Aggregate Supply and Aggregate Demand

Goals of this Unit

1. Model the macroeconomy economy using the AS/AD Model.
2. Graph shocks to the economy/shifts in Aggregate Demand, Short-Run Aggregate Supply and Long-Run Aggregate Supply and show the effects on price level and output.
3. Explain the importance and implications of sticky prices.
4. Compare Short-Run and Long-Run equilibrium and both explain and graph the transition to Long-Run equilibrium.
5. Model/graph historic events using the AS/AD Model.
6. Graph output gaps and explain their implications.
7. Explain the dangers of deflation.

Textbook Chapter

Krugman and Wells, “Aggregate Demand and Aggregate Supply”

Aggregate Demand (AD) vs Demand from Micro

Why is AD downward sloping?

- **The Wealth Effect**: At lower prices people buy more
- **The Interest Rate Effect**: When prices go up, people can not save as much. This increases the interest rate, causing Investment to decrease. (Loanable Funds Model)
- Or you can just think of why a Micro Demand curve is downward sloping.

What Shifts AD?

- In Micro we had Changes in Wealth, Tastes and Future Preferences
- In Macro we now have Changes in Overall Wealth, Consumption Levels (or Savings Levels) and Changes in Future Beliefs.
  - If Overall Wealth increase then AD shifts out.
  - If people start consuming more or saving less at all income levels then AD shifts out.
  - If consumers or businesses think the economy will improve then AD shifts out.
- Fiscal Policy
  - Government Spending increases AD shifts out.
  - Taxes increases AD shifts in.
- Investment increases shifts AD out.
- Net Exports Increase shifts AD out. (We will see that NX is influenced by changes in the exchange rate in a later chapter)
  - Exports increase shifts AD out.
  - Imports increase shifts AD in.
- Money Supply increases shift AD out.
  - Interest Rates decrease shift AD out.

Relating Aggregate Demand to Aggregate Expenditure

- Draw two graphs on top of each other.
- In the first show Aggregate Expenditure increasing from AE_1 to AE_2. Find the corresponding equilibrium GDPs (Y_1 and Y_2).
- Holding Price Level fixed, draw two AD curves; AD_1 and AD_2.

Aggregate Supply

- In Micro
  - in the Short Run, at least one input was fixed.
  - in the Long Run, all inputs were variable.

- In Macro
  - In the Short Run, wages and prices are **sticky**.
  - In the Long Run, wages and prices are fully flexible (or variable).

Why Are Prices Sticky Again?

- **Sticky Prices**: Prices that do not readily or immediately change due to new market conditions; are slow to adjust. Also called price rigidity.
- **Sticky Wages**: Wages that are slow to fall even during high unemployment and slow to rise during times of labor shortages. (Wages take a while to adjust).

Short-Run Aggregate Supply Curve(s) (SRAS)

- Draw a SRAS Curve where prices are sticky (but not fully fixed). This will be the SRAS Curve we use, unless told otherwise. Put Price Level (PL) on the y-axis and Real GDP (Y) on the x-axis.

- Draw a SRAS Curve where prices are fully fixed. We'll call this the Keynesian SRAS ($SRAS_K$).

Long-Run Aggregate Supply Curve (LRAS)

- LRAS is also know as **Potential GDP**, often denoted as $\bar{Y}$.
- Potential GDP: The level of real GDP the economy would produce if all prices, including nominal wages, were fully flexible (no cyclical unemployment).
- Draw a LRAS Curve where prices are fully flexible. Put Price Level (PL) on the y-axis and Real GDP (Y) on the x-axis. Where LRAS intersects the x-axis label the point $\bar{Y}$

Shifts in Supply Curves

- Technology/Productivity:
  - Increase shifts out both LRAS and SRAS by the same amount.
- Human Capital:
  - Increase shifts out both LRAS and SRAS by the same amount.
- Number of Factors of Production:
  - More Capital or Labor shifts out both SRAS and LRAS by the same amount.
- Input Prices:
  - Input price increases shift in **ONLY** SRAS
  - Increase is the Nominal Wage increase shift SRAS in.
  - Common Examples: Nominal Wages, Oil Prices, Steel Prices.
- Permanent vs Temporary:
  - If a shock is temporary then only SRAS is shifted.

What is a shock?

- A Shock is a change in the economy that causes a curve to shift.
- The terms shock and shifter can be used interchangeably.
- However economists prefer the term shock.
- Negative shock: curve shifts inward.
- Positive shock: curves shifts out.

Model: Aggregate Supply and Aggregate Demand (AS/AD)

- **Long-run equilibrium**: Situation where AD, LRAS, and SRAS all *intersect at the same point.*
- In a graph with AD, LRAS, and SRAS, find the long-run equilibrium Price Level (P^*) and Real GDP (Y^*).

Long-Run equilibrium is where ALL THREE CURVES intersect AT THE SAME POINT

Shifts and Short-Run Equilibrium

- **Short-run equilibrium**: Point where AD and SRAS intersect.
- Start in long-run equilibrium (P_0 and $\bar{Y}_0$) for all of the following, and find the new short-run equilibrium (P_1 and Y_{SR}):
- Government Spending (G) up:

Shifts and Short-Run Equilibrium

- **Short-run equilibrium**: Point where AD and SRAS intersect.
- Start in long-run equilibrium (P_0 and $\bar{Y}_0$) for all of the following, and find the new short-run equilibrium (P_1 and Y_{SR}):
- Technology improves *temporarily*:

Shifts and Short-Run Equilibrium

- **Short-run equilibrium**: Point where AD and SRAS intersect.
- Start in long-run equilibrium (P_0 and $\bar{Y}_0$) for all of the following, and find the new short-run equilibrium (P_1 and Y_{SR}):
- Technology improves *permanently*:

Shifts and Short-Run Equilibrium

- **Short-run equilibrium**: Point where AD and SRAS intersect.
- Start in long-run equilibrium for all of the following, and find the new short-run equilibrium:
- G up, Technology up temporarily. G up larger.

- G up, Technology up Permanently. G up larger.

Shifts and Short-Run Equilibrium (cont)

- Start in long-run equilibrium for all of the following find the new short-run equilibrium:
- Lump-Sum Taxes (T) up, Oil prices up.

- Lump-Sum Taxes (T) up, Oil prices up. Tax shock is larger than the oil price shock.

Short-Run equilibrium is where ONLY AD AND SRAS intersect AT THE SAME POINT

Output Gaps

- **Recessionary Gap**: Current GDP $<$ Potential GDP. $Y_{SR} < \bar{Y}$.

- **Inflationary Gap**: Current GDP $>$ Potential GDP. $Y_{SR} > \bar{Y}$.

Output Gaps are a Short-Run Phenomenon. In Long-Run Equilibrium, there is not an Output Gap!

Gap Joke

I was downtown in some town and they had store, store, store, and then there was an open area, then they had more stores. It said in the open area "Coming soon: The Gap" I'm like Man. It's coming soon and it's already here. —Mitch Hedberg

Long-Run Adjustment

- To reach long-run equilibrium nominal wages adjust; remember wages are sticky.
- **Sticky Wages**: Wages that are slow to fall even during high unemployment and slow to rise during times of labor shortages. (Wages take a while to adjust).
- In a Recessionary Gap nominal wages *fall*, shifting SRAS out to the intersection of AD and LRAS.
- In an Inflationary Gap, nominal wages *rise*, shifting SRAS in to the intersection of AD and LRAS.
- Show the long-run adjustment mechanism in both a recessionary gap and an inflationary gap:
- Show how the second example on the previous slides adjust to the new long-run equilibrium:

To go from a short-run equilibrium to the new long-run equilibrium ONLY SRAS SHIFTS

AS/AD and the Great Depression and/or the Great Recession

- Starting in long-run equilibrium, assume Investment goes down, find the new short-run equilibrium.

AS/AD and the Oil Embargo

- Starting in long-run equilibrium, assume oil prices unexpectedly go up, find the new short-run equilibrium.

AS/AD and the Covid Recession

- Starting in long-run equilibrium, assume productivity temporarily falls and consumption spending also falls. The fall in consumption spending has a larger effect. Find the new short-run equilibrium.

Deflationary Spiral

- Starting in long-run equilibrium, assume consumers expect prices to decrease, find the new short-run equilibrium.

- Based on the graph, what if consumers update their expectations on prices due to the new change; what would be the next short-run equilibrium?