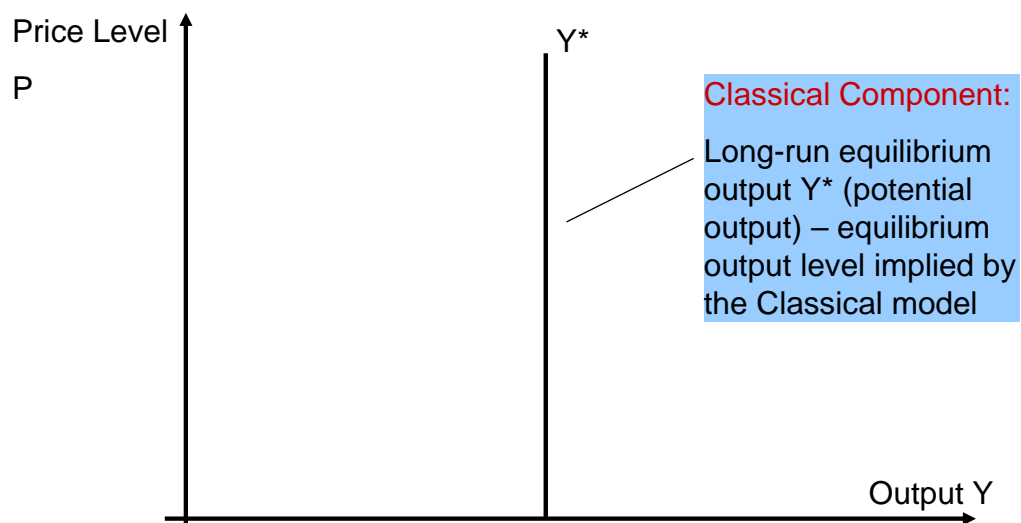
AD-AS Model

- AD-AS model integrates Keynesian model with the Classical model
 - Keynesian model describes the short-run
 - Classical model describes the long-run
- The key link between the two is the price level
 - Fixed in the short-run (Keynesian)
 - Gradually adjusting in the medium-run
 - Fully adjusting in the long-run (Classical)
- AD-AS model incorporates price adjustment explicitly and illustrates how the economy transitions from the short-run equilibrium to the long-run equilibrium (all in one diagram)

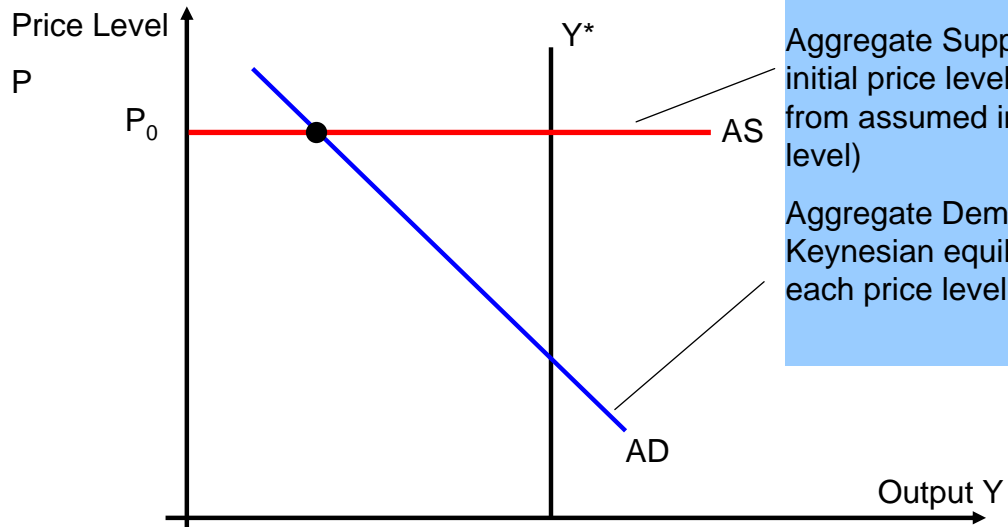
Building Blocks of AD-AS Model

- The AD-AS is comprised of Keynesian components, medium-run price adjustment, and a Classical component
 - The interplay between them determines what happens in the short-, medium- and long-run
- Here is the overview...

Long-Run Component

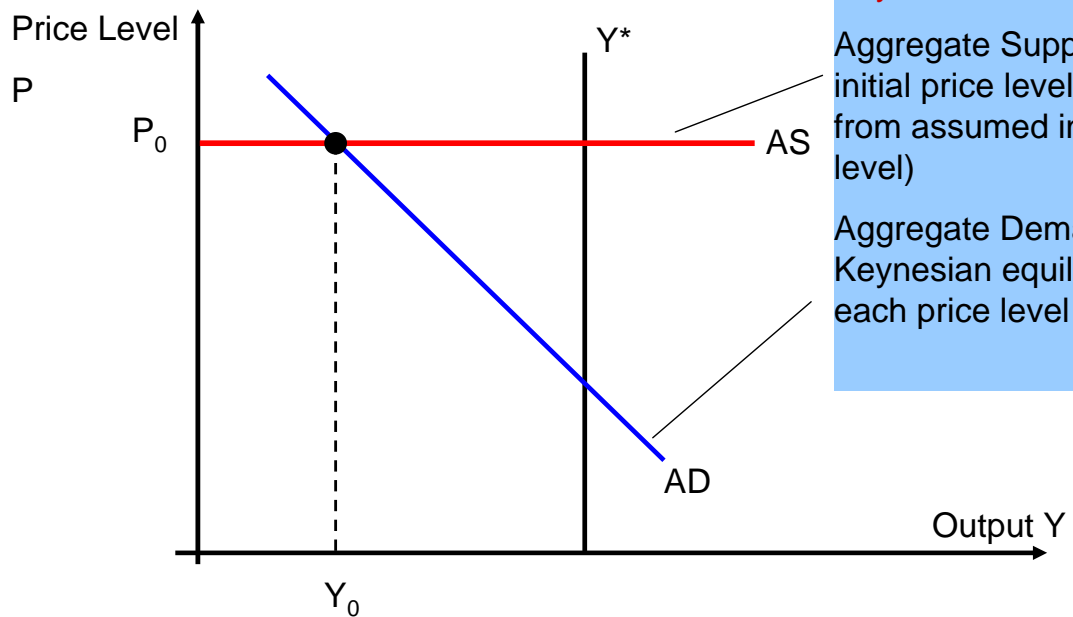


Keynesian Components



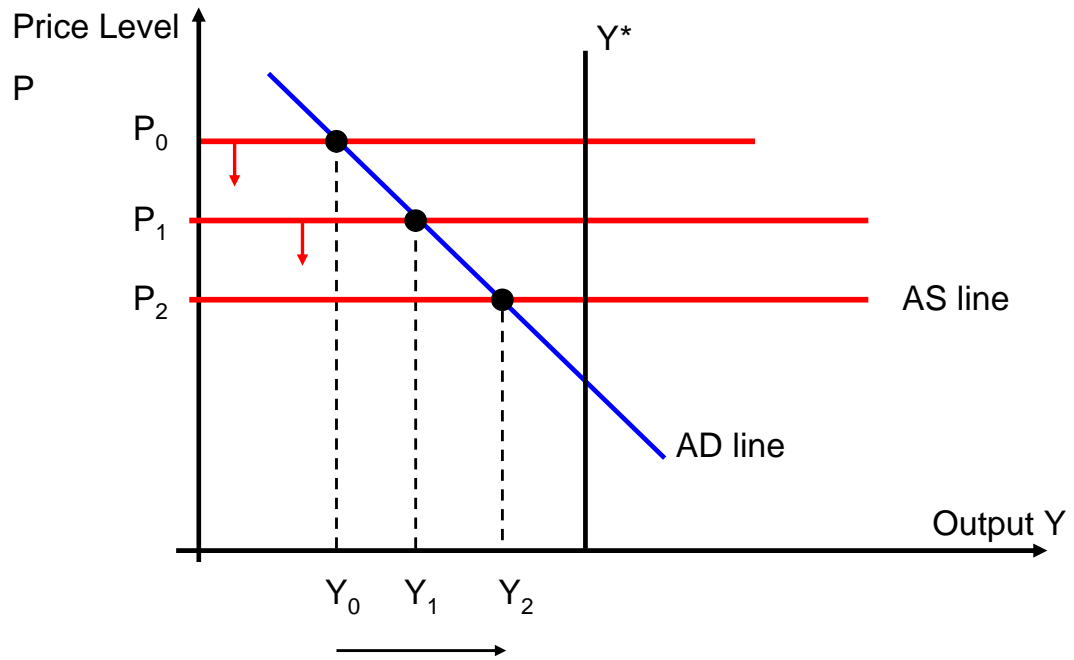
Keynesian Components:
Aggregate Supply – the initial price level (following from assumed initial wage level)
Aggregate Demand – Keynesian equilibrium at each price level

Short-Run Level of Output

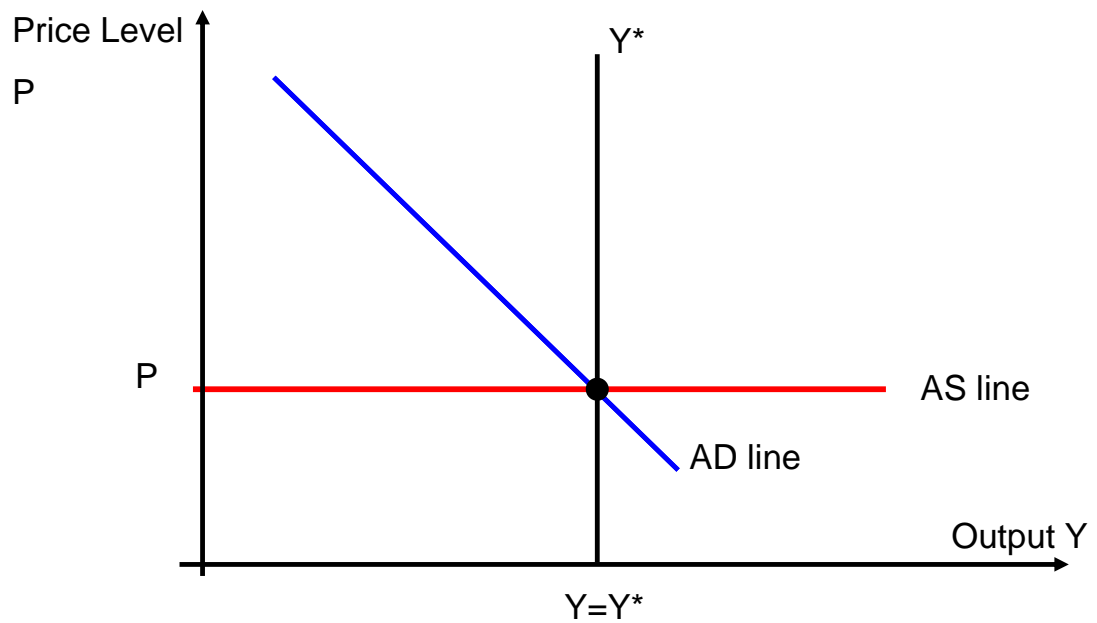


Keynesian Components:
Aggregate Supply – the initial price level (following from assumed initial wage level)
Aggregate Demand – Keynesian equilibrium at each price level

Price Adjustment in Medium-Run



Eventual Convergence to L-R Equilibrium



AD-AS Diagram Formally

- Aggregate demand line: the schedule of S-R equilibria implied by Keynesian model at various price levels P (wage levels)
- Aggregate supply line: the price level P implied by the short-run level of prevailing wages W
 - In our version of the Keynesian model firms choose prices as a constant markup over the wage level – AS schedule is flat

Using the AD-AS Model**AD-AS Diagram**

- To use the model effectively we need to know what factors shift the AD and AS lines

Factors that Shift the AD line

- Apart from the price level P (shift along AD line), everything else that changes output in the Keynesian model
 - Money supply shifts
 - Money demand shifts that are not driven by price level changes
 - Government expenditures G and net taxes T
 - Saving rate s
 - Autonomous investment or propensity to invest
 - Net exports (the textbook includes it)

Factors that Shift the AS line

- Everything that changes production costs and affects the price level
 - Increase in markups (e.g. market power)
 - Non-labor production cost (e.g. oil prices)
 - Labor costs (e.g. wages)

Demand/Supply Shocks

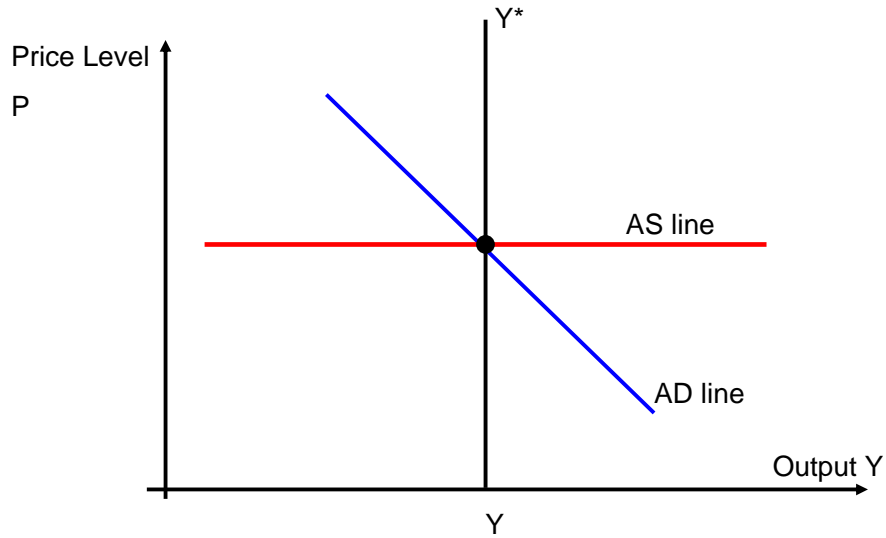
- AD-AS framework suggests a natural classification of all the changes that can affect the economy
 - Factors that shift AD line – referred to as demand shocks
 - Factors that shift AS line – referred to as supply shocks

Example: A Negative Demand Shock

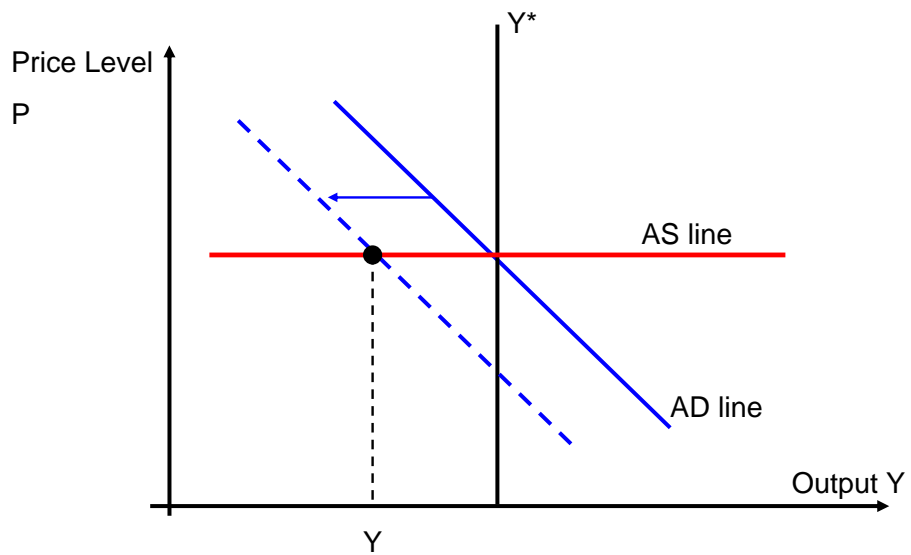
- Suppose consumers become pessimistic about the future and decide to spend less on consumption and save more instead (s increases)

- Study the short-run, medium-run and long-run effects of such change using AD-AS framework

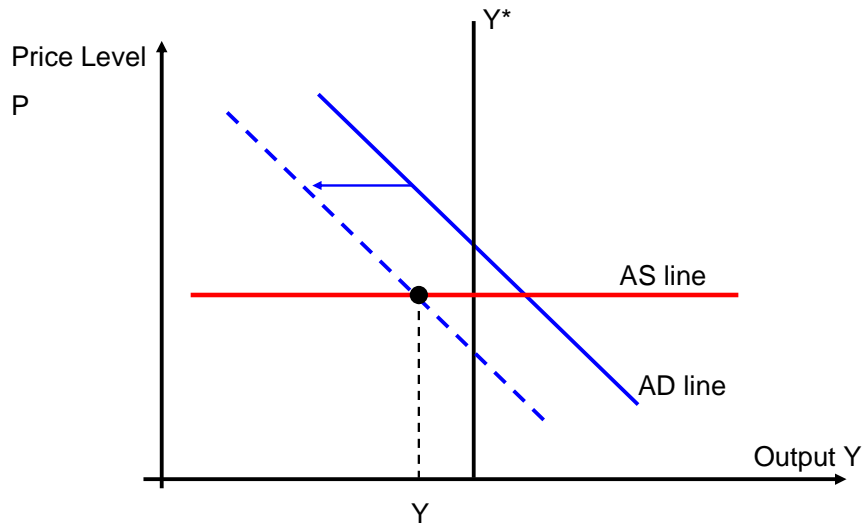
Start from Long-Run Equilibrium



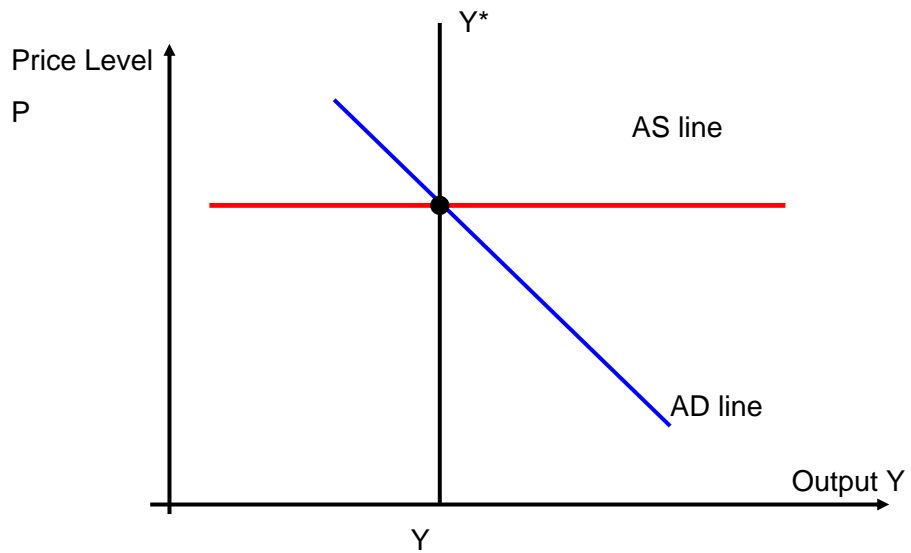
Shift the AD Line and Find S-R Equilibrium where AD and AS Intersect



Simulate Medium Run Response By Shifting AS curve Down (in this case)

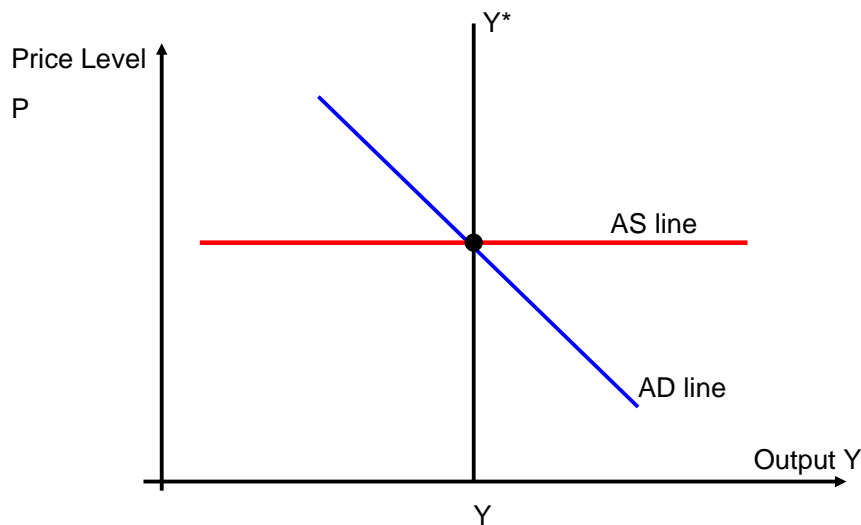
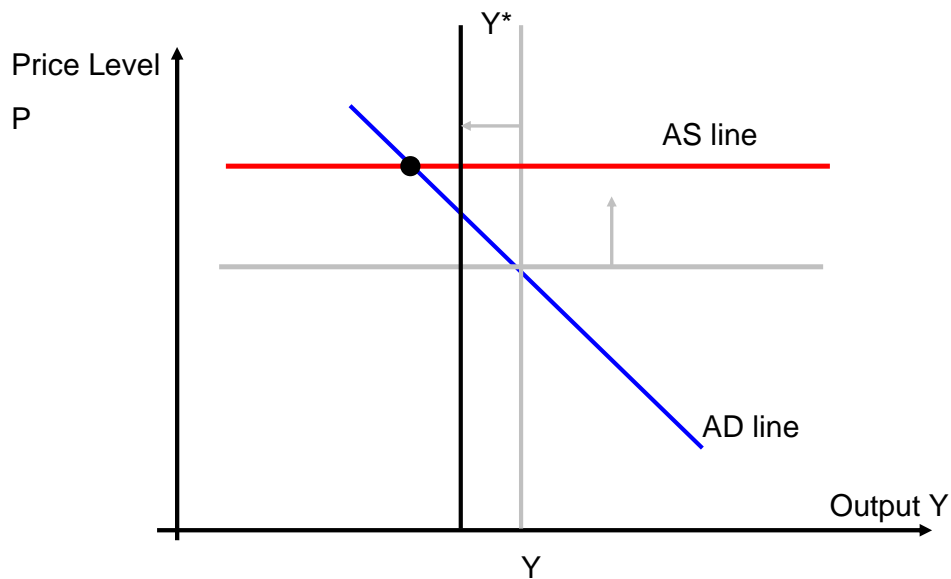


Identify the New Long-Run Equilibrium with the Intersection of Y^* and New AD Line

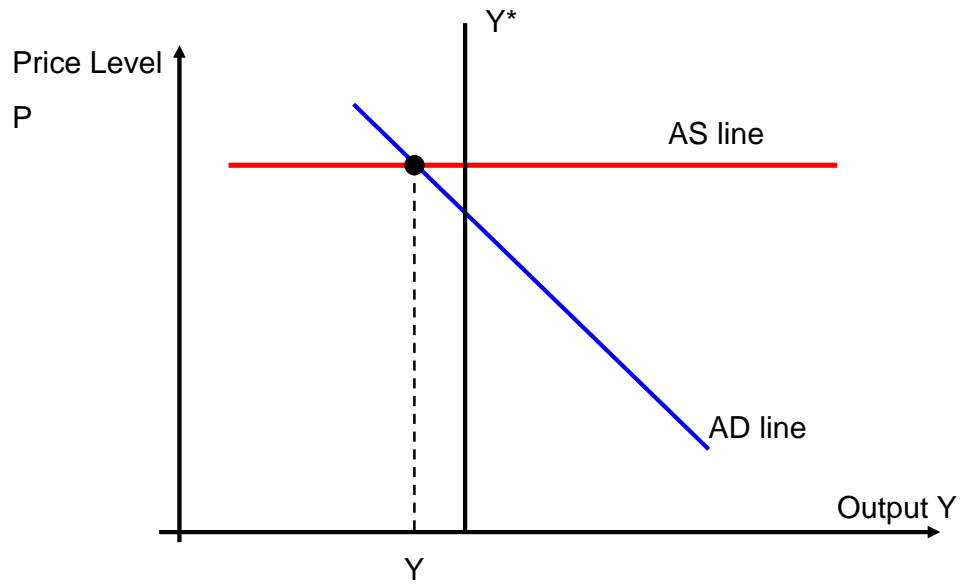


Example: A Negative Supply Shock

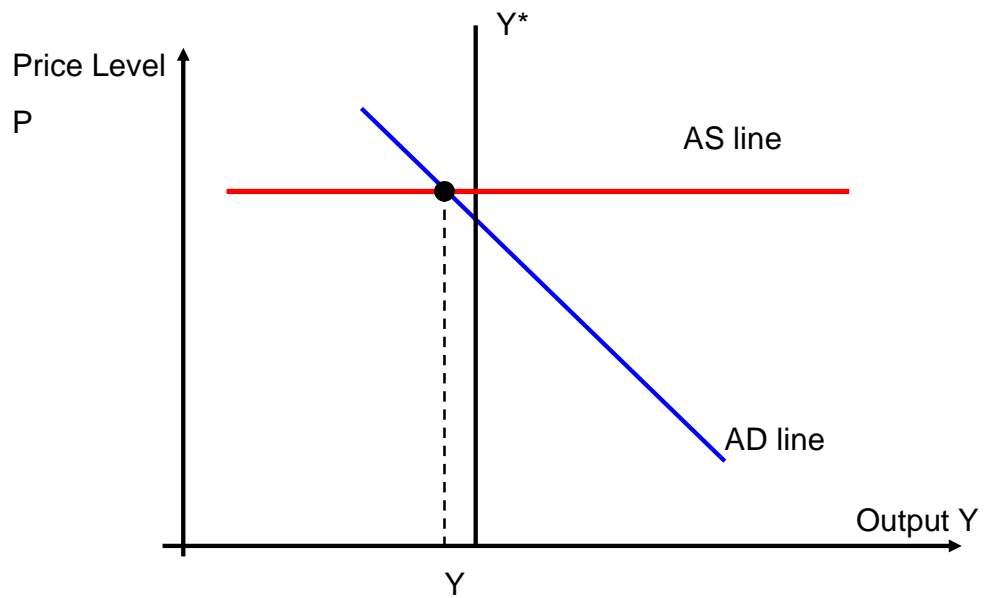
- Suppose oil price increase drastically, and lead to a large increase in non-labor cost (increase in the markup μ)
 - In addition, assume that due to the shock the potential output shrinks – so that the long-run equilibrium also falls
- Study the short-run, medium-run and long-run effects of such change using AD-AS framework

Start from the Long-Run Equilibrium**Shift the AS line and Y^*** 

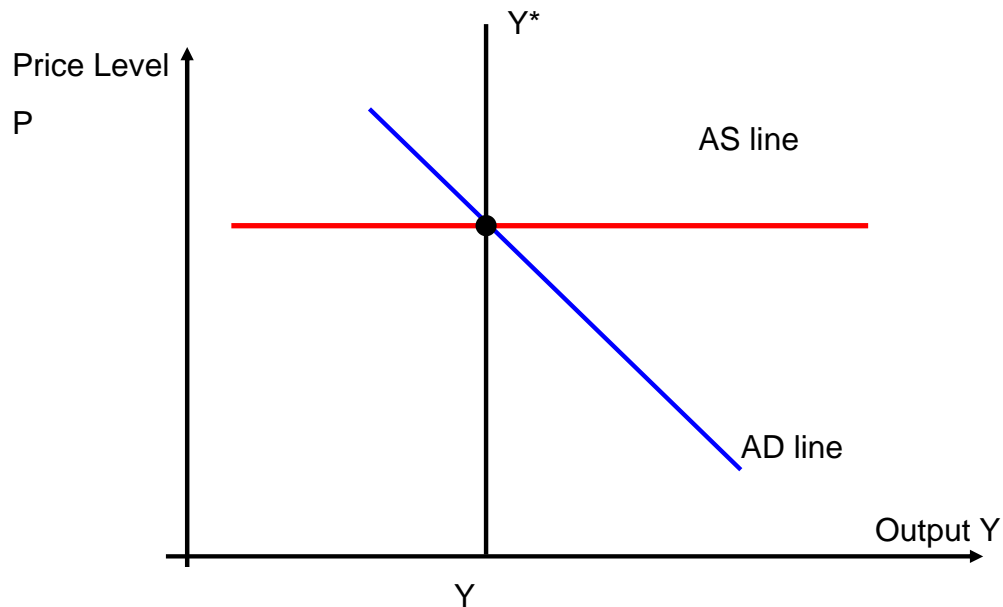
Identify S-R Level of Output



Simulate Medium Run Response (Shift AS Line Gradually Down)



Identify the New Long-run Equilibrium



Final Remarks

- In the short-run the AD-AS model has predictions in line with Keynesian model and in the long-run in line with Classical model
- There can potentially be two types of supply shocks
 - Those that have only temporary effects, i.e. shift only AS line but not the Y^* line
 - Those that lower potential output, i.e. shift also Y^* line (shift production function down)

Short-run and Long-run Effects of Monetary and Fiscal Policy

SR and LR Effects of Fiscal Expansion

Type of Policy	SR Effect	LR Effect
Increase in G (not invested in capital)	Expenditures up, output up, interest rates up Rightward shift of AD	Crowding out of investment, fall in future output – shift in Y^* – higher price level
Decrease in T	Same effect as above but smaller	Same effect as above but smaller
Simultaneous increase in G and T (size of government)	Same effect as above but smaller	Same effect as above but smaller

SR and LR Effects of Monetary Expansion

Type of Policy	SR Effect	LR Effect
Increase in M^s (monetary expansion)	Interest rates down, higher investment spending, output up Rightward shift of the AD curve	No effect on output, only price level higher (if persistent, then get inflation)

Important Note about the Use of Policy

- Fiscal and monetary policy are useful tools to stabilize business cycle fluctuations when they are driven by Keynesian departures from the long-run equilibrium – if they are driven by productivity shocks and fluctuating potential output – it is better to do nothing!
- Because we do not have certainty about the extent to which each mechanism contributes to overall fluctuations, usefulness of policy tools to stabilize output is somewhat questionable from theoretical perspective. It is good to keep it in mind!

Review of the Most Recent Material

- Tip 1: It is *less* confusing if you think MME line can travel only up and down (as it describes equilibrium interest rate in money market for all levels of output), and GME line can only travel left or right (as it describes equilibrium output in goods market for all levels of interest rate)
 - It is then more transparent what factors shift each curve
- Tip 2: Given tip 1, MME line shifts only if something changes the equilibrium interest rate level in the money market, and it is *not* output Y . Changes in output – as it is on the horizontal axis of the GME/MME diagram – imply a movement along the curve.
- Tip 4: Given tip 1, GME line shifts only if something changes the equilibrium output in the goods market (by shifting AE line), and it is *not* the interest rate. Changes in interest rate – as it is on the vertical axis of MME/GME diagram – imply a movement along the GME curve.
- Tip 5: It *less* confusing if you think that AD line can only travel from left to right – simply because it is a Keynesian equilibrium and at a fixed price level – so shifts in this curve must represent changes in equilibrium output in Keynesian model for a fixed price level.

- Tip 6: Everything that shifts GME line or MME line shifts also AD line (with the exception of the price level that is on the vertical axis of AD AS diagram!):
 - Factors that shift GME line to the right, and factors that shift MME line down, shift AD line to the right
 - Factors that shift GME line to the left, and factors that shift MME line up, shift AD line to the left
- Tip 7: GME line shifts to the right if the following happens
 - Saving rate s goes down
 - G goes up or T goes down
 - Investment schedule shifts up (investment for all levels of interest rate is higher)
 - NX goes (using augmented analysis from the textbook)
- Tip 8: MME line shifts down if the following happens
 - Money supply increases (money supply line shifts to the right)
 - Money demand increases for reasons other than changes in output
- Tip 9: Tips 6, 7 and 8 are useful to answer what factors shift the AD line.

Thank you very much! It was a pleasure to work with you. L