



commerce  
undergraduate  
society



ECON 102

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# FINAL EXAM REVIEW SESSION

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## PRINCIPLES OF ECONOMICS

- #1 People face trade offs, everything involves trade off
- #2 The cost of something is what you give up to get it – Opportunity Cost is whatever must be given up to obtain some item
- #3 Rational people (people who systematically and purposefully do the best) think at the margin
- #4 People respond to incentives
- #5 Trade can make everyone better off
- #6 Markets are usually good ways to organize economy's activity
- #7 Government can sometimes improve market outcomes
- #8 Standard of living depends on country's ability to produce goods and services
- #9 Prices rise when the government prints too much money
- #10 Society faces a short-run trade off between inflation and unemployment

Positive statements: claims that attempt to describe the world as it is

Normative statements: describe the world as it should be

Absolute advantage vs. Comparative advantage: comparative advantage is the person in the group who has the lowest OC of doing something



## GDP

For the economy as a whole, expenditure = income because every transaction has a buyer and seller. The standard of living is measured by GDP.

GDP is the market value of all final goods and services produced within a country in a given period of time.

- Government includes owner occupied housing in GDP by estimating its rental value.
- I. Value Added Approach: measure GDP by value added by each intermediary
- II. Expenditure Approach:  $Y = C + I + G + NX$
- Consumption: all spending by households
  - Investment: business spending and real estate, i.e. purchase of goods (capital equipment, inventories and structure) that will be used in the future to produce goods and services, includes buying a new house.
    - Intermediate goods unsold are counted as inventory. Next year it becomes negative inventory when sold, thus reducing GDP accordingly.
  - Government spending: does not include transfer payments or interest payments
  - Net exports: exports (domestically produced goods bought by foreigners) minus imports (foreign produced goods)
- If I buy stocks, how does this affect the GDP?
- III. Income Approach: measure GDP as the sum of all income in the economy including profit, labour income, investment income and tax.

### Limitations to GDP

GDP can underestimate true amount of productive activity because of home-based production, people who underreport their income, and illegal transactions.

Due to these discrepancies in how GDP is recorded, typically, we calculate GDP as the average between the expenditure approach method and the income approach method, i.e.,  $(\text{GDP from expenditure approach} + \text{GDP from income approach})/2$

GDP can overestimate the amount of productive activity/economic well being because it includes spending on things like pollution/environment degradation clean up, crime protection.



## Nominal vs Real GDP

Nominal GDP: production of goods and services valued at current prices

Real GDP : production of goods and services valued at constant prices, measures growth by reflecting economy's ability to satisfy (calculate real GDP with constant base year prices, and current production amounts)

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$$\text{GDP deflator} = \text{Nominal GDP} / \text{Real GDP} * 100$$

GDP deflator is a measure of price level, so GDP deflator of 120 means price level is 20% higher than in base year.

$$\text{Inflation rate in year 2} = (\text{GDP deflator year 2} - \text{GDP deflator year 1}) / \text{GDP deflator year 1}$$



## PRACTICE QUESTIONS for GDP

A customer pays you to dye his hair. You use dye from Korea. What happens to Canada's GDP?

Suppose that in 2008, nominal GDP is 350 million and real GDP is 330 million and the CPI is 112. The GDP deflator in 2008 is:

Suppose haircuts cost \$20 last year and \$30 this year and the price index rose to 120 this year. How much will 10000 haircuts contribute to this year's real GDP.

Question: If GDP doubles and the GDP deflator doubles, what will happen to nominal GDP

Suppose the government collects 10 million in tax revenue, pays 2 million in debt interest, 5 million in social security benefits and 1 million in government employee wages. What is the direct contribution to GDP coming from this government's fiscal actions?



## COST OF LIVING

Consumer Price Index – is the overall cost of a fixed basket of goods and services demanded by a typical consumer, used to monitor changes in cost of living over time.

$$\text{CPI} = (\text{price of basket of goods and services in current year}) / (\text{price of same basket of goods and services in base year}) \times 100$$

Problems with CPI - because it's a fixed basket, it causes CPI to overstate inflation by 0.6%

1. Commodity substitution bias- when prices change more for one product, people will substitute away. CPI's fixed basket ignores the possibility of consumer substitution.
2. Introduction of new goods – a greater variety of goods available makes the value of the dollar greater. Because CPI is a fixed basket, it doesn't reflect the increase in the value of the dollar that arises from more goods being available
3. Unmeasured quality change – if quality rises but price stays the same, the value of the dollar rises, vice versa if it falls. CPI doesn't accurately capture the increase in quality.

### GDP deflator vs. CPI

GDP deflator measures everything produced domestically

CPI measures typical basket bought by consumers (includes imported goods)

GDP deflator measures stuff currently produced

CPI measures set basket of stuff (doesn't change automatically every year)

### Price Index

- 1) GDP deflator
- 2) CPI
- 3) Core CPI (CPI with volatile goods removed)

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## PRACTICE QUESTIONS for Cost of Living

How to do price indexing, i.e., correcting for inflation to compare prices from different years

Example: Lipstick was \$5 in 1950. How much is that in 2014 dollars if CPI was 35 in 1950 and in 2014 it was 130?

If there is a 3% increase in the CPI, then the likely effect is

- a) 3% increase in the cost of living
- b) More than 3% rise in the cost of living because of consumers substituting away from goods whose relative prices rise towards other goods
- c) More than 3% rise in the cost of living because of the introduction of new goods
- d) Less than 3% rise in the cost of living because of falling quality of goods over time
- e) Less than 3% rise in the cost of living because of consumers substituting away from goods whose relative prices rise towards other goods

Which of the following could increase Canadian CPI but leave the Canadian GDP deflator unchanged

- a) Increase in the price of haircuts
- b) Increase in the price of gasoline
- c) Increase in the price of coffee
- d) Decrease in the price of potatoes



## PRODUCTION AND GROWTH

Level of GDP is a good gauge of economic prosperity and progress.  
Standard of living is determined by worker's productivity.

Productivity: quantity of goods and services a worker can produce in an hour. Can only be increased by increasing factors of production.

$$Y=A * F(L,K,H,N)$$

- L: # of labourers
- K: Physical capital per worker – equipment and structures that are used to produce goods and services
- H: Human capital – the knowledge and skills that workers acquire through education, training and experience
- N: Natural capital – nature provided inputs, renewable and non-renewable
- A: Technology – knowledge or science that improve production process

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Diminishing returns – increasing capital after a certain point yields less output than before

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Catch up effect – when countries that start off poorer grow more rapidly than rich countries; explains how same amount of investment/saving can lead to different amounts of productivity growth

- I. Inward oriented strategy: does not increase productivity
- II. Foreign direct investment: capital investment owned and operated by a foreign entity
- III. Foreign portfolio investment: capital investment owned by a foreign entity but operated by domestic

### Other things that increase productivity

Education

Health and nutrition

Research and development

Free trade

Property rights and political stability





## PRACTICE QUESTIONS for Production and Growth

Why do developing countries experience the “catch-up effect”

- a) The United Nations allocates extra resources to poor countries
- b) Productivity growth diminishes with increased capital stock
- c) Rich countries elect poor leaders, who enact policies that lead to poor growth
- d) Poor countries often spend less which allows them to allocate more resources to investment and improve productivity



## SAVING AND INVESTMENT

Financial System: group of institutions in the economy that help to match one person's savings with another person's investment

Financial Market: financial institutions through which savers can directly provide funds to borrowers

- i) Bond Market (debt): buying bonds makes you a creditor to the firm, you are legally obligated to be paid back. Risk depends on length of term of the bond (the longer, the riskier) and the credit risk (government bonds are the least risky, junk bonds are the most risky)
- ii) Stock Market (equity): buying shares makes you a partial owner of the firm. Higher risk than bonds because you are not promised your money back.

Financial Intermediaries: financial institutions through which savers can indirectly provide funds to borrowers

- i) Bank: takes deposits from savers, and uses deposits to make loans to borrowers
- ii) Mutual Funds: sells shares to public, then uses money to buy portfolio of stocks and bonds

Closed economy (or economy as a whole):  $Y=C+G+I$

$$Y-C-G=I$$

$$I=S$$

Income left over after consumption and government purchases is national saving

$$\text{National savings: } S=Y-G-C$$

$$\text{National Savings} = \text{Private savings} + \text{Public Savings} \quad S=(Y-T-C) + (T-G)$$

$Y-T-C$  <- private savings; households get income of  $Y$ , pay  $T$  and  $C$

$T-G$  <- public savings; government gets income of  $T$ , pays  $G$ .

Open economy:  $Y=C+G+I+NX$

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

$$S = I + NX$$

Budget surplus:  $T>G$

Budget deficit:  $T<G$

Ricardian Equivalence: When government cuts taxes to put more money in people's pockets so that they will spend more, but instead the people save it so that amount of saving doesn't change. It just goes from public saving to private. This normally is not realistic.



Market for Loanable Funds: the market in which those who want to save supply funds, and those who want to borrow invest demand funds.

- The price = the real interest rate, the supply = national saving.

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Increasing the saving rate can lead to an increase in the GDP growth rate

Policy 1: Saving incentives – shift supply curve right -> lowers interest rates -> results in greater investment

- Consumption tax like GST
- RRSP, TFSA, RESP (increases incentive to save because income from savings isn't taxed)

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Policy 2: Investment incentives – shift demand right -> increases interest rates -> which increases savings

- Investment tax credit, ex. Giving tax advantage to any firm building a new factory

Policy 3: Government budget deficits and surplus

- Government debt: sum of all past deficits – sum of all surpluses
- Balanced budget: a balanced budget for a year means there was no budget surplus and deficit

Deficit causes supply curve to shift left because the government had to borrow money to run a deficit. Public saving is then negative and this reduces national saving. Thus supply of loanable funds decreases, so investment decreases.

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Crowding out: a decrease in investment from government borrowing



## PRACTICE QUESTIONS for Saving and Investment

A government goes from a deficit to a surplus. How does this change affect the market for loanable funds?

- a) Supply of loanable funds shifts right
- b) Supply of loanable funds shifts left
- c) Demand for loanable funds shifts right
- d) Demand for loanable funds shifts left

When a country's citizens spend a lot of money, it makes it harder to increase living standards because it leads to

- a) Lower investment
- b) Higher government spending
- c) Lower taxes
- d) Higher unemployment

Recall our national income accounting identities. If  $NX > 0$ :

- a)  $S > I$
- b)  $S = I$
- c)  $S < I$
- d) The relationship between Savings and Investment is ambiguous

GDP = \$10, consumption is \$6.5, government spending is \$2. The budget deficit is 0.3. Find amount taxed.



## 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 QUESTIONS for Unemployment

"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

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?

If drug dealers are reported as employed instead of unemployed, what happens to the unemployment rate and labour force participation rate.



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



## PRACTICE QUESTIONS for The Monetary System

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.

The ability of financial institutions to expand the stock of money is limited by

- a) the willingness of eligible borrowers to take out loans.
- b) the quantity of reserves held by the financial institutions.
- c) the desired reserve ratios of the financial institutions.
- d) all of the above

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



## 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

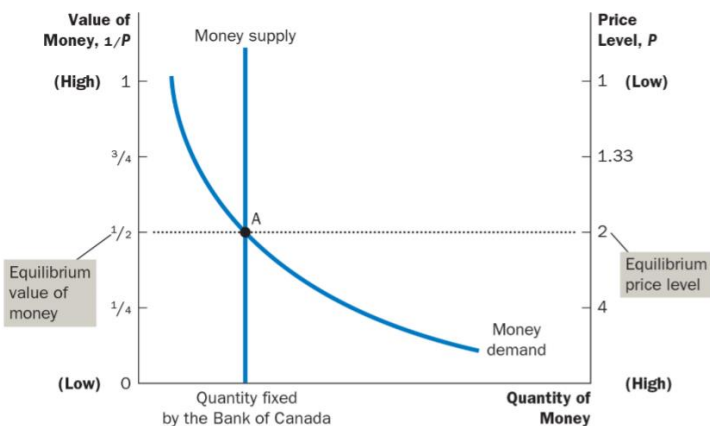
2. As a measure of the value of money

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 QUESTIONS for Money Growth and Inflation

Country A had higher inflation than Country B. What is likely the reason why

- a) Country B is more developed
- b) Country A printed money at a faster rate
- c) Country A is more productive
- d) Country A experienced market failure

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?

Malcolm buys a one year bond for \$200. He receives principal and interest totaling \$230 one year later. During the year, the CPI rose from 120 to 130, but he had thought the CPI would be 135 by the end of the year. Malcom expected the real interest rate to be \_\_\_\_, but it turned out to be \_\_\_\_



## 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

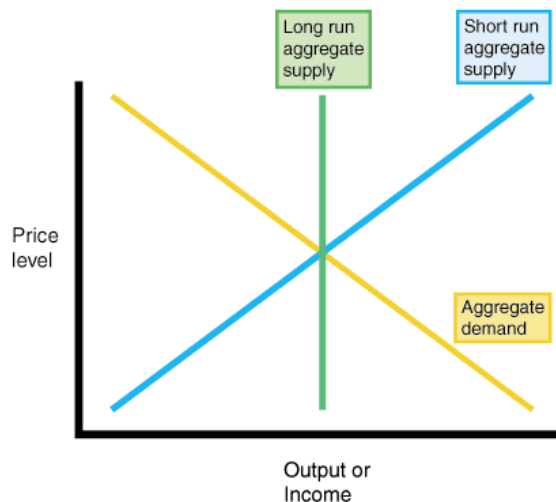
- 1) Economic fluctuations are irregular and unpredictable
- 2) Most macroeconomic variables (that measure income, spending, or production) fluctuate together
- 3) As output falls unemployment rises

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

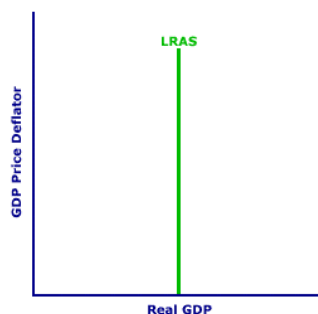
3. Changes in government purchases

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:

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

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

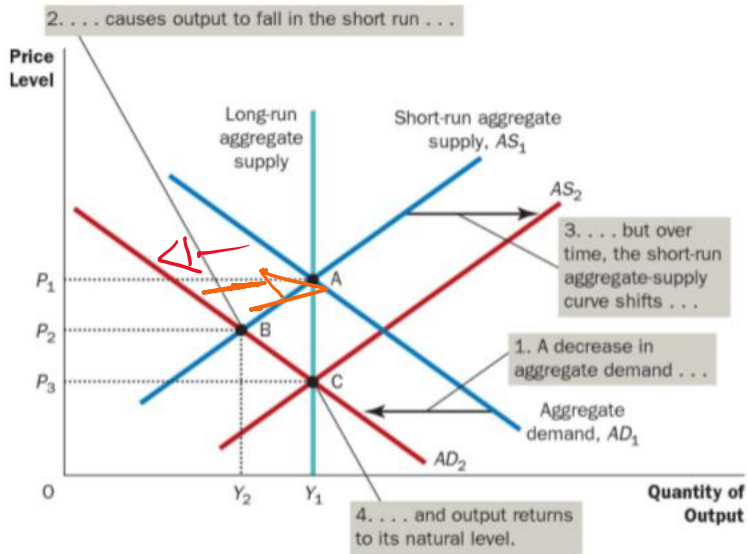
- 1) Changes in any factor (capital, labour, natural resource, technology)  
*The exact same thing that changes LRAS plus effects of expectations*
- 2) Changes in expected price level
  - ➔ When EXPECTED price levels fall, firms will bargain wages lower, thus costs decline and firms increase production. 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.





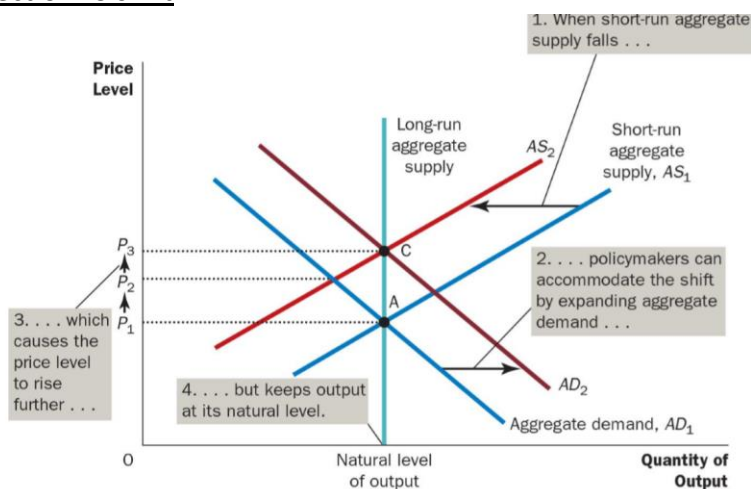
## Effect of an AD shift



### 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 QUESTIONS for Aggregate Demand and Aggregate Supply

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

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

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 \_\_\_\_\_ gap and the economy is experiencing \_\_\_\_\_



## MONETARY AND FISCAL POLICIES

Monetary policy involves money supply and interest rates, both of which affect aggregate demand.

Theory of liquidity preference: Keynes theory that interest rate adjusts to bring money supply and money demand into balance

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### Factors that affect money demanded

Changes in price, income and payment technology cause shifts in money demanded

Changes in interest rates is movement along the curve

### Money Injection in a Closed Economy

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Opportunity cost of holding money is the interest rate on the bonds.

Fiscal Policy: when governments change a) its level of spending b) the level of taxation to manipulate aggregate demand



Multiplier effect: the additional shifts in aggregate demand that results from expansionary fiscal policy that increases income thus consumer spending.

- 1) Marginal propensity to consume: fraction of extra income that a household consumes rather than saves

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- 2) Marginal propensity to import  
What if it is an open economy?

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- 3) Tax cut

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The multiplier effect of a tax cut is always one less than the government spending multiplier because government spending injects money while a tax cut's effect is on existing money.

In sum:

In SR, increase in AD increases GDP

In LR, increase in AD pushes up inflation

Crowding out effect: the offset in AD that results when expansionary fiscal policy raises the interest and thereby reduces investment spending

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## Using policy to stabilize economy

For: do it to maintain production at full employment level

Against: policy change has lag

- Recognition time lag - The time required to infer the status of the economy and recognize a policy need.
- Decision time lag - The time between recognition of a policy need and deciding the most effective course of action. Often this includes deciding between monetary and fiscal policy.
- Implementation time lag - The time it takes to put a policy into effect
- Effect time lag - The time period between a policy's implementation and its impact on the economy.

Automatic Stabilizers: changes in fiscal policy that stimulate AD when economy goes into recession without policymakers having to take any deliberate action. Eg. Employment Insurance

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## PRACTICE QUESTIONS for Monetary and Fiscal Policies

There is a recession in Canada. How can the government use fiscal policy to stabilize output? Name both ways and support your answer with graphs and explain how the MPC and MPI affects the governments' actions.



## Philips Curve

In the LR, inflation and unemployment are unrelated

In the SR, increasing AD, which moves along SRAS, can lower unemployment temporarily, at the cost of higher inflation. Vice versa, contracting AD will lower inflation at cost of temporarily higher unemployment

The Phillips curve shows the short run tradeoff between unemployment and inflation.

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Changes in monetary or fiscal policy can move AD, thus monetary and fiscal policy can move economy along Philips curve

When money supply decreases, government spending decreases and taxation increases, AD contracts. This moves the economy on the Phillips curve to lower inflation and higher unemployment. So the Phillips curve shows policymakers a new combination of inflation and unemployment.

### LR Philips curve

Inflation does not change any of the things that determine that natural rate of unemployment like job search, union, or minimum wage i.e., it doesn't change frictional or structural unemployment. So the LR Philips curve is vertical. Monetary and fiscal policy cannot influence the natural rate of unemployment.

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This expresses the classical theory of money neutrality.

### Shift in Phillips curve

Anything that actually decreases the natural unemployment rate (like getting rid of unions) shifts the Phillips curve left. This also shifts LRAS right.



## So what actually happens?

In AD/AS, we know that SRAS is only because of expectations and sticky wages and prices, but in LR these adjust.

Likewise, Phillips curve is only downward sloping in SR because of *expected* inflation.

- BoC can create unexpected inflation by increasing money supply, which increases AD
- But in LR, people expect the inflation rate that the BoC chose, so wages, prices and perceptions adjust to the inflation rate, and thus LR Phillips curve is vertical.
- So changes in AD do not affect Y in LR. Thus unemployment returns to the natural rate of unemployment in the LR.

No stable SR Phillips curve, whenever expected inflation changes, the SR Phillips curve shifts.

Natural-rate hypothesis – unemployment rate eventually returns to the natural unemployment rate, regardless of the inflation rate

In sum, policymakers cannot actually pick a spot on the Phillips curve because it doesn't work in the LR. The unemployment rate will stay the same despite changes in inflation.

Question: what happens to the Phillips curve in an AS shock

Example: crude oil price goes up, everything is more expensive to make, so AS shifts left.

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Disinflation: reducing the *rate* of inflation

- Disinflation is done by contracting money supply to reduce AD

Sacrifice ratio: # of % points in GDP must be lost to reduce inflation by 1% (because disinflation will affect GDP temporarily due to the temporary increase in unemployment)

Okun's law: the # of percentage points the unemployment rate increases when GDP falls 1%

Rational expectations: theory that says people ultimately use all the info they have, including info about government policies, when forecasting the future. Thus, sacrifice ratio could be smaller if government just told people to change their expectations. In theory, sacrifice ratio could be zero if everyone believed the government and the government told them the inflation rate.



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Expansionary policy: movement on the SR Phillips curve to the left (higher inflation, lower unemployment)

Contractionary policy: movement on Phillips curve to the right (lower inflation, higher unemployment)

Increase in expected inflation: SRPC shift right

Increase in natural rate of unemployment: shift LRPC and SRPC right

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Recall, a recessionary gap, if left alone, will fix itself and the government does not have to be in debt from spending. So the SR decrease in unemployment rate may not be worth the LR increase in the inflation rate because, at some point, contractionary policy is necessary to fix it.

Note: It is the higher rate of inflation that reduces unemployment, not a high rate of inflation

### PRACTICE QUESTIONS

In a situation of inflationary pressure, an increase in the overnight loans rate results in

- a) an increase in real GDP and the price level.
- b) an increase in real GDP, but a fall in the price level
- c) a rise in the price level, but no change in real GDP.
- d) a fall in the price level and real GDP.

Which of the following would be an issue in the government applying the Phillips Curve by increasing inflation to reduce unemployment

- a) If consumers expect higher inflation in the next period, the Phillips Curve will shift up
- b) The Phillips curve is only a theory and cannot be used in practice
- c) Inflation imposes a high cost on the economy
- d) The Bank of Canada does not have control over the inflation rate

The unemployment rate is going up. What happens to AD and AS?

