



commerce
undergraduate
society



ECON 102

MIDTERM REVIEW SESSION

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EMPLOYMENT

Natural Rate of Unemployment: amount of unemployment economy normally experiences

- i. Frictional Unemployment: essentially explained by people who are currently in the “matchmaking” process — looking for a job or transitioning between jobs
- ii. Structural Unemployment: from not being at equilibrium for labour supply and demand
 - 1) Minimum wage laws: shortage of demand, excess supply (only affects minimum wage workers)
 - 2) Union + collective bargaining: increases wages for union, causing excess supply
 - 3) Efficiency wages: firms choose to pay above equilibrium wage because workforce is more productive that way

Cyclical Unemployment: year-to-year fluctuations in unemployment around its natural rate

→ deviation from LR

Formulas

1. Labour Force: # of people ages 15+ who want to work
= # of employed + # of unemployed
2. Labour Force Participation Rate: % of people who want to work
= labour force / adult population x 100%
3. Unemployment Rate: % of people who job searched in last 4 weeks
= # of unemployed / labour force x 100%

Limitations to unemployment rate

- underemployment: unsuitable jobs, or working in a job you don't want
- discouraged workers
- an increase in jobs can increase unemployment rate if more people enter the labour force



PRACTICE PROBLEMS

"The reduction in the unemployment rate which is projected to take place as a result of the budget proposals is expected to be moderated as participation rates continue to _____." Fill in the blank.

- a. **rise**
- b. fall
- c. fluctuate
- d. hold steady

Who is NOT included in the labour force?

- a. Ray, who is on temporary layoff
- b. **Jack, who is retired**
- c. Jane, who is working full-time
- d. Joan, who is 16 and works part-time

Which of the following best defines the natural rate of unemployment?

- a. It is the unemployment rate that would prevail with zero inflation.
- b. It is the rate associated with the highest possible level of GDP.
- c. It is the difference between long-run and short-run unemployment rates.
- d. **It is the amount of unemployment that the economy normally experiences.**

People who are not employed and are not actively looking for work, because they are fairly certain they could not find a satisfactory job, are counted by the Statistics Canada as

- a. involuntarily employed.
- b. **neither employed nor unemployed.**
- c. unemployed members of the labor force.
- d. voluntarily unemployed.

Mary, a 14 year old, gets fired from her job at McDonald's and is looking for another job. Which statement is true?

- a) She was never employed
- b) She is frictionally unemployed
- c) She is cyclically unemployed
- d) **She is not part of the labour force**

There are 500 unemployed people in Bigland and 600 employed people. 200 people don't want to work and 100 are too young to work. What is the labour force participation rate and unemployment rate?

The labour force participation rate is $(500+600)/(500+600+200)= 84.62\%$

The unemployment rate is $500/(500+600)= 45.45\%$



The Monetary System

Barter = trade; requires double coincidence of wants

Money – facilitates trades, allows for specialization, increases the standard of living

Liquidity – ease that an asset can be converted into money

Commodity money – intrinsic value, like gold

Fiat money – no intrinsic value, valid because of government decree

Functions of Money:

- 1) Medium of exchange: money is a commonly accepted medium of exchange, meaning sellers will accept it when buyers give it to them item
- 2) Unit of account: measuring stick people use to measure and record economic value
- 3) Store of value: an item people can use to transfer purchasing power from the present to the future

Demand deposit – balances in bank account that depositors can access on demand via debit card or cheque aka chequing account balance

Currency – bills and coins

M1: currency and chequing deposits

M2: M1 + saving account

Non-monetary assets: stocks, bonds, cars, houses

Bank of Canada (Canada's central bank) Roles

- 1) Issue currency
- 2) Act as a banker to commercial banks
Loans to commercial banks
- 3) Banker to Canadian government
- 4) Monetary Policy – control money supply and interest rates



Fractional Reserve Banking

Reserves: deposits received by bank and not loaned out

Fractional reserve banking: banking system in which banks hold only a fraction of deposits as reserves

Reserve ratio: fraction of total deposits the bank holds as reserves

Reserve requirement: set by the central bank

Excess reserves: reserves > reserve requirement

Money Multiplier

Money Multiplier: The amount of money the banking systems generate with every dollar that is deposited

Money multiplier = $1/R$, R=reserve ratio

How much \$ is created if the Bank of Canada injects \$2b in the banking system if the reserve ratio is 10%?

=Initial x money multiplier

=Initial x $1/\text{reserve ratio}$

Creating money is not the same as creating wealth.



Bank of Canada Tools for Monetary Control

1. Open Market Operations

Example:

The Bank of Canada buys \$2b bonds and the reserve ratio is 10%. How much money is created

To INCREASE the money supply, the BoC BUYS bonds or treasury bills from the public

To DECREASE the money supply, the BoC SELLS bonds or treasury bills to the public

Quantitative Easing: Purchase and sale by the central bank of non government securities or gov securities with long maturity terms

Foreign Exchange Market Operations – a type of quantitative easing; purchase or sale of foreign dollars by the BoC

Sterilization – offsetting effect of foreign exchange market operations with open market operations to cancel out the effect on money supply

2. Changes in Reserve Requirements

Recall money multiplier = $1/R$

Increasing the reserve requirement will decrease the money multiplier, thus reducing the money supply.

To INCREASE the money supply, the BoC decreases the reserve requirement

To DECREASE the money supply, the BoC increases the reserve requirement

3. Changes to Overnight Rate

Overnight rate: interest rate commercial banks pay to make very short term loans. A higher overnight rate discourages banks from borrowing reserves from the BoC, thus reducing reserves in the banking system, thus money supply contracts.

To INCREASE the money supply, the BoC decreases the overnight rate

To DECREASE the money supply, the BoC increases the overnight rate

Problems in controlling money supply

1. BoC doesn't control amount of \$ households deposit in banks
2. BoC doesn't control amount of \$ banks choose to lend



Commercial Banks

Bank Capital – resources a bank obtains from issuing equity (aka shares) to its owners (i.e. resources a bank's owners have put into the institution)

Leverage – use of borrowed money to supplement existing funds for investment purposes

Leverage Ratio – the ratio of assets to bank capital

Capital Requirement – a government regulation specifying a minimum amount of bank capital

Commercial Banks

ASSETS	LIABILITIES + EQUITY
<ul style="list-style-type: none">• Reserve – vault cash + bank's deposit at BoC (No risk or return)• Loans	<ul style="list-style-type: none">• Deposits (Liability)• Debt (Liability)• Bank's Capital (Equity)

PRACTICE PROBLEMS

How does currency contribute to the money supply?

- a) Currency held by the public and by banks is part of the money supply.
- b) Currency held by the public is part of the money supply, but currency held by banks is not.**
- c) Currency held by the public is not part of the money supply, but currency held by banks is.
- d) Currency held by the public or banks is not part of the money supply since it is not included in M1.

Money is

- a) equivalent to barter.
- b) currency plus credit cards plus debit cards.
- c) the same as gold.
- d) a means of payment.**
- e) currency plus coins.

Suppose that the central bank buys \$4 billion of bonds on the open market and the banks wish to hold reserves of 8 percent.

What is the largest amount the money supply could ultimately increase?

- a) \$4b
- b) \$32b
- c) \$50b**
- d) \$80b

If when extra deposits are created, customers increase their holdings of cash by 3 percent of those extra deposits, the money multiplier

- a) is unaffected
- b) becomes larger
- c) becomes smaller**
- d) can't tell what should happen



Which of the following best describes the outcome of an increase in the bank rate?

- a) Banks will borrow more from Bank of Canada, so reserves increase.
- b) Banks will borrow more from Bank of Canada, so reserves decrease.
- c) Banks will borrow less from Bank of Canada, so reserves increase.
- d) Banks will borrow less from Bank of Canada, so reserves decrease.**



MONEY GROWTH AND INFLATION

The economy's overall price level can be viewed in two ways:

1. As the price of a basket of goods and services.

The inflation rate is the percentage change in either the: CPI or GDP deflator

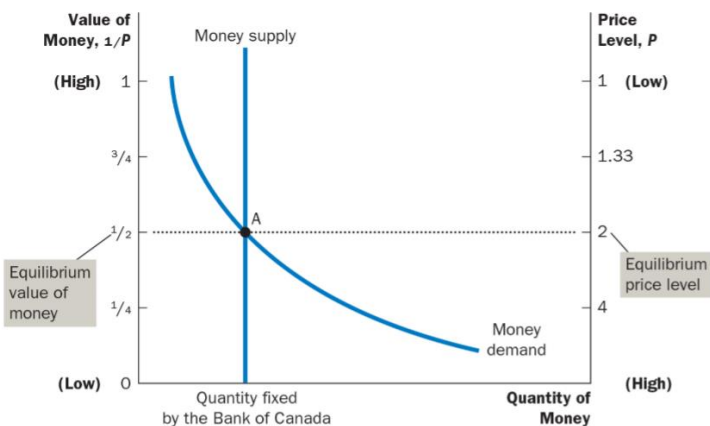
2. As a measure of the value of money

Inflation concerns the value of the economy's medium of exchange. When price level increases, the value of money decreases, so each dollar buys less.

Supply and demand determines the value of money

- M^s – determined by BoC
- M^d – reflects how much wealth people want in liquid form
 - Based on price level: the higher the price level, the lower the value of money, the more money a typical transaction requires, so the more money I demand
 - Based on interest rate: how much I can I earn if I don't hold it as money, but as securities

In the LR, the overall level of prices adjusts to the level at which the demand for money equals the supply.



What happens to price level if government sells bonds?

Quantity Theory of Money

- 1) The quantity of money available determines the price level so...
- 2) The growth in the quantity of money is the primary cause for inflation



Classical Dichotomy: 2 types of economic variables

1. Nominal variables – measured in monetary units (dollar prices)
 - heavily influenced by changes in monetary system, i.e., price level
2. Real variables – measured in physical units (relative prices) ; e.g. real wages

Money Neutrality – proposition that changes in money supply don't affect real variables

- Only holds in the LR

Velocity of Money

- Rate that money changes hands

Velocity and the Quantity Equation

$$V = (P \times Y) / M$$

- **V**: Velocity of money
- **Y**: Real GDP
- **P**: Price level
- **M**: Quantity of money

Quantity Equation

$$M * V = P * Y$$

$$\% \Delta M + \% \Delta V = \% \Delta P + \% \Delta Y$$

Velocity doesn't really change. Y is determined by real factors. So if M increases, then the only variable that will go up with it is P.

Hyperinflation: happens when government prints money to pay for stuff instead of taxing or selling government bonds. This is an 'inflation tax' which 'taxes' everyone who holds money because the value of the money drops.

Fisher Effect: the one for one adjustment of the nominal rate to expected inflation

The Fisher Effect

Real interest rate = Nominal interest rate - Inflation rate

Nominal interest rate = Real interest rate + Inflation rate



Cost of Inflation

- 1) Shoeleather costs – The resources wasted when inflation encourages people to reduce their money holdings.
- 2) Menu cost – cost of changing prices
- 3) Relative-price variability and misallocation of resources
- 4) Inflation-induced tax distortion
- 5) Confusion and Inconvenience
- 6) Unexpected inflation leads to arbitrary redistributions of wealth

Deflation – similar costs as inflation except it reverses shoeleather costs (Friedman Rule)

PRACTICE PROBLEMS

When the value of money rises, what happens to the number of dollars needed to buy a representative basket of goods?

- a. It increases, and so the price level rises.
- b. It increases, and so the price level falls.
- c. It decreases, and so the price level rises.
- d. It decreases, and so the price level falls.**

Randy pays \$120 for a bag of goods he purchases at the HyValu discount store. Which of the following accurately identifies the types of variables involved?

- a. The \$120 is a real variable; the bag of groceries is a nominal variable.
- b. The \$120 is a nominal variable; the bag of groceries is a real variable.**
- c. Both the \$120 and the bag of groceries are nominal variables.
- d. Both the \$120 and the bag of groceries are real variables

According to monetary neutrality, what will a decrease in money supply not change?

- a) Nominal GDP
- b) Price level
- c) Labour productivity**
- d) Nominal wage rate

Assuming that velocity is stable, if real GDP grows by 10 percent this year, and if the money supply does not change this year, how much does the price level change by?

-10%



Suppose Bob considers borrowing \$100 from Sheila at a 10 percent interest rate. They both think that a 4 percent real interest rate would be fair.

What was the inflation rate they both expected? **6%**

If the inflation rate turned out to be 8 percent, how much was the real interest rate?

Who gained and who lost from this transaction, and how much because of unexpected inflation? **2%, Bob (borrower) gain and Sheila (lender) lost**



AGGREGATE DEMAND AND AGGREGATE SUPPLY

Recession – period of declining real incomes, rising unemployment and decreased demand for G+S

Depression – severe recession

Business Cycle – fluctuations in economy; corresponds to business conditions

Economic Expansion – when real GDP and profits are growing

Economic Contraction – real GDP and profits are declining

Facts about economic fluctuations

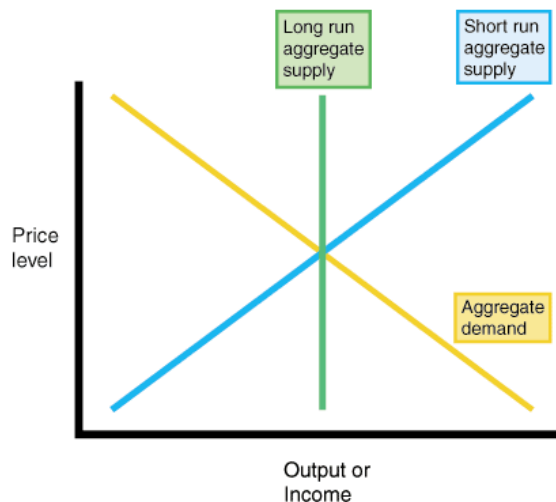
- 1) Economic fluctuations are irregular and unpredictable
- 2) Most macroeconomic variables (that measure income, spending, or production) fluctuate together
- 3) As output falls unemployment rises

In SR, money neutrality and classical dichotomy don't apply; nominal and real variables are intertwined.

Model of Aggregate Demand and Aggregate Supply

Aggregate Demand – quantity of G+S households, firms and government want to buy at each price level

Aggregate Supply – quantity of G+S that firms produce and sell at each level



Why aggregate demand curve slopes downward

Recall $Y = C + I + G + NX$

G is fixed by government policy, so C, I and NX depend on price level

1. Wealth Effect

Lower price level → increase in real value of your money → buy more stuff → increase in aggregate demand

2. Interest Rate Effect

Lower price level → increase in real income → increase in bond purchases and savings → decrease in interest rate → increase in borrowing (by companies) → increase in aggregate demand

3. Real Exchange Rate Effect

Lower CDN price level → Depreciate CAD → CDN goods are cheaper → increase in demand for CDN aggregate demand

Why aggregate demand shifts

$Y = C + I + G + NX$

1. Changes in consumption

2. Changes in investment

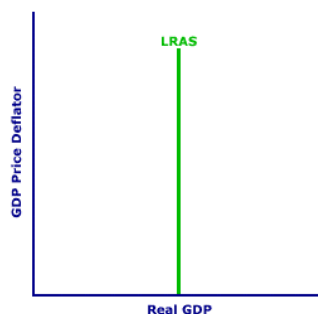
3. Changes in government purchases

4. Changes in net exports

5. Changes in money supply (increase in money supply lowers interest rate in SR, shift right because borrowing is cheaper)

Aggregate Supply Curve

LRAS is vertical because output is a real variable and don't depend on price level (nominal variable) in LR



This level of output is called the full employment output, or the potential output, or the natural level of output.



Why SRAS is upward sloping

Sticky Wages: Wages “stick”, so as prices increase labour becomes cheaper in real terms, and firms can produce more (output, or GDP, or X-axis increases).

Sticky Price: Prices are set even while price level changes so purchases increase.

The Worker Misperception Theory: People think price level changes are actually real changes.

All three theories express that output deviates from natural level when price level is not as expected.

Slope of SRAS is represented by:

$$\text{Quantity of output supplied} = \text{Natural rate of output} + a \left(\begin{array}{c} \text{Actual price level} \\ - \\ \text{Expected price level} \end{array} \right)$$

The quantity of output supplied deviates from its LR or natural level when the actual price level deviates from the expected price level.

Why LRAS curve shifts?

- 1) Changes in any factor (capital, labour, natural resource, technology)

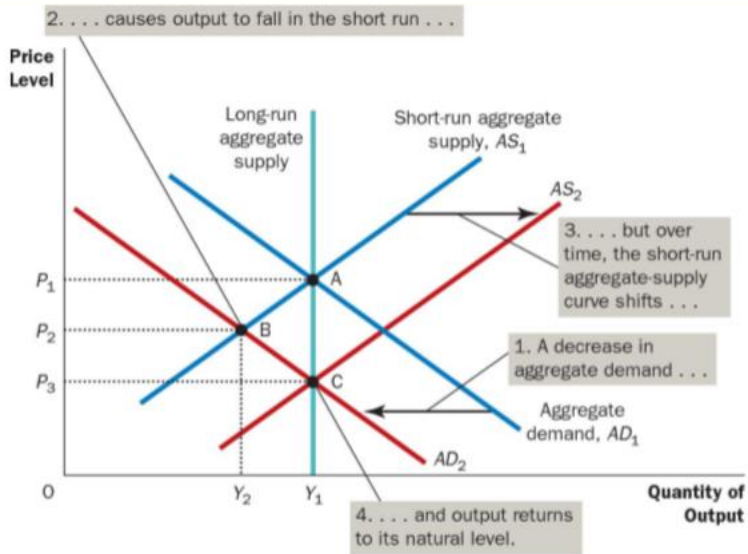
Why SRAS curve shifts

- 1) Changes in any factor (capital, labour, natural resource, technology)
The exact same thing that changes LRAS plus effects of expectations
- 2) Changes in expected price level
 - ➔ When EXPECTED price levels fall, firms will bargain wages lower, thus costs decline and firms increase production. This is a shift to the right.
 - ➔ When EXPECTED price levels rise, people will negotiate higher wages, costs are higher and output supplied is lower.

*Changes in actual price level is movement on the curve, not a shift.



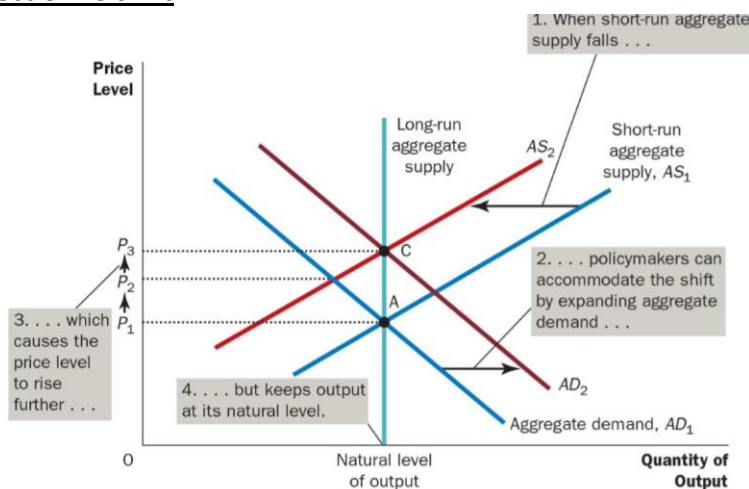
Effect of an AD shift



Summary

- 1) AD shifts left. At this point there is a recessionary gap, and output is below the natural level.
- 2) In LR, SRAS shifts right until we are back at natural level of output. So the shift in AD in LR only affected price level, not output
- 3) Government can influence AD by spending (Keynesian economics), to shift AD back to original position

Effect of AS shift



Summary

- 1) Shifts in AS can cause stagflation
- 2) Policymakers can influence AD to mitigate the problem but only at the cost of worsening the inflation.



SR vs. LR

In SR, expectations are fixed so output is where AD and SRAS intersect. This can cause either a recessionary gap (when actual output is less than natural level of output) or inflationary gap.

In LR, expectations adjust, along with SRAS, so then AD and LRAS and SRAS will intersect, and we will be at equilibrium,

PRACTICE PROBLEMS

Which of the following shifts AD rightward?

- a) Federal government decides to buy fewer weapons
- b) Increase in money supply**
- c) Price level falls
- d) Net exports fall

What happens to AD if the CAD appreciates

- a) Consumer expenditure increases and AD shifts right
- b) Net exports decrease and AD shifts left**
- c) Net exports increase and AD shifts right
- d) Net exports increase and movement on AD curve to the right

In what situation does long-run AS shift right?

- a) If immigration from abroad decreases
- b) If the capital stock decreases
- c) If the money supply increases
- d) If technology advances**

Which does not explain the slope of the aggregate-demand curve?

- a) When interest rates fall, Hyatt Canada builds new hotels
- b) Exchange rate falls so Americans import more Canadian maple syrup
- c) Janet feels wealthier because of the price drop so she remodels her bathroom.
- d) With prices down and wages fixed by contract, Apple Canada lays off some workers**

Short Answer

Suppose the economy is in long-run equilibrium. A shock occurs and we see unemployment rate increases and price level increases. We can conclude that there is now a **recessionary** gap and the economy is experiencing **stagflation**.

According to quantity theory, if Y doubles, V is constant and M doubles, what factor does price level multiply by? **1**

