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Econ Chapter 8: Aggregate Demand and Aggregate Supply

- Aggregate Demand refers to the buying side of the economy

- Aggregate supply refers to the producing side of the economy

- with respect to production, two periods are relevant:

- 1.) Production in the short run: Short-run aggregate supply

- 2.) Production in the long run: Long-run aggregate supply

Aggregate Demand: The quantity demanded of all goods and services, or the quantity demanded of U.S. Real GDP, at various price levels

Aggregate Demand (AD) Curve: Graphical representation of aggregate demand

- Downward Sloping, indicating an inverse relationship between price level (P) and the quantity demanded of Real GDP (Q)

- The inverse relationship is explained by (1) the real balance effect (2) the interest rate effect (3) the international trade effect

Real Balance Effect (Due to Change in Price Level)

- States that the inverse relationship between price level and quantity demanded of Real GDP is established through changes in the value of monetary wealth, or the value of a person's monetary assets.

- Changes in monetary wealth usually take the form of increased or decreased purchasing power - the quantity of goods and services that can be purchased with a unit of money

- As price level goes up, purchasing power goes down

- A fall in the price level causes purchasing power to rise, increasing a person's monetary wealth

- To sum it up, as people become less wealthy, the quantity demanded of Real GDP falls.

Interest Rate Effect (Due to Change in the Price Level)

- States that the inverse relationship between the price level and the quantity demanded of Real GDP is established through changes in the part of household and business spending that is sensitive to changes in interest rates.

- Ex. Price level rises, purchasing power decreases. with a less purchasing power

Matt cannot purchase a his fixed bundle of goods with same amount of money. If Matt wants to continue to buy his goods, he needs to acquire more money. To do this, Matt goes to a bank and requests a loan. Thus, the demand for credit increases. Consequently the interest rate rises. As interest rate rises, households borrow less to finance (cars, houses).

- Thus, the quantity demanded of Real GDP falls.

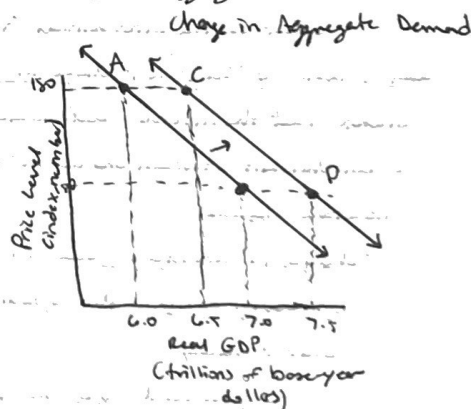
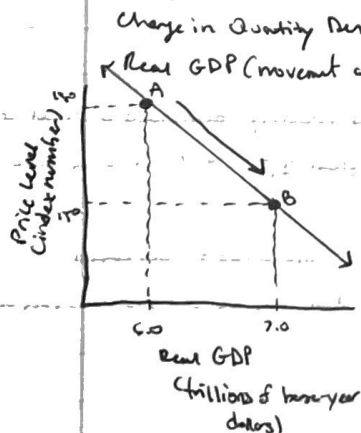
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International Trade Effect (Due to a Change in the Price Level)

- The change in foreign sector spending as the price level changes.
- The inverse relationship between the price level and Real GDP is established through foreign sector spending, which includes U.S. spending on foreign goods and foreign spending on U.S. goods.
- Ex. Price level in U.S. falls. As this happens, U.S. goods become relatively cheaper than foreign goods. As a result, both Americans and foreigners buy more U.S. goods. The quantity demanded of U.S. Real GDP rises.
- John ~~buys~~ buys a watch imported from Switzerland.
- John is buying it because the Swiss watch is cheaper than the U.S. watches.
- The U.S. price level has risen relative to the Swiss price level.

A Change in Quantity Demanded of Real GDP, Versus a Change in Aggregate Demand



Changes in Aggregate Demand: Shifts in the AD Curve

- Aggregate Demand changes when spending on U.S. goods and services
 - Spending increases at a given price level $\rightarrow$ AD rises
 - Spending decreases at a given price level $\rightarrow$ AD falls
- When individuals, firms, and governments want to buy more U.S. goods and services even though the prices of the goods have not changed, we say that aggregate demand has increased.
 - AD curve shifts to right
 - AD curve shifts to left when individuals, firms, and governments want to buy fewer U.S. goods and services at a particular price level

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In order to determine what causes an increase in total expenditures we have to look at the components of total expenditures.

- Consumption, Investment, Government Purchases, Net Exports.

- Total Expenditures on U.S. Goods and Services = $C + I + G + NX$

- $C \uparrow, I \uparrow, G \uparrow, NX \uparrow \rightarrow$ Total expenditures on U.S. goods and services $\uparrow$

- $C \downarrow, I \downarrow, G \downarrow, NX \downarrow \rightarrow$ Total expenditures on U.S. goods and services $\downarrow$

- If, at a given price level, $C \uparrow, I \uparrow, G \uparrow, NX \uparrow$, then $AD \uparrow$

- If, at a given price level, $C \downarrow, I \downarrow, G \downarrow, NX \downarrow$, then $AD \downarrow$

- True or False: The price level falls and total spending rises. As a result of total spending rising, aggregate demand in the economy rises and the AD curve shifts rightward

- False; Aggregate Demand rises only if total spending rises at a given price level

- Total spending can rise for one of two reasons:

- 1.) Decline in prices and leads to movement along a given AD curve

- 2.) Change in some factor other than prices and leads to a shift in the AD curve

Factors that can change C, G, I, NX and Shift the AD curve

Four Factors can affect Consumption: Wealth, Expectations about future prices and income, the interest rate, and income taxes.

Wealth: The value of all assets owned, both monetary and nonmonetary

- Wealth $\uparrow \rightarrow C \uparrow \rightarrow AD \uparrow$ (Increase in wealth leads to increase in consumption)

- Wealth $\downarrow \rightarrow C \downarrow \rightarrow AD \downarrow$ (Decrease in wealth leads to decrease in consumption)

Expectations about Future Prices and Income:

- Expect higher future prices $\rightarrow C \uparrow \rightarrow AD \uparrow$ (Increase current consumption)

- Expect lower future prices $\rightarrow C \downarrow \rightarrow AD \downarrow$ (Decrease current consumption)

- Expect higher future income $\rightarrow C \uparrow \rightarrow AD \uparrow$ (Increase consumption)

- Expect lower future income $\rightarrow C \downarrow \rightarrow AD \downarrow$ (Decrease consumption)

Interest Rate

- Interest rate $\uparrow \rightarrow C \downarrow \rightarrow AD \downarrow$ (Increases monthly payments, thus decreases consumption of durables)

- Interest rate $\downarrow \rightarrow C \uparrow \rightarrow AD \uparrow$ (Reduces monthly payments, thus increases consumption of durables)

Income Taxes

- Income Taxes $\uparrow \rightarrow C \downarrow \rightarrow AD \downarrow$ (Disposable income decreases)

- Income Taxes $\downarrow \rightarrow C \uparrow \rightarrow AD \uparrow$ (Disposable income increases)

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Investment is affected by three factors: Interest Rate, Expectations of Future Sales, business taxes

Interest Rate:

- Interest Rate $\uparrow \rightarrow I \downarrow \rightarrow AD \downarrow$ (Cost of investment project rises, businesses invest less)
- Interest Rate $\downarrow \rightarrow I \uparrow \rightarrow AD \uparrow$ (Cost of investment project falls, businesses invest more)

Expectations about Future Sales:

- Business becomes optimistic about future sales $\rightarrow I \uparrow \rightarrow AD \uparrow$ (Investment spending grows)
- Business becomes pessimistic about future sales $\rightarrow I \downarrow \rightarrow AD \downarrow$ (Investment spending contracts)

Business Taxes:

- Business taxes $\uparrow \rightarrow I \downarrow \rightarrow AD \downarrow$ (Lower expected profitability)
- Business taxes $\downarrow \rightarrow I \uparrow \rightarrow AD \uparrow$ (Higher expected profitability)

Two factors can change Net Exports: Foreign Real National Income and the Exchange Rate.

Foreign Real National Income: Earnings of people in other countries.

- Foreign Real National Income $\uparrow \rightarrow U.S. \text{ Exports } \uparrow \rightarrow U.S. \text{ net exports } \uparrow \rightarrow AD \uparrow$
- Foreign Real National Income $\downarrow \rightarrow U.S. \text{ Exports } \downarrow \rightarrow U.S. \text{ net exports } \downarrow \rightarrow AD \downarrow$

Exchange Rate: The price of one currency in terms of another currency

- A currency has appreciated in value if more of a foreign currency is needed to buy it.
- A currency has depreciated in value if more of it is needed to buy a foreign currency.
- Depreciation makes foreign goods more expensive.

(Ex.) Irish coat priced at €200 when the exchange rate is \$1.25 = €1

To buy the Irish coat, an American has to pay \$250.

Now suppose the dollar depreciates to \$1.50 = €1.

The American now has to pay \$300 for the coat.

- Dollar Depreciation $\rightarrow U.S. \text{ Exports } \uparrow$ and $U.S. \text{ Imports } \downarrow \rightarrow U.S. \text{ net exports } \uparrow \rightarrow AD \uparrow$

- Dollar Appreciation $\rightarrow U.S. \text{ Exports } \downarrow$ and $U.S. \text{ Imports } \uparrow \rightarrow U.S. \text{ net exports } \downarrow \rightarrow AD \downarrow$

$\rightarrow$ Foreigners (whose currency has appreciated) increase their purchases of U.S. exported goods.

Can a change in the Money Supply lead to a change in Aggregate Demand?

An increase in money supply affects interest rates, which changes consumption and investment, so money is a catalyst in a process that ends with a change in aggregate demand.

If one component rises (C, I, G, NX), does another spending component have to decline?

- We must look at the money supply and velocity.

- Velocity: The number of times a dollar changes hands (or is spent) to buy final goods and services in a year

$$\text{total spending} = \text{money supply} \times \text{velocity}$$

If both the money supply and velocity are constant, a rise in one spending component (such as consumption) necessitates a decline in one or more other spending components.

Short Run Aggregate Supply

Aggregate Supply: The quantity supplied of all goods and services (Real GDP) at various price levels.

Short Run Aggregate Supply Curve: Shows the quantity of all goods and services (Real GDP, or output) at different price levels.

- Upward Sloping: As price level ~~falls~~ rises, firms increase the quantity supplied of goods and services.

Why is the SRAS curve upward sloping?

Sticky Wages

- Firms pay nominal wages (\$30 an hour) but they often decide how many workers to hire based on real wages.

$$\text{Real Wage} = \frac{\text{Nominal Wage}}{\text{Price Level}}$$

Quantity of labor supplied is directly related to real wage

- As Real Wage rises, the quantity supplied of labor rises.

- As Real Wage falls, the quantity supplied of labor falls.

- More workers are willing to work more, at higher real wages, than at lower real wages.

- Quantity of labor demanded is inversely related to real wage.

- Real Wage $\uparrow$ $\rightarrow$ Quantity demanded of labor $\downarrow$

- Firms will employ more workers, the cheaper it is to hire them.

- If nominal wages are sticky (constant):

: Decline in price level and constant nominal wage $\rightarrow$ Real Wage $\uparrow$ $\rightarrow$ Firms ~~less~~ hire fewer workers $\rightarrow$ Decline in quantity supplied of Real GDP

- Price level falls, the quantity supplied of goods and services does too.

Worker Misperceptions

- In response to misperceived falling real wage, workers may reduce the quantity of labor they are willing to supply. With fewer workers (unemployed), firms produce less.

: Nominal wages and price level decline by equal percentage $\rightarrow$ Real Wage remains constant $\rightarrow$ Workers think real wage has fallen $\rightarrow$ workers reduce quantity supplied of labor $\rightarrow$ Less output is produced.

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What puts the "Short Run" in the SRAS Curve?

- Things are likely to change over time.
- Wages will not be sticky forever and workers will figure out that they misperceived changes in the real wage.

Factors that Shift the SRAS Curve: Wage rates, price of nonlabor inputs, productivity,

supply shocks

Wage Rates

- Higher wage rates mean higher costs, and, at constant prices, translate into lower profits and a reduction in the number of units that firms will want to produce.

• Wage Rates $\uparrow \rightarrow$ SRAS $\uparrow$

Price of Nonlabor Inputs

- Increase in the price of a nonlabor input (oil), shifts the SRAS curve leftward.

• Price of Nonlabor Inputs $\downarrow \rightarrow$ SRAS $\uparrow$

Productivity

- The output produced per unit of input employed over some length of time.

- Ex. Labor

- Productivity $\uparrow \rightarrow$ SRAS $\uparrow$

Supply Shocks

- Major natural or institutional changes that affect aggregate supply are referred to as supply shocks.

Supply Shocks

- There are Adverse Supply Shocks and Beneficial Supply Shocks.

Adverse: Shift Leftward

- Ex. Bad weather that wipes out a large part of the Midwestern wheat crop.

Ex. Major cutback in the supply of oil coming to the U.S. from Middle East

Beneficial: Shift Rightward

- Ex. Major oil discovery, unusually good weather leading to increased production of a food sample.

Putting AD and SRAS Together: Short Run Equilibrium

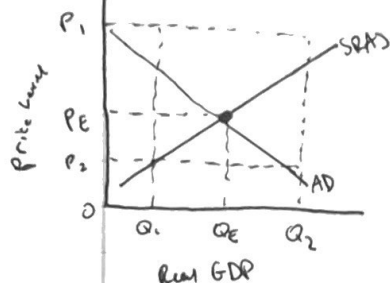
- The condition in the economy when the quantity demanded of Real GDP equals the (short-run) quantity supplied of Real GDP.

- This condition is met when the aggregate demand curve intersects the short-run aggregate supply curve.

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Short Run Equilibrium Graph



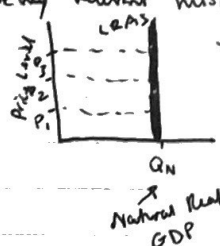
Surplus at P_1
Shortage at P_2

- Increase in aggregate demand increases the price level and Real GDP
- Increase in short run aggregate supply decreases the price level and increases Real GDP
- Decrease in short run aggregate supply increases the price level and decreases Real GDP

Long Run Aggregate Supply

- In a time when wages become unstuck, and misperceptions turn into accurate perceptions, the economy is said to be in the long run
 - The two conditions do not hold in the long run
- The level of Real GDP that the economy produces in the long run will NOT be the same as in the short run
- In the long run, the economy produces the full-employment Real GDP, or the Natural Real GDP
- Natural Real GDP: The Real GDP that is produced at the natural unemployment rate and the Real GDP that is produced when the economy is in long-run equilibrium

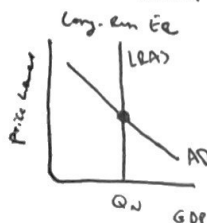
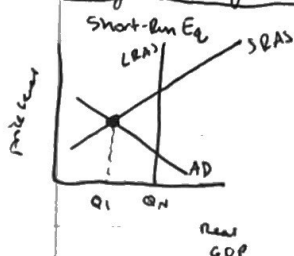
Long-run Aggregate Supply Curve: A curve that represents the output the economy produces when wages and prices have adjusted to their final equilibrium levels and when workers do not have any relevant misperceptions.



vertical line because is not related to price level

Disequilibrium: when the economy is neither in short run or long run equilibrium. The state of the economy as it moves from one short-run equilibrium to another or from short to long-run equilibrium.

Long-Run Equilibrium: Occurs at the intersection of the AD and LRAS



Difference: In long-run, the quantities supplied and demanded of Real GDP equal Natural Real GDP