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COMMERCE MENTORSHIP PROGRAM

FINAL REVIEW SESSION

ECON 102

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Topic 1:

GDP (Gross Domestic Product)

Intro to Macroeconomics

Macroeconomics

- The study of the economy as a whole.
  - Includes large-scale, economy-wide factors such as economic growth, inflation, unemployment, and GDP.
  - Includes markets, firms, consumers, and governments.

GDP (Gross Domestic Product)

- Also called National Income, National Output, and National Expenditure.
- The total monetary value of all finished goods and services produced in the economy of a country during a defined time period (usually a fiscal year).
- Used to estimate the size of an economy.

GDP (Gross Domestic Product)

Nominal GDP

- Current dollar measure of GDP.
- Reflects changes in output and changes in prices.
- Nominal GDP = Current Q x Current P

Real GDP

- Inflation adjusted measure of GDP (prices are held constant from year to year).
- Reflects changes in output produced (since prices are constant).
- Real GDP = Current Q x Base P

$$\textbf{GDP per capita} = \frac{\text{Real GDP}}{\text{Total Population}}$$

GDP (Gross Domestic Product)

Q1: The following table shows the output and prices of a country in 2023 and 2024. Calculate the nominal GDP in 2023 and 2024.

Goods produced	Price (2023)	Quantity (2023)	Price (2024)	Quantity (2024)
Bacon	$5	150	$6	180
Egg	$3	40	$5	75
Ham	$6	120	$7	200

GDP (Gross Domestic Product)

Q2: The following table shows the output and prices of a country in 2023 and 2024. Calculate the real GDP in 2023 and 2024.

Goods produced	Price (2023)	Quantity (2023)	Price (2024)	Quantity (2024)
Bacon	$5	150	$6	180
Egg	$3	40	$5	75
Ham	$6	120	$7	200

Potential GDP

Potential GDP (Y*)

- Also called Potential Output, Natural Rate of Output, and Full-Employment Output.
- Level of production of goods and services sustained in an economy in the long-run.
- The level of real GDP that the economy would produce at if resources are fully employed.

Output Gaps

- **Inflationary Gap**
  - $Y > Y^*$
  - The economy is producing at more than potential.
- **Recessionary Gap**
  - $Y < Y^*$
  - The economy is producing at less than potential.

Potential GDP

Business Cycle

- The fluctuation of GDP over time.
- Upswings and downswings (expansions and contractions) of economic activity.

Recession

- Two quarters of negative growth.
- Downward trend in the business cycle.

Depression

- Major downswing and persistent low growth.
- Characterized by high unemployment and pauses in economic activity.

Measuring GDP

Methods for Measuring GDP

- **Value Added Approach**
- **Expenditure Approach**
- **Income Approach**

Value Added Approach

- Add up all added value during production to determine the final market value of goods produced.
- Value Added = Sales Revenue - Cost of Intermediate Goods
- Avoids the problem of double counting (adding the value multiple times).
- Intermediate goods: all outputs that are used as an input for another stage of production.

Measuring GDP

Expenditure Approach

- Flow of expenditure needed to produce final output.
- Expenditures fall under four categories: consumption, investment, government, and net exports.
- GDP(E) = C + I + G + NX

Consumption Expenditure (C)

- Expenditure made by households on goods and services.

Investment Expenditure (I)

- Expenditures made by firms on goods that are not for present consumption.
- Includes plant and equipment, inventory, and residential construction (new housing).

Measuring GDP

Government Expenditure (G)

- Government purchases of goods and services.
- Excludes transfer payments (expenditures not in return for something else).

Net Exports (NX)

- Net Exports (NX) = Exports (X) - Imports (M)
- **Exports**: goods that flow out of and money that flows into the circular flow.
  - Foreign expenditure on domestically produced goods.
- **Imports**: goods that flow into and money that flows out of the circular flow.
  - Domestic expenditure on foreign produced goods.

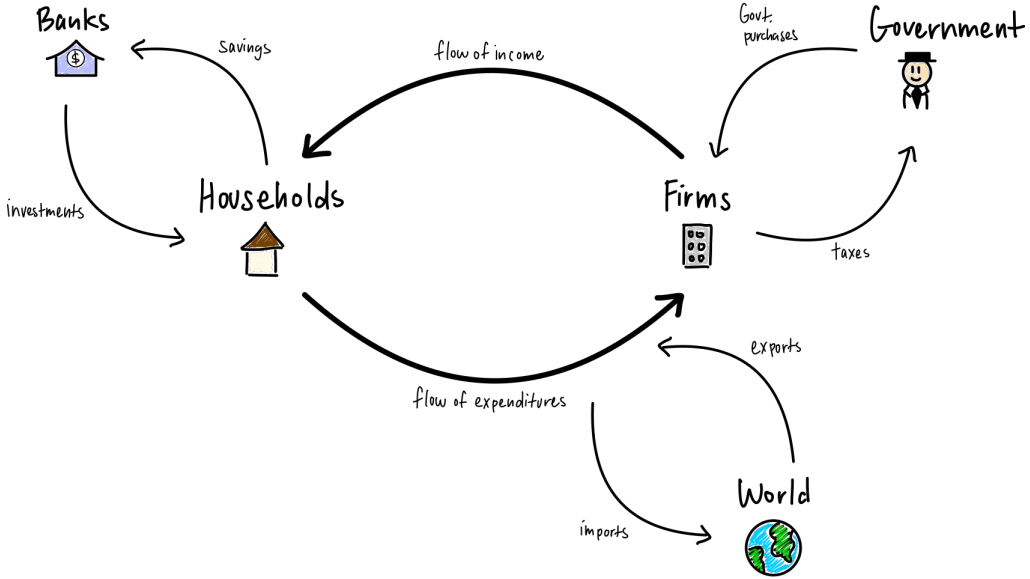
Measuring GDP

Q3: The following table provides information about a country's economic variables in 2024. Compute GDP using the expenditure approach.

Economic Variables	Amount (2024)
Consumption Expenditure	$8916
Wages & Salaries	$8556
Business Profits	$2715
Depreciation	$450
Interest Income	$3855
Investment Expenditure	$1005
Indirect Taxes	$2637
Exports	$1806
Imports	$1350
Subsidies	$903
Government Expenditure	$6933

Circular Flow Model

Spendthrift Economy: households and firms (flow of income and flow of expenditures)
Frugal Economy: includes banks (savings and investments)
Governed Economy: includes the Government (government purchases and taxes)
Open Economy: includes world trade (imports and exports)



Measuring GDP

Income Approach

- Flow of income claims by factors and non-factors on production
- GDP(I) = Factor Payments + Non-Factor Payments

Factor Payments

- Wages and Salaries (payments to labour)
- Economic Rent (payment to land)
- Interest (payment to capital)
- Business Profits (payment to taxes and expenditures)

Non-Factor Payments

- Indirect business taxes (sales and property taxes)
- Depreciation
- Subsidies (subtracted from the GDP(I) formula)

Measuring GDP

Q4: The following table provides information about a country's economic variables in 2024. Compute GDP using the income approach.

Economic Variables	Amount (2024)
Consumption Expenditure	$8916
Wages & Salaries	$8556
Business Profits	$2715
Depreciation	$450
Interest Income	$3855
Investment Expenditure	$1005
Indirect Taxes	$2637
Exports	$1806
Imports	$1350
Subsidies	$903
Government Expenditure	$6933

Omissions from GDP

Illegal Activities

- Not reported and difficult to measure.

Underground Markets

- Legal transactions that are not recorded for tax evasion purposes.

Non-Market

- Include home activities, volunteering, leisure.
- Add to economic well being, but there is no transaction.

Free Products

- Include the internet and social media platforms
- Generate economic activity, but there is no transaction.

Economic "Bads"

- Include negative effects to the environment, health, and well being.
- Negative externalities that detract from economic value.

GDP Deflator

- An index of inflation that considers all goods produced in a country.
- Converts Nominal GDP to Real GDP.

$$\textbf{GDP Deflator} = \frac{Q_{Current} \times P_{Current}}{Q_{Current} \times P_{Base}}$$

$$\textbf{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

GDP Deflator

Q5: Calculate the GDP deflator for 2024 based on the values in the following table.

	2023	2024
Nominal GDP	725	850
Real GDP	550	680

Rule of 70

Rule of 70

- Used to determine the number of years it takes for a variable to double.

$$\textbf{Number of years for variable to double} = \frac{70}{\text{Growth Rate}}$$

- Can be calculated with nominal GDP or real GDP.

Topic 2:

Aggregate Expenditure

Aggregate Expenditure

Desired Expenditure

- Intended and planned value of GDP
- Y-axis

Actual Expenditure

- Actual value of GDP
- X-axis

Autonomous Expenditure

- Exogenous variable
- Does not depend on Y (GDP / National Income)

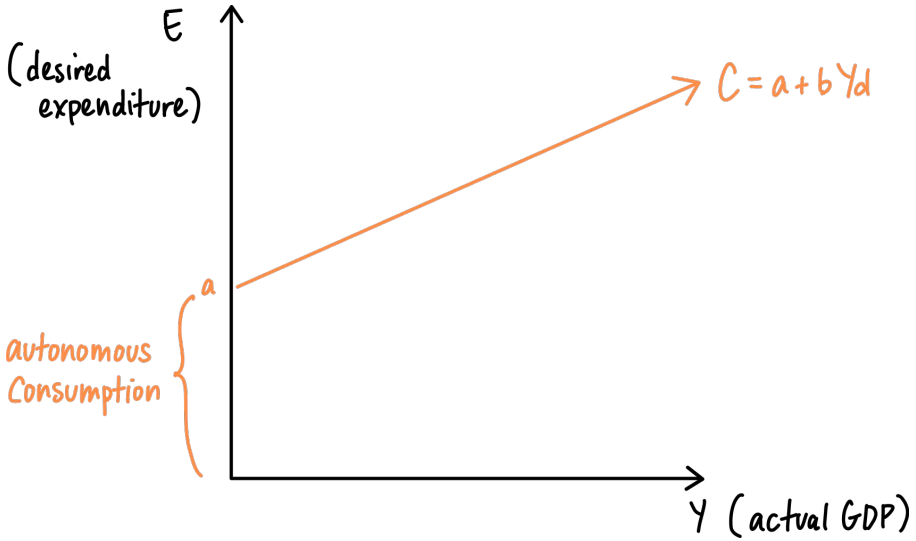
Induced Expenditure

- Endogenous variable
- Function of Y

Consumption Function

Consumption Function

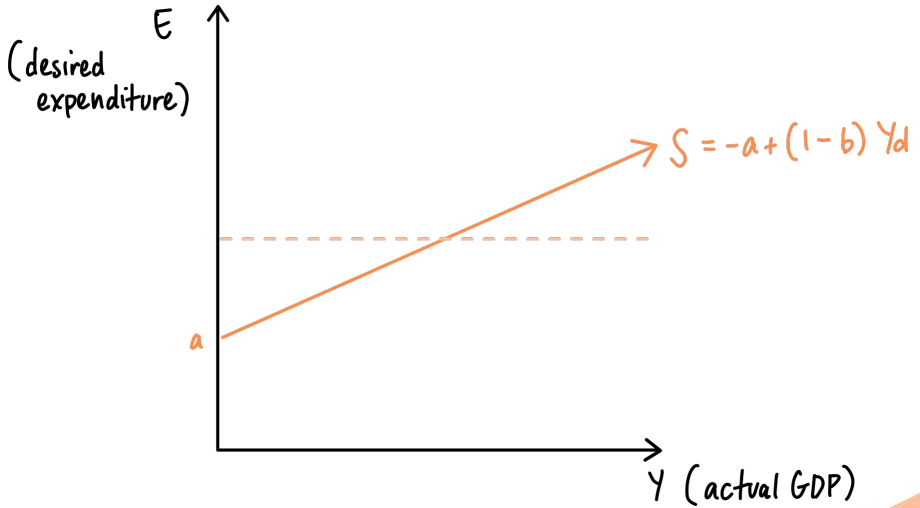
- Simplified function of aggregate expenditure.
- Relationship between desired consumption and actual GDP/income.
- C = a + bYd
  - a = autonomous consumption
  - bYd = induced consumption
    - b = marginal propensity to consume (MPC)
    - Yd = disposable income (Yd = Y(1 - t))



Savings Function

Savings Function

- Consumption + Savings = Disposable Income
- S = Yd - C
- S = -a + (1 - b)Yd
    - 1 - b = marginal propensity to save



Theories of the Consumption Function

Keynes' Theory

- Short-sighted view.
- Current consumption depends largely on current disposable income (Yd).
    - Consumption is induced and a dependent variable based on income.

Friedman's Theory

- Forward-looking view.
- Also called the Permanent Income Hypothesis.
- Current consumption depends on permanent income (the present value of expected income).
    - Consumers spend money based on their expected long-term average income.
    - Lifetime savings play a key role in determining consumption behaviour.

Consumption Function

Marginal Propensity to Consume (MPC)

- Ratio of the change in desired consumption to the change in disposable income.
- MPC = ΔC / ΔYd

Average Propensity to Consume (APC)

- The proportion of disposable income that households want to spend.
- APC = C / Yd

Marginal Propensity to Save (MPS)

- Ratio of the change in desired savings to the change in disposable income.
- MPC = ΔS / ΔYd

Average Propensity to Save (APS)

- The proportion of disposable income that households want to save.
- APC = S / Yd

Consumption Function

Q6: Nina received a raise in salary from $80,000/yr to $115,000/yr. Her savings increased from $30,000 to $42,000 per year. Calculate her MPC.

Aggregate Expenditure

Aggregate Expenditure

- The total desired components of spending in the economy.
- Frugal economy: AE = C + I
- Governed economy: AE = C + I + G
- Open economy: AE = C+ I + G + NX

Aggregate Expenditure Function

- AE (desired) = a + bY
- a: autonomous expenditures
- bY: induced expenditure (depends on national income)
    - b: marginal propensity to spend

Aggregate Expenditure

Induced (variable) vs Autonomous (fixed)

- Consumption expenditures: Induced and Autonomous
- Investment expenditures: Autonomous
- Government expenditures: Autonomous
- Exports: Autonomous
- Imports: Induced

Autonomous Expenditure: C + I + G + X

Induced Expenditure: [MPC x (1 - t)Y] - mY

AE = a + [MPC x (1 - t)Y] + I + G + X - mY

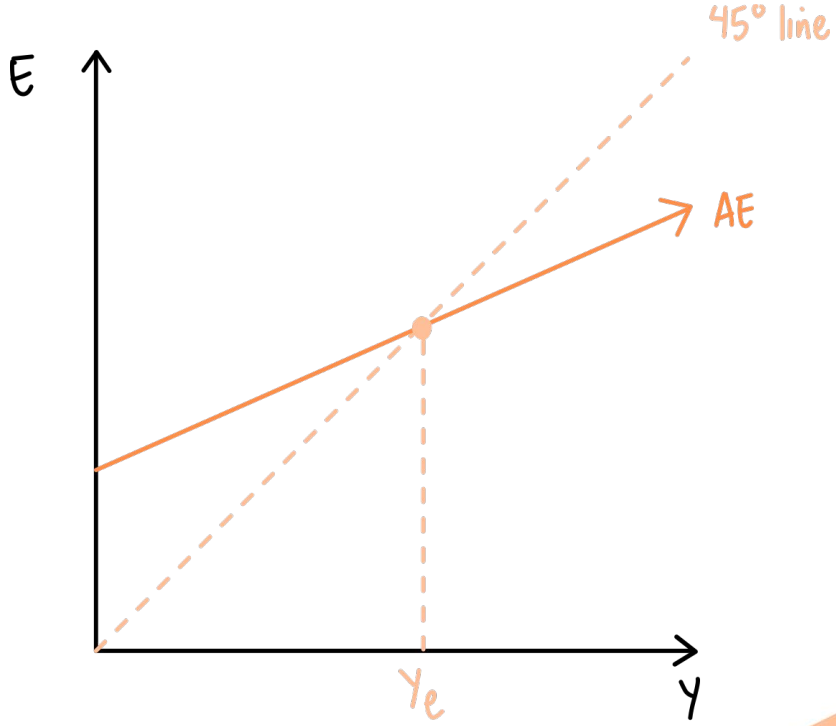
Aggregate Expenditure

Q7: The United States' autonomous consumption is $850, government expenditure is $360, marginal tax rate is 10%, exports is $240, investments is $150, marginal propensity to consume is 0.8, and marginal propensity to import 0.2. Determine the aggregate expenditure function.

Equilibrium

Equilibrium

- Stable level of GDP (GDP remains constant and does not want to change).
    - There is a tendency for GDP to move toward the equilibrium.
- Point of intersection where AE = Y (desired expenditure is equal to actual output).
- Where the AE function intersects the 45 degree line.
    - The 45 degree line is a hypothetical line that shows all points where desired expenditure is equal to actual output.



Equilibrium

Why is AE = Y a stable equilibrium?

- AE = Y is a stable equilibrium meaning that any deviation from this point will push the economy back towards it.

If AE > Y:

- Spending is greater than production.
- Firms will produce more to keep up with demand.
- Real output increases until AE = Y.

If AE < Y:

- Spending is less than production.
- Firms will produce less since they have excess inventory.
- Real output decreases until AE = Y.

Equilibrium

Q8: Using the previous aggregate expenditure function, solve for the equilibrium point.

Equilibrium

Q9: Draw a graph of the AE function. Indicate the equilibrium point on the graph.

Equilibrium

Equilibrium

- The equilibrium point is also where withdrawals is equal to injections.
  - The amount of money leaving the economy is equal to the amount of money entering the economy.

Withdrawals

- The induced portion of aggregate expenditures.
- Includes savings, taxes, and imports.

Injections

- The autonomous portion of aggregate expenditures
- Includes autonomous consumption, investments, government purchases, and exports.

Equilibrium

Why is W = J a stable equilibrium?

- W = J is a stable equilibrium meaning that any deviation from this point will push the economy back towards it.

If W > J:

- More money is leaving than entering.
- Y decreases.
- W also decreases, since withdrawals are induced, until W = J.

If W < J

- More money is entering than leaving.
- Y increases.
- W also increases, since withdrawals are induced, until W = J.

Marginal Propensity to Spend (MPSpend)

Marginal Propensity to Spend

- The proportion of an additional dollar of income that is spent on consumption.
- MPSpend determines how much people spend.
- Slope of the AE function.

MPSpend = MPC (1 - t) - m

- MPC: marginal propensity to consume
- t: tax rate
- m: marginal propensity to import

Marginal Propensity to Spend (MPSpend)

Q10: Scarlett has $100 in income. If there were no taxes, she would want to save $40. Since the government taxes 15% of Scarlett's total income, she only consumes on her after-tax income. Additionally, 10% of her income is used to purchase imports. Calculate Scarlett's marginal propensity to spend.

Topic 3:

Multiplier

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Multiplier

Multiplier

- How much a change in autonomous spending will increase GDP.
  - Autonomous spending raises income, which induces more spending and creates a continuous cycle.
- Reflects the magnifying effect of initial spending on overall economic activity and GDP.

$$\textbf{Multiplier} = \frac{1}{1 - \text{MPSpend}}$$

Change in GDP = Change in Autonomous Expenditure x Multiplier

Multiplier Effect

How will the injection of dollars from spending affect GDP and economic activity?

- The multiplier effect results in a larger overall increase in GDP and economic activity (than the initial injection amount).
- Spending is a continuous cycle.
    - When a consumer spends, the recipient of income will then spend the money.
    - Each round of spending generates more rounds and increases economic activity.
    - The multiplier amplifies the impact of the initial injection amount.

Multiplier and MPSpend

Relationship between the multiplier and MPSpend

- Direct relationship.
- When MPSpend increases, there is a greater increase in overall spending and a larger multiplier effect.
- The relationship is shown in the multiplier formula

$$\textbf{Multiplier} = \frac{1}{1 - \text{MPSpend}}$$

Multiplier

Q11: Suppose the autonomous consumption in Canada increases by $20 billion. MPSpend is 0.8. What is the total effect on GDP?

Multiplier

Q12: What is the multiplier if a $900,000 decrease in investment expenditure in the United States resulted in a $1.5 million decrease in real GDP.

Topic 4:

AD/AS Model

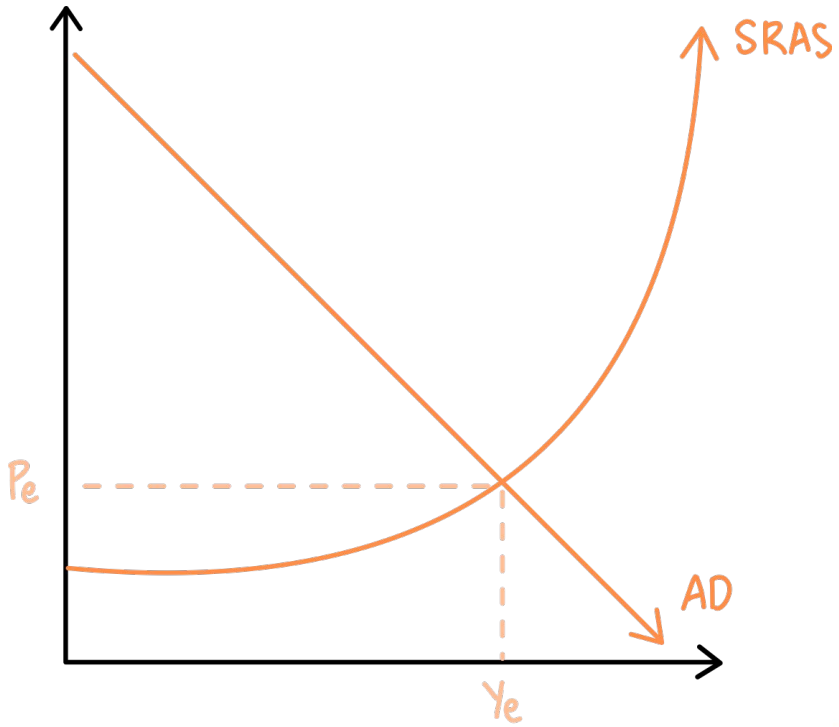
AD/AS Model

AD/AS Model

- Macroeconomic model of price level and output through the relationship between aggregate demand and aggregate supply.
- Used to explain fluctuations in economic activity.

Macroeconomic Equilibrium

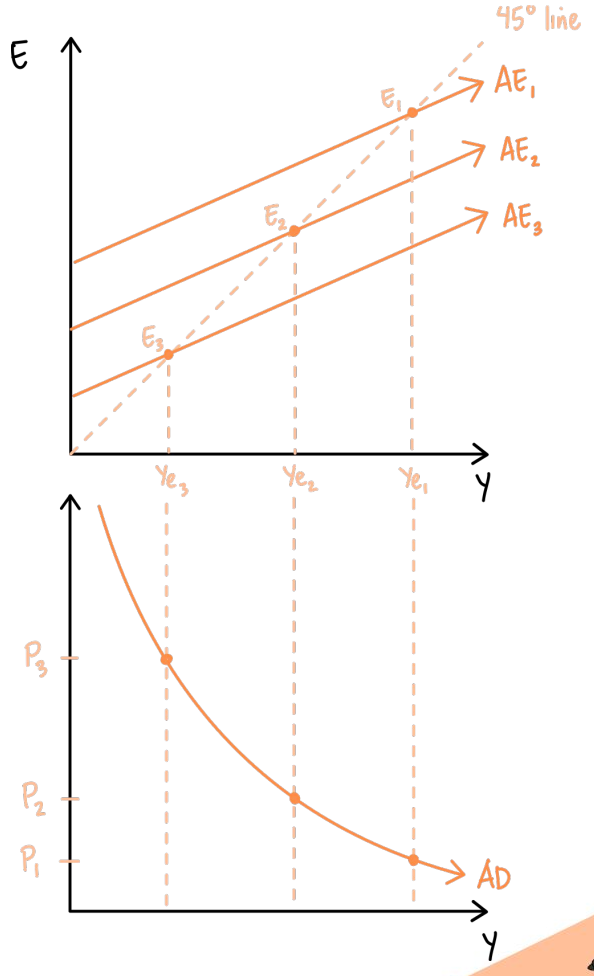
- Intersection of AD and short-run AS curves.
- Ye is the equilibrium level of GDP.
- Pe is the general price level in the economy.



Aggregate Demand

Aggregate Demand

- Total demand for final goods and services in an economy.
- Curve that shows the quantity of goods and services that households, firms, and the government want to buy at each price level.
- Relationship between the general price level (P) and the level of GDP (Y) for which Y = E.
- Combinations of P and Y where AE intersects the 45 degree line.

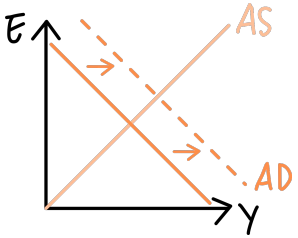


Aggregate Demand Shocks

- An event that shifts the aggregate demand curve.
- Caused by changes in autonomous AE (changes in consumption, investment, government purchases, and net exports)

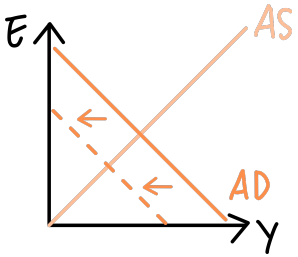
Positive/Expansionary demand shock:

- Shifts the curve to the right.
- Increases aggregate output and price level.



Negative/Contractionary demand shock:

- Shifts the curve to the left.
- Decreases aggregate output and price level.



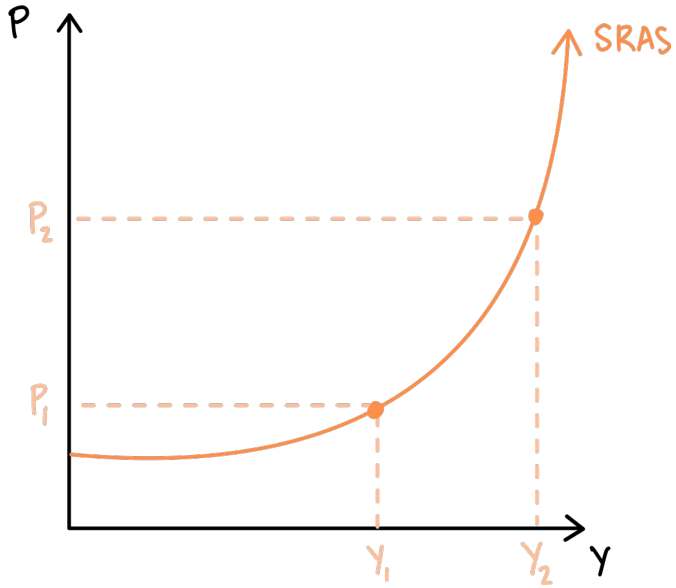
Short-Run Aggregate Supply

Short-Run Aggregate Supply

- Total amount of goods and services that firms are willing and able to supply.
- The quantity of goods and services that firms choose to produce and sell at each price level.
- Assumptions:
  - Factor prices are constant.
  - State of technology is constant.
- Upward sloping curve that reflects unit costs.

Law of Diminishing Marginal Returns

- As output increases and efficient inputs are used, costs increase since the less efficient inputs are left.
- Increasing slope and unit costs rising faster.

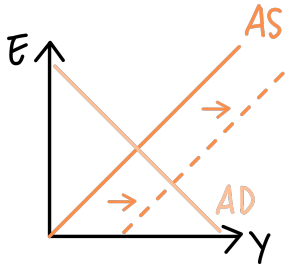


Aggregate Supply Shocks

- An event that shifts the short-run aggregate supply curve.
- Caused by changes in input prices, productivity, and technology.

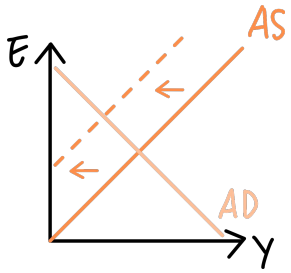
Positive/Expansionary supply shock:

- Shifts the curve to the right.
- Increases aggregate output.
- Decreases price level.



Negative/Contractionary supply shock:

- Shifts the curve to the left.
- Decreases aggregate output
- Increases price level.



Aggregate Demand and Supply Shocks

Q13: Determine the type of aggregate demand or aggregate supply shock in the following scenarios:

A. A 10% decrease in income taxes.

B. A significant increase in labour productivity.

C. The central bank raises interest rates.

Aggregate Demand and Supply Shocks

Q13: Determine the type of aggregate demand or aggregate supply shock in the following scenarios:

D. A sudden spike in input prices.

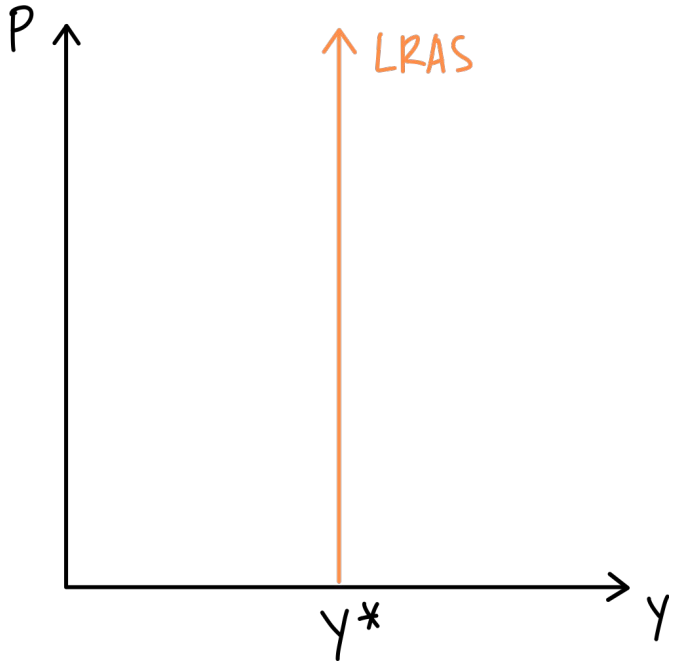
E. Consumer uncertainty during an economic downturn.

F. Increased crop yields due to good weather conditions.

Long Run Aggregate Supply

Long Run Aggregate Supply

- Vertical slope at the full employment level of output.
  - Real GDP in the long run is fixed and independent of price level and aggregate demand.
  - All available factors of production are fully utilized.
- Unlike short run aggregate supply which is upward sloping.
- Represents maximum potential output in an economy.



Topic 5:

Money and Banking

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Definition of Money

Medium of Exchange

- Easily recognizable and acceptable.
- Durable, divisible, portable, and difficult to counterfeit.
- Facilitates trade and used to buy goods.
    - Without money, goods would be exchanged by barter (requiring a double coincidence of wants).

Store of Wealth

- Maintains stable value over time and purchasing power.
    - Can be exchanged for goods in the future.
- Method for deferred payments.

Unit of Account

- common measure allowing comparison of value of goods.

Origins of Money

Commodity Money

- Money that takes the form of commodities (such as gold and silver).
- High intrinsic value.

Fiat Money

- Paper money or coinage that is declared by the Government and law as legal tender.
  - By law, it must be accepted when offered for purchase of goods.
- Money without intrinsic value.

Why does fiat money have value?

- Generally accepted by the public.
- People have trust in the Government that issues the fiat money.
- Backed by the productive capacity of the economy (ability to produce goods and generate income).

Sectors of the Economy

Real Sector

- Production of goods and services.
- Regulated by relative prices.
- Includes employment, GDP, and overall economic activity.

Monetary Sector

- Refers to financial activities and institutions that manager money supply in an economy.
- Includes the banking system, financial markets, interest rates, and monetary policy.

The real sector and monetary sector are interconnected.

Banking System

Central Bank

- In Canada: Bank of Canada (BoC)
  - Crown Corporation owned and operated by the Government of Canada that controls the banking system.
  - The sole money-issuing authority.

Commercial Banks

- Also known as chartered banks.
- Privately-owned, profit-maximizing financial institutions .
- Big 5 commercial banks in Canada:
  - Royal Bank of Canada (RBC)
  - Toronto-Dominion Bank (TD)
  - Bank of Nova Scotia (Scotiabank)
  - Bank of Montreal (BMO)
  - Canadian Imperial Bank of Commerce (CIBC)

Central Bank Functions

Bank for Commercial Banks

- Lend money to and accept deposits from commercial banks.
- Transfer funds between commercial banks.

Bank for the Government

- Lend money to and accept deposits from the Government.

Regulate Money Supply

- Controls the amount of money in circulation.

Regulate Financial Markets

- Prevents bank failures.
- Sets monetary policy.

Commercial Bank Functions

Credit Provider

- Intermediaries of the credit market.
- Borrow money by accepting deposits and lend money by providing credit (such as loans, mortgages, and credit cards).

Interbank Activity

- Facilitates cooperative relationships between commercial banks.
    - Payments and transactions through services (such as electronic fund transfers), bank cards (debit/credit), and cheques.Lend money to and accept deposits from the Government.

Money Supply

Money Supply Definition

- The total quantity of money in an economy at a point in time.
- Includes currency in circulation and demand deposits at commercial banks.
- Central bank monitors money supply by conducting monetary policy.

Measures of Money Supply

- There are different measures of money supply.
- **M1** = Currency + Demand Deposits (chequing accounts)
- **M2** = M1 + Savings Deposits
- **M2+** = M2 + Deposits at non-bank financial intermediaries (insurance companies, trust companies, pension funds, mutual funds, etc)
- **M3** = M2 + Foreign Currency Deposits

Bank Reserves

Reserves

- Money that commercial banks hold onto.
  - When commercial banks receive a deposit, money is either loaned out or held as a reserve.
- Purpose of reserves:
  - Ensure liquidity to meet customer withdrawal demands
  - Avoid bank runs (when there are greater withdrawal demands than reserves)
- In Canada, there is no legislature that states a required amount of reserves held by commercial banks.

Reserve Ratio (RR)

$$\textbf{RR} = \frac{\text{Reserves}}{\text{Deposits}}$$

Reserve Ratio

- The fraction of deposits that are held by commercial banks as reserves.
- Target Reserve Ratio (RR):
  - Set independently by commercial banks in Canada.

Excess Reserves

- Any reserves above the target RR.

Reserve Ratio (RR)

Q14: RBC has $1 billion in deposits. Its reserve ratio is 12%. How many reserves does the RBC have?

Money Creation

Money Creation by the Banking System

- Multiple expansion of money supply.
- The commercial banking system creates money when receiving a new deposit into the banking system.
    - A single increase in monetary base create a larger change in the overall money supply in the economy.
- Due to the money multiplier and lending process.

Money Multiplier

$$\textbf{Money Multiplier} = \frac{1}{\text{Reserve Ratio}}$$

Money Multiplier

- The maximum amount of money the banking system generates with each dollar of a new deposit.
- When a commercial banks receives a new deposit, only a portion is kept as reserves.
    - The rest is lended out creating new deposits that are again partially lended out which allow deposits to multiply.

Total Change in Money Supply = Money Multiplier x Initial Change in Monetary Base

Money Multiplier

Q15: Assume all commercial banks have a 10% target reserve ratio. Assuming there are no excess reserves, what is the maximum increase in money supply if the monetary base increases by $10,000?

Money Multiplier

Q16: Assume CIBC has a target reserve ratio of 20%. If CIBC receives a new deposit of $50,000, how much does its target reserves change? How much does its excess reserves change?

Money Multiplier

Q17: Monetary base increased by 25%. As a result, money supply increased by 55%. What is the money multiplier?

Money Multiplier

$$\textbf{Cash Ratio} = \frac{\text{Cash}}{\text{Deposits}}$$

Cash Drain

- The amount of cash held by the public as a fixed fraction of their bank deposits.

$$\textbf{New Money Multiplier} = \frac{1}{\text{Reserve Ratio} + \text{Cash Ratio}}$$

Topic 6:

Financial System

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Financial System

Financial System

- A group of institutions that match savings and investments together.
- Financial intermediary:
    - Financial institution that serves as a middleman and facilitates financial transactions.

Wealth

- Financial assets and accumulated purchasing power.
- Includes money and bonds.

Money

- Non-interest bearing asset.
- Includes paper money, coins, and bank deposits.

Bonds

Bonds

- Interest-bearing asset.
- Issued by companies or the government.
    - Financial contract to pay a fixed payment in the future and repay the principal (money loaned originally).
- Buying a bond: loaning money (creditor).
- Selling a bond: borrowing money (debtor).

Bond Terminology

Present Value

- Current value of bond's future cash flows (includes coupon payments and principal).
- Interest-bearing asset.
- Loan agreement for a company or the government.

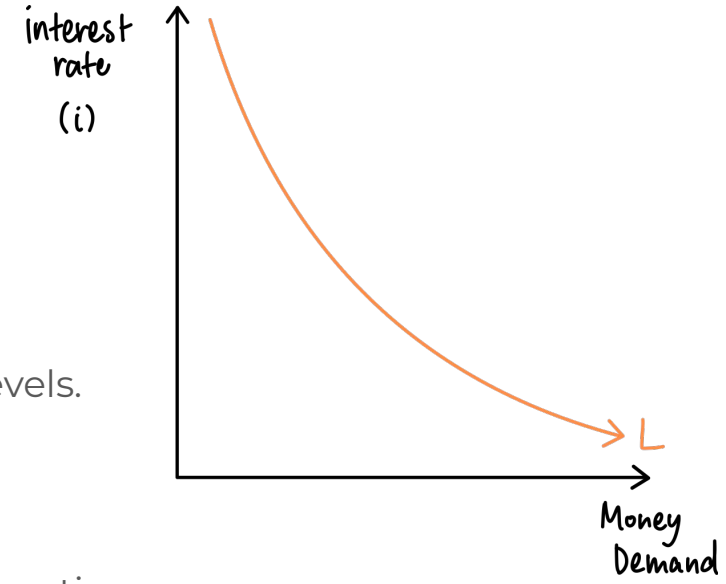
$$\textbf{PV} = \frac{\text{Future Value}}{(1 + i)^n}$$

Yield to Maturity

- Overall rate of return for a bond.
- Moves the the market interest rate.

Present Value and Interest Rate are inversely related.

Money Demand Function



Money Demand

- The total amount of money that the public wants to hold as cash.
- L = Liquidity Preference Function
  - Willingness to hold cash rather than bonds.
- Dependant on interest rate, real income, and price levels.

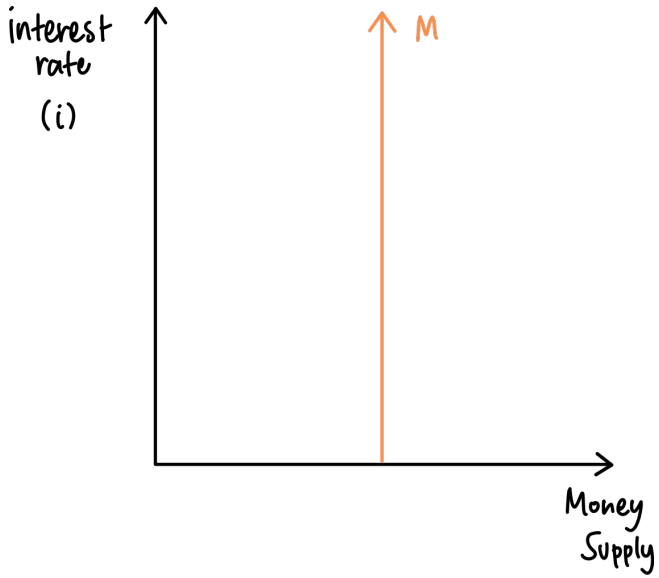
Money Demand Influences

- Transactions demand
  - Carrying money so it is readily available for transactions.
- Precautionary demand
  - Uncertainty about timing of expenditures or emergencies.
- Speculative demand
  - Inversely related to interest rates.
  - Taking advantage of investing in assets (buying low and selling high).

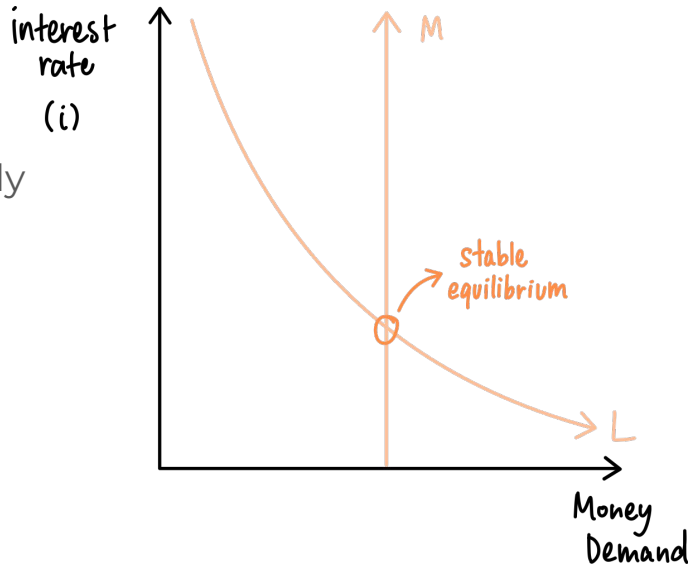
Money Supply Function

Money Supply

- The total amount of money available in an economy at a point in time.
- M = Money Supply
    - Perfectly inelastic (vertical line) and independent of interest rates.
- Dependant on the reserve ratio, cash ratio, new deposits, and central bank actions.



Monetary Equilibrium



Equilibrium Interest Rate

- Where the money demand function and money supply function intersect.

If L > M:

- Excess demand for money.
- Decreases demand for bonds
  - Decreases bond price and increases interest rate.

If L < M:

- Excess supply of money.
- Increases demand for money
  - Increases bond price and decreases interest rate.

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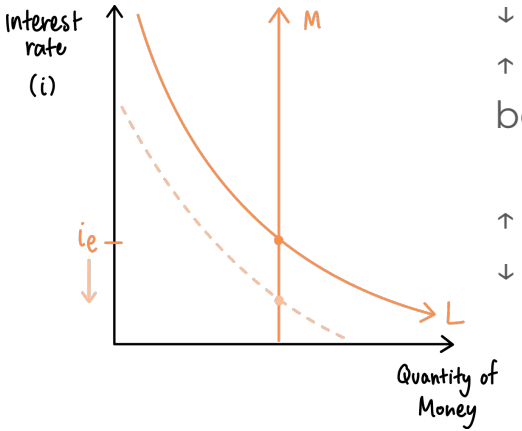
Monetary Transmission Mechanism

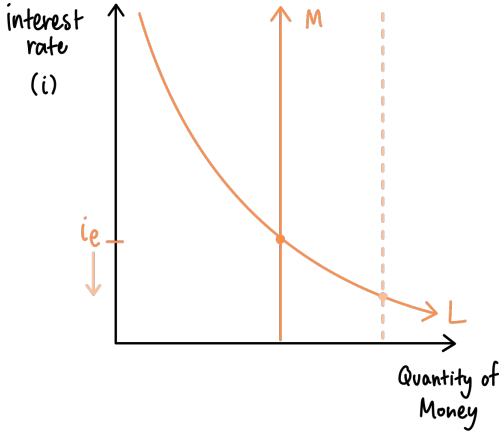
- The connection of changes in money supply and money demand with changes in aggregate demand.
    - Monetary sector affects the real sector.

Change in Equilibrium Interest Rate



↓ L
↑ demand for bonds

↑ bond price
↓ i_e



↑ M
↑ demand for bonds

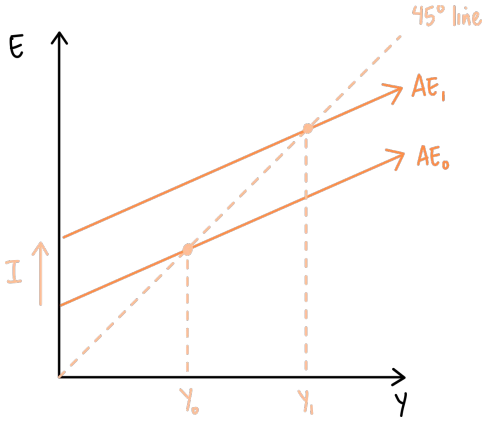
↑ bond price
↓ i_e

Monetary Transmission Mechanism

Change in Desired Investment

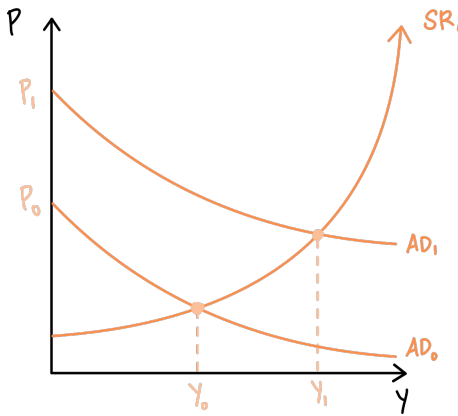
- Interest rates and willingness to invest are inversely related.
    - Decreased interest rates decreases the cost of borrowing and increases desired investment.

Change in Aggregate Expenditure



↑ desired I
↑ AE

Change in Aggregate Demand

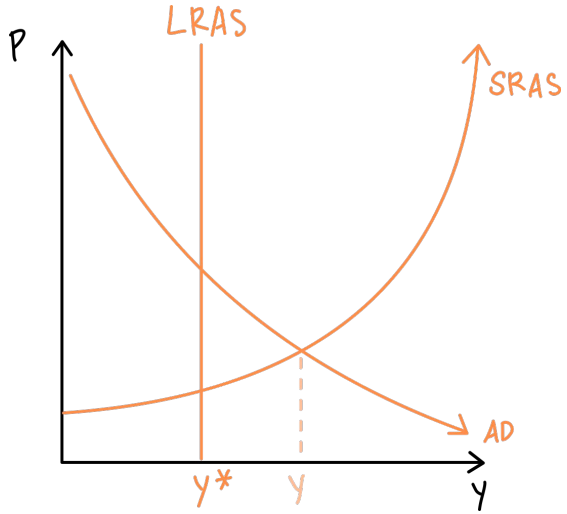


↑ AE
↑ AD

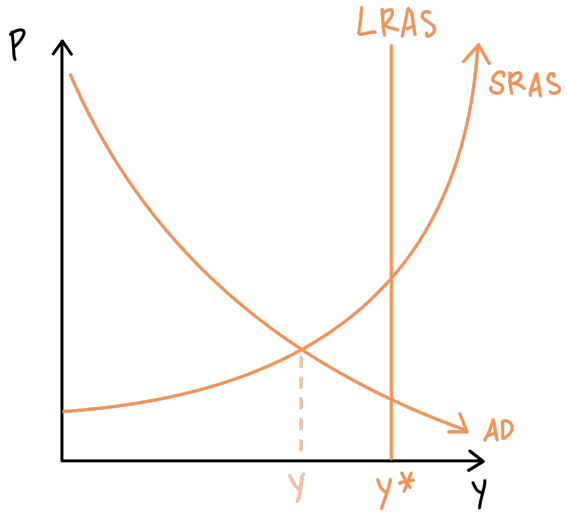
Output Gap

- Difference between actual GDP (Y) and potential GDP (Y*).

Inflationary Gap



Recessionary Gap



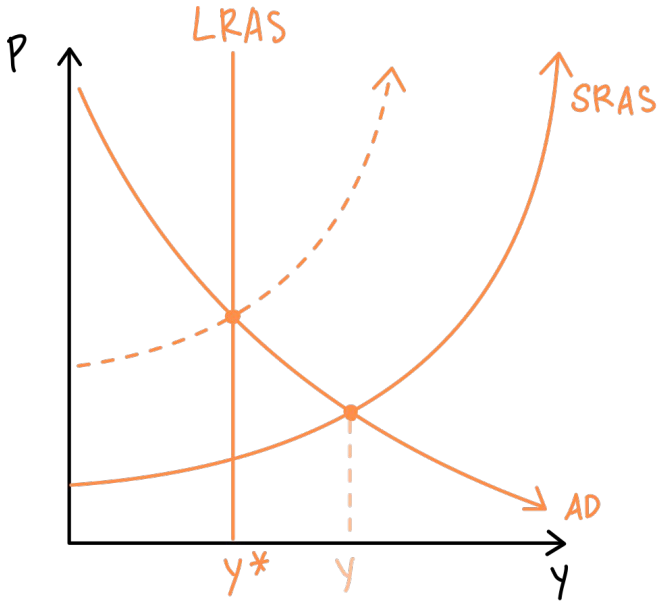
Adjustment Process

Inflationary Gap

- Initially, the economy is in equilibrium.
- The inflationary gap is caused by a positive expansionary AD or SRAS shock.

Adjustment Process

- Costs and wages rise due to inflationary pressures.
- SRAS shifts to the left.
- Real GDP is unchanged.
- Price level increases (inflation).



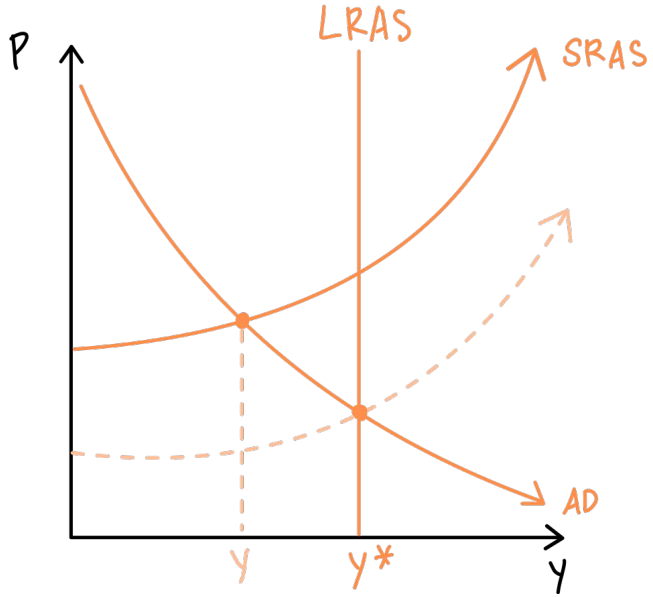
Adjustment Process

Recessionary Gap

- Initially, the economy is in equilibrium.
- The recessionary gap is caused by a negative contractionary AD or SRAS shock.

Adjustment Process

- Costs and wages fall due to downward pressures.
- SRAS shifts to the right.
- Real GDP is unchanged.
- Price level decreases (deflation).



Consequences of AS Shocks

Income Redistribution

- Redistribution from workers to shareholders (since workers are negatively affected to push Y back to Y*.

Income Inequality

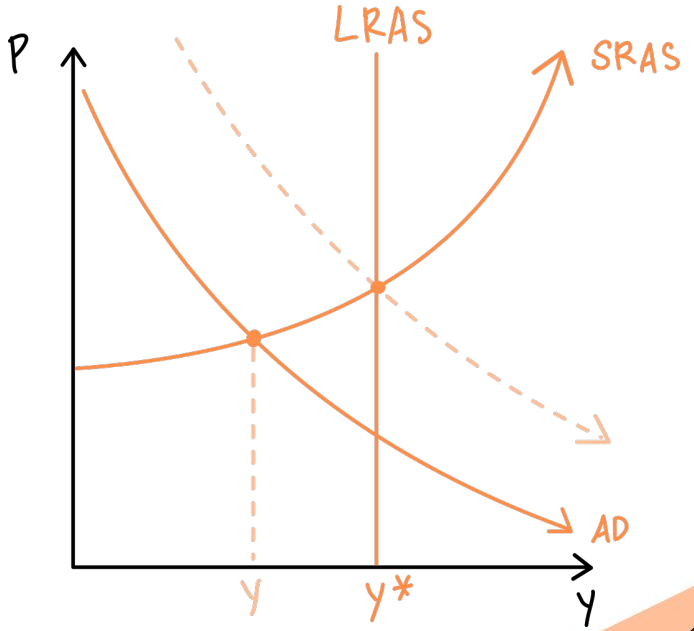
- In a recessionary gap, firms reduce labour costs and decrease wages.
- In an inflationary gap, increased costs of production results in higher prices paid by consumers (decreasing purchasing power).

Fiscal Stabilization Policy

- Used to eliminate output gaps using AD shock (rather than SRAS shock).
- Stronger than the economy's natural adjustment process)

Contractionary Policy

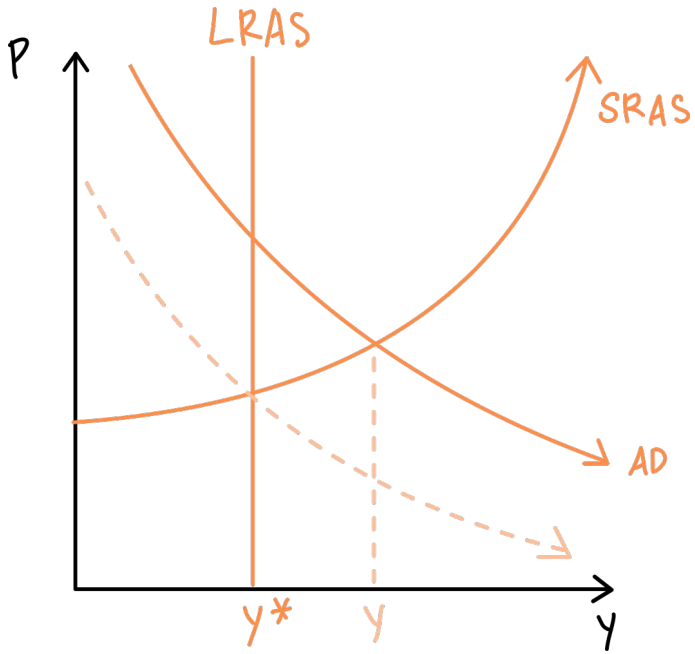
- Closing inflationary gap.
- Decrease G or increase T.
- AE decreases and AD shifts to the left.
- Output gap closes without increased price level.



Fiscal Stabilization Policy

Expansionary Policy

- Closing recessionary gap.
- Increase G or decrease T.
- AE increases and AD shifts to the right.
- May substantially shorten a lengthy recession.



Topic 7:

Monetary Policy

Monetary Policy

Monetary Policy

- The central bank's decisions regarding money supply and interest rates to influence aggregate demand.

Expansionary Monetary Policy

- Used in a recessionary gdp.
- Increase money supply and decrease interest rate.

Contractionary Monetary Policy

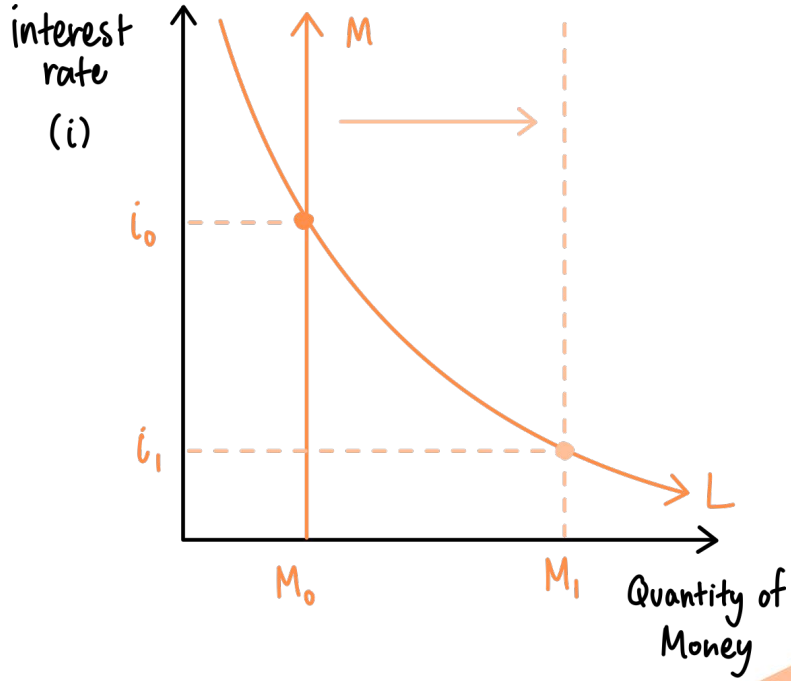
- Used in an inflationary gap.
- Decrease money supply and increase interest rate.

Targeting Money Supply

- The central bank attempts to influence the money supply directly resulting in a shift in equilibrium interest rate.

Disadvantages

- Cannot directly control money supply (can only influence).
    - Bank of Canada does not have control over deposit expansion of commercial banks.
- Uncertainty regarding position and slope of money demand curve which affects the change of interest rate.

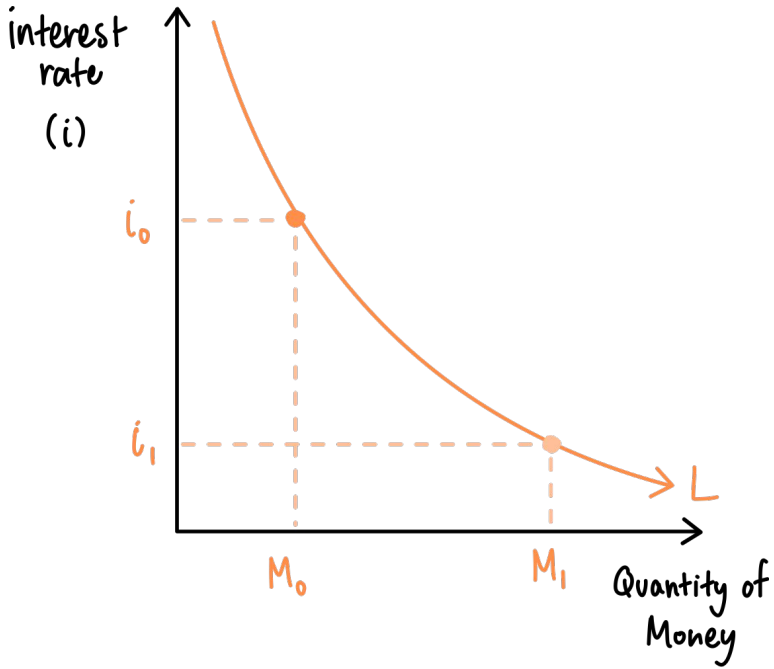


Targeting Interest Rate

- Direct change in interest rate.
- Results in a movement along the money demand curve which must be accommodate by a change in money supply by the central bank.

Advantages

- Bank of Canada has direct control over a particular interest rate.
    - Able to communicate directly to the public.



Interest Rates

- There are many interest rates in the Canadian economy.
- The entire distribution of interest rates move together.

Overnight Rate (ONR)

- The anchor of the yield curve and all interest rates.
- Interest rates that commercial banks borrow from other commercial banks.
- The target ONR is set by the Bank of Canada.

Bank Rate

- The rate that the Bank of Canada charges commercial banks for loans.
- 0.25 percentage points above the target ONR (upper limit of operating band).

Deposit Rate

- The rate that the Bank of Canada pays to borrow from commercial banks.
- 0.25 percentage points below the target ONR (lower limit of operating band).

Inflation Targeting

Negative Effects of High Inflation

- Reduces purchasing power which distorts the price system affecting demand and supply.
- Generates uncertainty prohibiting the economy from running smoothly.
- Changes in inflation are interdependent with unemployment rates and real GDP.

Monetary Policy and Inflation

- Monetary policy is the most important determination of long-run inflation.
    - Money supply and interest rates affect inflationary pressures.
- The Bank of Canada targets an inflation rate of 2%.

Topic 8:

Unemployment

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Unemployment

Labour Force

- Sum of employment and unemployment.
- **Employment**: number of people above 15 years old who are employed (full-time, part-time, temporary, self-employed).
- **Unemployment**: number of people above 15 years old who are willing and searching for work but are not employed.

Unemployment Rate

- Unemployment rate = $\frac{\text{Unemployed}}{\text{Labour Force}}$

Unemployment

Types of Unemployment

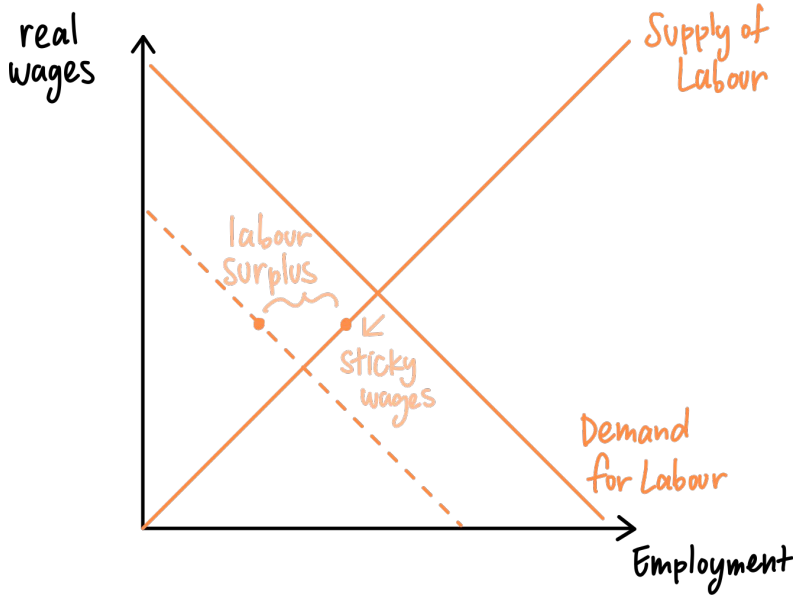
- **Frictional**: unemployment between jobs
- **Structural**: mismatch in skills and demand for labour
- **Cyclical**: caused by recessionary gaps in the business cycle

Natural Rate of Unemployment

- Also called the non-accelerating inflation rate of unemployment (NAIRU).
- Rate of unemployment when the economy is at full employment.
- Frictional unemployment + structural unemployment.

Wage Stickiness

- Wages are generally relatively stable and reluctant to fall (sticky downward).
- In a recession, wages fall slowly.
  - The demand for wages decrease, however the price of labour does not fall quickly.
  - Results in excess supply of labour and cyclical unemployment.
- In a boom, wages rise quickly.



Topic 9:

Inflation

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Inflation and CPI

Inflation

- The increase in the average overall price level of goods and services in the economy.
- Price level is expressed with the CPI (Consumer Price Index).

$$\textbf{Inflation Rate} = \frac{\text{Change in Price Level}}{\text{Initial Price Level}}$$

- Percent change in price level.

CPI (Consumer Price Index)

- An index of the weighted average price of all goods and services of a market basket of goods (representative of consumer spending and used to track changes in prices over time).

CPI

Constructing the CPI

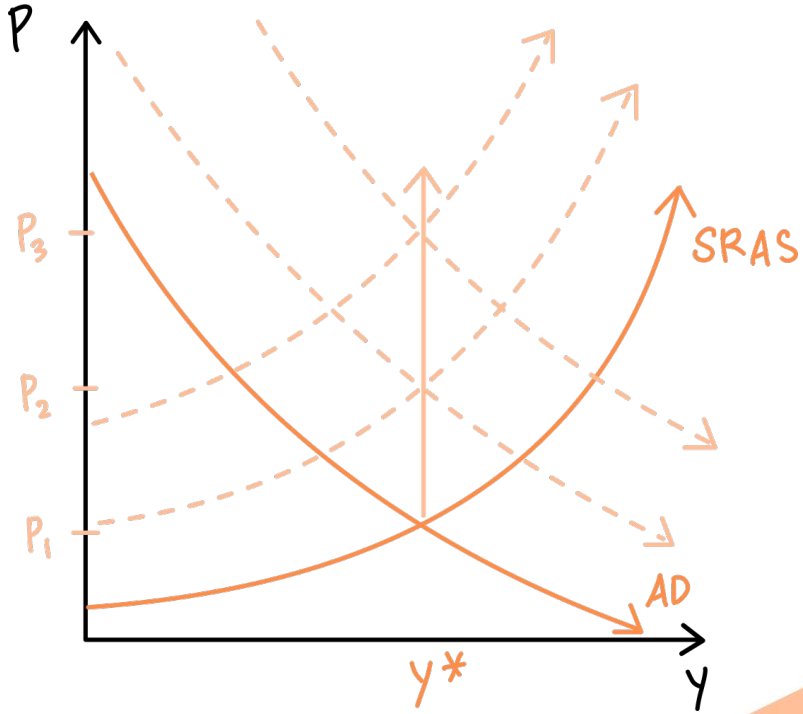
- Determine the goods in the basket.

$$\textbf{CPI} = \frac{Q_{Base} \times P_{Current}}{Q_{Base} \times P_{Base}}$$

- The CPI is the basket price in the current year divided by the basket price base year.
- CPI provides the inflation rate.

Constant Inflation

- Occurs when there is no output gap and no exogenous supply shocks.
- AD and SRAS shift upward equally.
- Caused by monetary validation which shifts the AD curve



Topic 10:

International Trade

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International Trade

- Open economies engage in trade.
- Countries specialize in the production of goods that they can produce efficiently.
    - Countries then trade to obtain other from other countries.
- Trade implies specialization leading to efficiency and resulting in gains.

Why trade?

- Efficiency and cost savings from economies of scale and accumulated experience.
- The end result is increased total output and world GDP.

Absolute Advantage

- A country has an absolute advantage if it can produce more of a good than another country using the same inputs.
    - Determined by comparing productivity (output per unit of input).
- Efficient production leads to an absolute advantage.

Absolute Cost

- The dollar cost of labour, capital, and other resources required to produce a good.

Absolute Advantage

Q18: The USA and Canada have 1000 units of labour. Using the labour, the USA can produce 100,000 units of burgers and 60,000 units of poutine. Canada can produce 5,000 units of burgers and 10,000 units of poutine. Which country has an absolute advantage?

Comparative Advantage

- A country has a comparative advantage if it can produce a good at a lower opportunity cost than another country.
- Comparative advantage is about relative efficiency.

Importance of Comparative Advantage

- Determinant of trade and results in gains.
- Countries should specialize in the production of goods with a competitive advantage.

Opportunity Cost

- Loss of potential gain from choosing an alternative.
- In the context of international trade, it is the foregone output of other goods that a country did not specialize in.

$$\textbf{OC of X} = \frac{\text{Units of Y given up}}{\text{Units of X produced}}$$

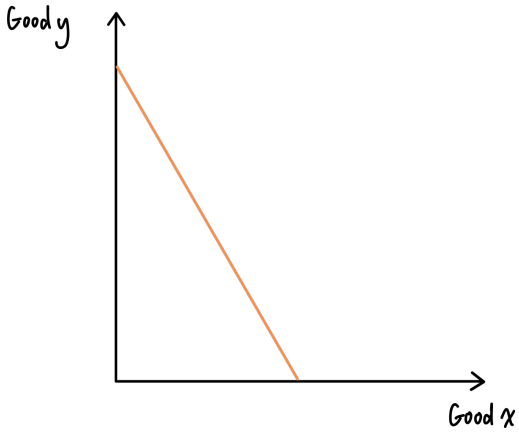
Comparative Advantage

Q19: Using the previous scenario, calculate the opportunity cost of the USA and Canada of producing burgers and producing poutine. Determine each country's comparative advantage.

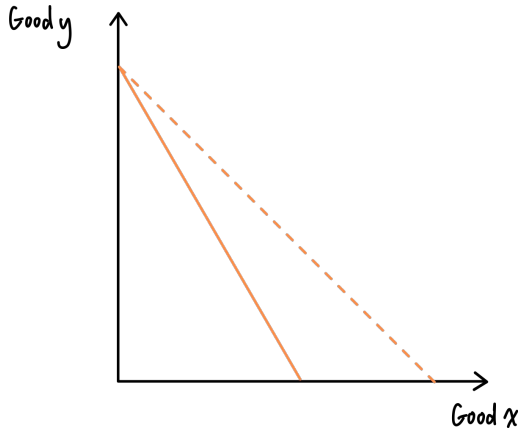
Production Possibilities Curve

- The production possibilities curve represents the tradeoff between two goods and the allocation of resources.
- The axis with the intercept further away from the origin is the good with a lower opportunity cost.

No Trade



With Trade



Production Possibilities Curve

Q20: Draw the production possibilities curve of both the USA and Canada, and explain how both countries are better off by trading.

THANK YOU!

ANY QUESTIONS?

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