AS-AD Model

Prof. Irina A. Telyukova
UBC Economics 345
Fall 2008
Outline

- Now that we know how to model money supply and money demand, we take a quick look at one model of the aggregate economy.
- Aggregate Demand is influenced by money supply
- Aggregate Supply is influenced by prices and costs of production
- Together, they determine aggregate output level and price level
- Using these tools, we will later take a look at money and inflation
Aggregate Demand

- Aggregate demand consists of 4 parts:
  - consumer expenditure
  - planned investment spending (firms and new homes)
  - government spending
  - net exports (X-M)

\[ Y = C + I + G + (X-M) \]

- Relationship between AD and prices will give us the aggregate demand curve.
Aggregate Demand Curve

Suppose prices increase.

This leads to a decrease in real money supply, $M/P$.

We know that a fall in real money supply leads to an increase in interest rates $i$.

An increase in interest rates has two effects:

- *Investment I* - higher interest rates lead to fall in investment
- *Net exports X-M* - higher interest rates lead to an increase in the exchange rate, and a consequent decrease in exports.

A decrease in investment and net exports mean a decrease in aggregate output $Y$.

$ightarrow$ *Prices and aggregate output are negatively related.*
Aggregate Demand Curve

\[ P \] vs. \[ Y \text{ (output)} \]

- AD curve
AD Shifters (Demand Shocks)

- If money supply $M$ increases, $M/P$ increases.
- This leads to a fall in interest rates $\rightarrow$ an increase in investment and net exports $\rightarrow$ rightward shift in the AD curve.
- Other factors that shift AD curve:
  - increase in government spending (AD right)
  - decrease in taxes $\rightarrow$ increase in consumption (AD right)
  - consumer and/or business confidence $\rightarrow$ increase in consumption and/or investment (AD right)
A Positive Demand Shock

Diagram showing the comparison between AD and AD' curves, indicating a positive demand shock.
Suppose that prices and wages take time to adjust (are *sticky*).

Then in the short run, aggregate supply will behave differently than in the long run.
- In the short run, changes in prices and costs of production will affect supply.
- In the long run, the economy gravitates to full employment (*natural rate of unemployment*), with corresponding *natural level of output*.
Short-Run AS Curve

- A firm’s profits are determined by the price at which it sells its good, as well as the costs of production:
  \[ \text{PROFIT} = (P - c) \times Q \]

- \( c \) – costs of production – include wages, costs of raw inputs (e.g. steel for car makers), costs of transportation, costs of investment, etc.

- These costs are often fixed (sticky) in the short run: wage contracts written for a year, investment orders made far in advance, etc.

- Thus if the price increases, profits per unit increase in short run \( \rightarrow \) increased production (supply).

→ Positive relationship between prices and short-run AS.
Short-Run AS Curve
SRAS Shifters
(Supply Shocks)

The SRAS curve will shift if there are shocks to costs of production, known as supply shocks:
- higher costs decrease profit per unit, decrease production (SRAS left)
- lower costs increase production (SRAS right)

Costs of production depend on:
- labor market tightness
- expected inflation
- unionization and other labor bargaining arrangements
- non-wage shocks (e.g. oil prices)
Negative Supply Shocks (Increase in Costs)
Short-Run Equilibrium
Long-Run AS Curve

- In the long run, economy gravitates toward natural rate of unemployment/employment.

- This is associated with the *natural level of output*.

- Thus the long-run AS curve just indicates the economy is at the natural level of output.
Long-Run AS Curve

\[ P \]

\[ Y_n \]

\[ Y \text{ (output)} \]
Long-Run Equilibrium
Movement toward Long-Run Equilibrium
Shifts in Natural Level of Output over Time

- Above analysis under the assumption that the LRAS curve is not affected by demand and supply shocks

- This assumption has been disputed:
  - Real Business Cycle theory - supply shocks, such as technology shocks, lead to substantial short run fluctuations in natural level of output. Most fluctuation in the long run is due to these shifts, hence no need for intervention.
  - Keynesian view - demand shocks affect AD persistently, and previous movements in AD determine current movements. In this view, shocks to AD shift natural rate of unemployment away from full-employment level. Need intervention.