CHAPTER 5 – MEASURING A NATION'S INCOME

Gross domestic product (GDP) measures 2 things at once

- Total income of those in the economy, and
- Total expenditure on the economy's output of goods and services

Gross Domestic Product (GDP): *the market value of all final goods and services produced within a country in a given period of time*

GDP adds many different kinds of products into a single measure of the value of economic activity (uses market prices)…

Includes…

- All items produced in the economy and sold legally in markets
- Market value of housing services provided by the economy's stock of housing
- Only "final good", except when intermediate good is added to firm's inventory
- Goods and services currently produced domestically

Excludes…

- (Most) items produced/sold illegally
- (Most) items produced/consumed at home

GDP/person = the income and expenditure of the average person in the economy, but it is not a perfect measure of well-being... this is because it does not account for leisure or jobs done at home or volunteer work etc.

Composition of GDP: GDP (Y), Investment (I), Net Exports (NX), Consumption (C), Government Purchases (G)

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

Consumption: *Spending by households on goods and services, with the expectation of purchases of new housing*

Investment: *Spending on capital equipment, inventories, and structures, including household purchases of new housing*

**Here the word investment means purchases of goods used to produce other goods

Government Purchases: *Includes spending on goods and services by local, territorial, provincial, and federal governments*

**Includes salaries of government workers and spending on public works

**Transfer payments are not counted as part of government purchases (payments not made in exchange for a currently produced good and services)

Net Exports: *The value of a nation's exports minus the value of tis imports; also called the trade balance*

Nominal GDP uses current prices to place value on the economy's production of goods and services, while real GDP uses constant base year prices to place a value on the economy's production of goods and services.

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

Real GDP: *The production of goods and services valued at constant prices*

GDP Deflator: *A measure of the price level calculated as the ratio of nominal GDP to real DGP times 100*

$$\text{GDP Deflator} = [\text{Nominal GDP}/\text{Real GDP}] * 100$$

Inflation rate: *The percentage change in some measure of the price level from one period to the next*

$$\text{Inflation rate (in year 2)} = [(\text{GDP Deflator (Y2)} - \text{GDP Deflator (Y1)}) / \text{GDP Deflator Y1}] * 100$$

CHAPTER 6 – MEASURING THE COST OF LIVING

Consumer Price Index (CPI): *A measure of overall cost of goods and services bought by a typical consumer*

CPI is used to monitor the changes in cost of living over time

- CPI goes up = spend more to maintain same standard of living
- Inflation = describes when an economy's overall price level is rising

How the CPI is calculated

1) Determine the basket: Which prices are most important to the typical consumer?
2) Find the prices: Prices of the goods and services in the basket for each point in time
3) Compute the basket's cost
4) Choose base year and compute the index

Index calculated by = (Price of basket of goods and services in current year / Price of basket in base year) * 100

5) Compute the inflation rate

Inflation rate (in year 2) = [(CPI (Y2) – CPI (Y1))/CPI (Y1)] * 100

- Determines how quickly the cost of living for the typical consumer is rising

Core Inflation: *The measure of the underlying trend of inflation*

Problems with CPI include…

- Commodity substitution bias (some prices rise more than others): ignores the possibility of a substitute for an item in the basket that is cheaper (therefore, consumer switch to buying substitute)
- Introduction of new goods (increase in possibilities makes each dollar more valuable)
- Unmeasured quality change (if quality of items fall, value of dollar falls, even if goods' prices stay the same)

What is the difference between GDP Deflator and CPI?

- GDP deflator reflects the prices of all goods and services domestically
- CPI reflects the prices of all goods and services bought by consumers
- GDP deflator compares the price of currently produced goods and services to the price of the same goods and services in the base year
- CPI compares the price of a fixed basket of goods and services to the price of the basket in the base year

Indexation: *The automatic correction of a dollar amount for the effects of inflation by law or contract*

Interest rate represents a payment in the future for a transfer of money in the past.

Real Interest Rate = Nominal interest rate – inflation rate

Nominal interest Rate: *The interest rate as usually reported without a correction for the effects of inflation*

Real Interest Rate: *The interest rate corrected for the effects of inflation*

- Nominal interest rate tells you how fast the number of dollars in your bank account rises over time
- Real interest rate tells you how fast the purchasing power of your bank account rises over time

CHAPTER 7 – PRODUCTION AND GROWTH

Economic prosperity (GDP/person) varies worldwide; growth rates of real GDP vary substantially, which can cause positions of countries to change dramatically.
Productivity: The quantity of goods and services produced each hour of worker's time

- A nation will have higher standard of living if they have higher productivity

Determinants of productivity (also known as factors of production) include physical capital, human capital, natural resources, and technological knowledge

Y = A F(L,K,H,N) – (divide by L)

A = Technology, K = Physical Capital, H = Human Capital, N = Natural Resources

Physical Capital: *The stock of equipment and structures that are used to produce goods and services*

**Workers are more productive with more tools

Human Capital: *The knowledge and skills that workers acquire through education, training and experience*

**Includes skills accumulated in schools or training

**Human capital is a produced factor of production

Natural Resources: *The inputs into the production of goods and services that are provided by nature, such as land, rivers and mineral deposits*

**There are both renewable and non-renewable resources

**Not always necessary for high productivity in economy

Technological Knowledge: *Society's understanding of the best ways to produce goods and services*

**(One form is) common knowledge → after it becomes used by one person, everyone becomes aware of it

**(One form is) Proprietary → it is known only by the company that discovers it

A society can change the amount of capital it has:

- To raise future productivity, invest more in current resources in the production of capital
- Produce more capital = produce less goods and services

Diminishing Returns: *The property whereby the benefit from an extra unit of an input declines as the quantity of the input increases*

**Due to diminishing returns, an increase in the saving rate leads to higher growth only for a time

Catch-Up Effect: *The property whereby countries that start off poor tend to grow more rapidly than countries that start of rich*

Foreign Direct Investment: *A capital investment that is owned and operated by a foreign entity*

Foreign Portfolio Investment: *An investment that is financed with foreign money but operated by domestic residents*

Gross National Product (GNP): *The income earned by residents of a country both at home and abroad*

Looking more closely at human capital and societies:

- Education, which is an investment in human capital
    - For example in Canada schooling has historically raised a person's wage on average by about 10%

Externality: *The effect of one person's actions on the well being of a bystander*

**In poor countries, many drop out of school causing losses of possible knowledge (externality)

Brain Drain: *The emigration of many of the most highly educated workers to rich countries, where workers can enjoy a higher standard of living*

- Health and nutrition: Human capital mainly refers to education but can also refer to provisions made to make a healthier population
- For example, taller population means higher levels of productivity (related to nutrition/malnutrition)

Property Rights: *The ability of people to exercise authority over the resources they own*

**Threat to property rights is political instability (doubt to whether property rights will be respected in the future)

- Free Trade: inward-orientated policies associated to poor countries, outward-oriented policies associated with growing/wealthy nations
- Amount of trade also depends on geography of country (close to water? Surrounded by land?
- A larger population means more workers to produce goods and services
- At the same time, more people leads to more consumption; therefore, larger population does not always mean higher standard of living
- When population growth is rapid, each worker has less quantity of capital (physical)
- Smaller quantity of capital per worker leads to lower productivity per worker and lower GDP per worker
- If there are more people, then there are more scientists, inventors, and engineers to contribute to technological advances, benefiting society

Conclusion

- Economists' views vary on the role of government in promoting economic growth
- Government can lend hand by supporting invisible hand through property rights and political stability

CHAPTER 8 – SAVING, INVESTMENT, AND THE FINANCIAL STATEMENT

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

- At broadest level, the financial systems moves the economy's scarce resources from savers to borrowers
- Savers supply their money to the financial system but expect to receive interest; buyers demand money from the financial system knowing they will need to pay back with interest

Financial Markets: *Financial institutions through which savers can directly provide funds to borrowers*
Bond: *A certificate of indebtedness that specifies the obligations of the borrower to the holder of the bond*
Date of Maturity: *Identifies the time at which the loan must be repaid*
Principal: *The original amount of money borrowed*

**When government or corporations need to borrow money, they issue bonds

Term: *The length of time until the bond matures*

**Higher risk bonds (associated with long-term have higher interest rates)

Credit Risk: *The probability that the borrower will fail to pay some of the interest or principal (failure to pay is called a default)*
Junk Bonds: *Pay considerably higher interest rates than the bonds issued by more secure corporations and by governments*

Another way for companies to raise funds is through stocks.
Stocks: A claim to partial ownership in a firm
Equity Finance: *The sale of stock to raise money*
Debit Finance: *Sale of bonds*

- Compared to bonds, stocks offer the holder both higher risk and potentially higher return
- Stocks can be traded after being issued by company
- The demand for a stock (and thus its price) reflects people's perception of the corporation's future profitably
- The stock index is an average of a group of stock prices

How people exchange in the economy…
Financial Intermediates: *Financial institutions through which savers can indirectly provide funds to borrowers*

- Banks are the financial intermediates with which people are most familiar
- Primary job of banks is to take in deposits from people who want to save and use these deposits to make loans to people who want to borrow
- Banks help create a special asset that people can use as a medium of exchange

Medium of Exchange: *An item that people can easily use to engage in transactions*
Mutual Funds: *An institution that sells shares to the public and uses the proceeds to buy a portfolio of stocks and bonds*

- Value of portfolio goes up, then the shareholder benefits; value of portfolio goes down, then the shareholder suffers loss
- Mutual funds are diverse; therefore, can sometimes be less risky
- The company operating the mutual funds charges shareholders a fee
- Mutual funds give ordinary people access to the skills of professional money managers

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

Closed Economy: *One that does not interact with other economies*
Open Economy: *They interact with other economies around the world*

- Closed economies means that NX = 0
- Saving equals investment (output in closed economy is all consumed by firm, household, or government)

National Saving: *The total income in the economy that remains after paying for consumption and government purchases*

$$S = Y - C - G = I$$

Private Saving: *The income that households have left after paying for taxes and consumption (Y- T – C)*
Public Saving: *The tax revenue that the government has left after paying for its spending (T – G)*

Savings = Private savings + Public savings

Budget Surplus: *An excess of tax revenue over government spending*
Budget Deficit: *A shortfall of tax revenue from government spending*

- Investment refers to the purchase of new capital

Market for Loanable Funds: *The market in which those who want to supply funds and those who want to borrow to invest demand funds*

- In the market for loanable funds, there is one interest rate, which is both the return to saving and the cost of borrowing
- Saving is the source of supply, Investment is the source of demand
- Interest rate is the price of a loan
    - IR goes up, demand goes down; IR goes down, demand goes up
- Supply and demand for loanable funds depend on real interest rate

Policy 1: Saving incentives (ex. More consumption tax)
Policy 2: Investment incentives (ex. Investment tax credit)
Policy 3: Government deficits and surpluses
Government Debt: *The sum of all past budget deficits and surpluses*
Crowding Out: *A decrease in investment that results from government borrowing*

Vicious Circle: *Results when deficits reduce the supply of loanable funds, increase interest rates. Discourages investment, resulting in slower economic growth. Slower growth leads to lower tax revenue, and higher spending on income-support programs, and the result can be even higher budget deficits*
Virtuous Cycle: *Results when surpluses increase the supply of loanable funds, reduce interest rates, stimulate investment, and result in higher tax revenue and lower spending on income-support programs, and the results can be even higher budget surpluses*
Government Net Debt: *The difference between the value of government financial liabilities and financial assets*

- When government reduces national saving by running a budget deficit, the interest rate rises, and investment falls

- A budget surplus increases the supply of loanable funds, reduces the interest rate, and stimulates investment

CHAPTER 9 – UNEMPLOYMENT AND ITS NATURAL RATE

Natural Rate of Unemployment: *The amount of unemployment that the economy normally experiences*

Cyclical Unemployment: *The year-to-year fluctuations in unemployment around its natural rate; closely associated with the short-run ups and downs of economic activity*

Stats Canada places adults (15 and up) into 3 categories: employed, unemployed, not in the labour force

Labour Force = employed + unemployed

Unemployment Rate = (# of unemployed/Labour force) * 100

Labour Force Participation Rate = (Labour Force/Total population) * 100

Some trends in unemployment rates…

- Women participate in labour force less than men
- Higher unemployment among those between 15 – 24
- Atlantic Canada has higher unemployment rates than rest of country
- Hard to distinguish between unemployed and those not in the labour force

Discouraged Searchers: *Those who would like to work but have given up looking*

- Unemployment can be a short-term or long-term problem for a person

Natural Rate of Unemployment: *The rate of unemployment to which the economy tends to return in the long run*

Frictional Unemployment: *Unemployment that results because it takes time for workers to search for the jobs that best suit their tastes and skills*

Structural Unemployment: *Unemployment because the number of jobs available in some labour markets is insufficient to provide a job for everyone who wants one*

Job Search: *Process that workers go through to find appropriate jobs (tastes & skills)*

- Frictional unemployment is often a result of changes in the demand for labour among different firms – which are popular (in consumers' opinions
- Different regions specialize in producing different goods; therefore, unemployment can rise or fall depending on region

Sectorial Shifts: *Changes in the composition of demand among industries or regions*

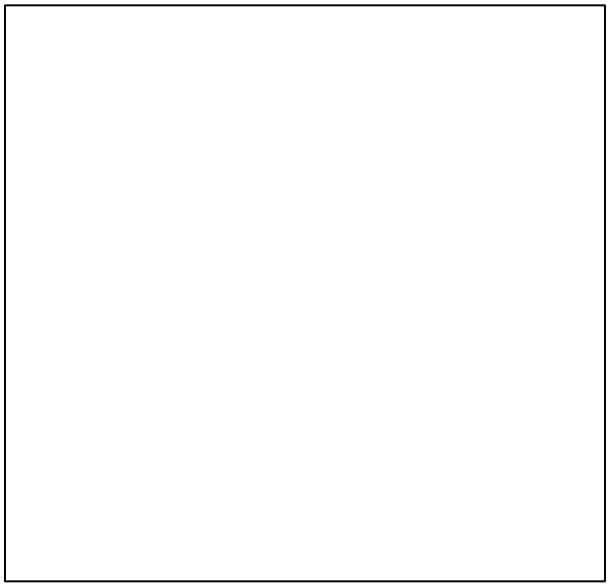
- Sectorial shifts temporarily cause unemployment; takes time to find new job
- Workers in declining industries without jobs, even though most shifts bring about higher standards of living and productivity
- If government policy can reduce the time it takes for workers to find jobs, the economy's natural rate of unemployment can be reduced
- Government programs can facilitate government-run employment agencies (give out info) about job vacancies and public training programs (transitions)
- Newspaper ads, internet job sites, university and college placement offices, word of mouth etc. help to spread information

Employment Insurance (EI): *A government program that partially protects workers' incomes when they become unemployed*

- Eases burden of being unemployed, could also make unemployment rate be higher than usual
- More hours of work means person can collect EI benefits for a longer
- A high local unemployment rate can lead to people collecting EI benefits for longer and working less hours
- Think it helps unemployment rate grow because EI stops when job is found
- The likelihood of finding new employment increases as EI recipients near end of their benefits
- EI improves the ability of the economy to match each worker with the most appropriate job

Minimum wages that are imposed can sometimes cause structural unemployment…

- When minimum-wage law forces the wage to remain above equilibrium, result is decrease in labour demanded, but increase in labour supplied
- These laws are mostly binding to least skilled/experienced workers
- If wage is kept above equilibrium for any reason, the result is unemployment
- 2 reasons for wage to be kept above equilibrium: unions and efficiency wages
- When wage is above equilibrium level, the quantity of labour supplied > quantity of labour demanded; people are waiting



Union: *Worker association that bargains with employers over wages and working candidates*
Collective Bargaining: *The process by which unions and firms agree on the terms of employment*
Strike: *Organized withdrawal of labour from a firm by a union*
Insiders: *Those who benefit from high union wages*
Outsiders: *Those who do not get the union jobs*

- Some of those "outsiders" remain unemployed and wait for the chance to become insiders and earn the high union wage
- Others take jobs in firms that are not unionized
- Outsiders go to non-unionized industries = surplus supply, decrease wages
- Workers in unions reap the benefits; workers not in unions bear some cost
- Unions cause some workers to be unemployed, and reduce the wages in the rest of the economy

A fourth reason why economy always experiences some unemployment is suggested by theory of efficiency wages.

Efficiency Wage Theory: *Above equilibrium wages paid by firms in order to increase worker productivity*

- Theory states worker productivity is connected to worker health
  - Better paid, eat better, more health, more productive
  - Health part of theory is more prominent in poorer countries
- Worker turnover: more firm pays the worker, less employees will leave; therefore, can reduce turnover by paying employees more
- There is a link between wages and effort
  - Higher wages means working harder
- Links wages and worker quality
  - Higher pay attracts a better pool of workers; higher quality work pool

CHAPTER 10 – THE MONETARY SYSTEM

The social custom of using money for transactions is extraordinarily useful in a large, complex society

Barter: *The exchange of one good or service for another*

- An economy relying on bartering will have trouble allocating its scarce resources because double coincidence of wants

Double Coincidence of Wants: *The unlikely occurrence that two people each have a good or service the other wants*

- Using money helps trade - it is of common value; people can specialize

Money: *The set of assets in an economy that people regularly use to buy goods and services from other people*

Money's 3 Functions: Medium of exchange, a unit of account, and a store of value

Medium of Exchange: *An item that buyers give to sellers when they want to purchase goods or services*

Unit of Account: *The yardstick people use to post prices and record debts*

Liquidity: *The ease with which an asset can be converted into the economy's medium of exchange*

"The Kinds of Money"

Commodity Money: *Money that takes the form of commodity with intrinsic value*

Intrinsic Value: *The item would have value even if it were not used as money*

**When gold is used as money, it is said to be operating under gold standard

Fiat Money: *Money without intrinsic value that is used as money because of government decree*

**Ex. Compare money in your wallet with Monopoly money

**The acceptance of fiat money depends as much on expectations and social conventions as on government decree

Money Stock: *Quantity of money circulating in the economy*

Currency: *The paper bills and coins in the hands of the public*

- Wealth in chequing accounting almost as easy to access as wealth in wallet

Demand Deposits: *Balances in bank accounts that depositors can access on demand by writing a cheque or using a debit card*

- Difference between assets that are "money" and assets that cannot; therefore, various measures of the money stock are available in Canadian economy
- Money stock in Canada includes currency and deposits that can be easily used to buy goods and services

Whenever economies use system of fiat money, must have organization for control…
Central Bank: *Institution designed to regulate the quantity of money in the economy*

- Government is technically in control of Central Bank (through appointment)
- Primary responsibility of commercial banks is to maximize profits they earn on behalf of shareholders

Bank of Canada has 4 related jobs:

- To issue currency;
- Act as banker to commercial banks;
- Act as banker to Canadian Government;
- Control the money quantity in the economy

Money Supply: *The quantity of money available in the economy*
Monetary Policy: *The setting of the money supply by policy-makers at Central Bank*

- The Bank of Canada has the power to increase/decrease the # of dollars

Reserves: *Deposits that banks have received but have not loaned out*
100% Reserve Banking: *All deposits are held as reserves (using this, banks would have no influence on the supply of money)*
Fractional-Reserve Banking: *A banking system in which banks hold only fraction of deposits as reserves*
Reserve Ratio: *The fraction of deposits that banks hold as reserves*
Reserve Minimum: *Minimum amount Central Bank requires banks to hold (reserves)*
Excess Reserves: *When bank holds above legal minimum (less reserves, more money)*
Money Multiplier: *The amount of money the banking system generates with each dollar of reserves*

- The money multiplier is the reciprocal of the reserve ratio (R = reserve ratio) = 1/R
- The higher the reserve ratio, the less each deposit, the less of each deposit banks loan out, and the smaller the money multiplier

Different banks around the world use different tools of monetary control. Some follow…
Open Market Operations: *The purchase or sale of government of Canada bonds by the Bank of Canada*

- Central Bank can make supply of money go up by buying, down by selling

Foreign Exchange Market Operations: *The purchase/sale of foreign money by Bank of Canada*
Sterilization: *The process of offsetting foreign exchange market operations with open-market operations, so that the effect on the money supply is cancelled out*

Reserve Requirements: *Regulations on the minimum amount of reserves that banks must hold against deposits*

- Reserve requirements influence how much money the banking system can create with each dollar of reserves
- Increase requirements → hold more → loan out less → raises reserve ratio → lower money multiplier → decreases money supply
- Changing the over night: Central banks like the Bank of Canada act as bankers to the commercial banks. These banks hold demand deposits at the Bank of Canada, which are part of their reserves

Bank Rate: *Interest rate charge by the Bank of Canada on loans to commercial banks*
Overnight Rate: *The interest rate on very short-term loans between commercial banks*

- Lower overnight rate encourages banks to borrow form the Bank of Canada, increase the quantity of reserves, increases the money supply
- It lowers the overnight rate whenever it wants the money supply to expand, raises the overnight rate whenever it wants money supply to contract

There are problems controlling money supply:

1) The Bank of Canada does not control the amount of money that households choose to deposit in banks
- Deposits up, reserves up, money released up
- Deposits down, reserves down, money released down

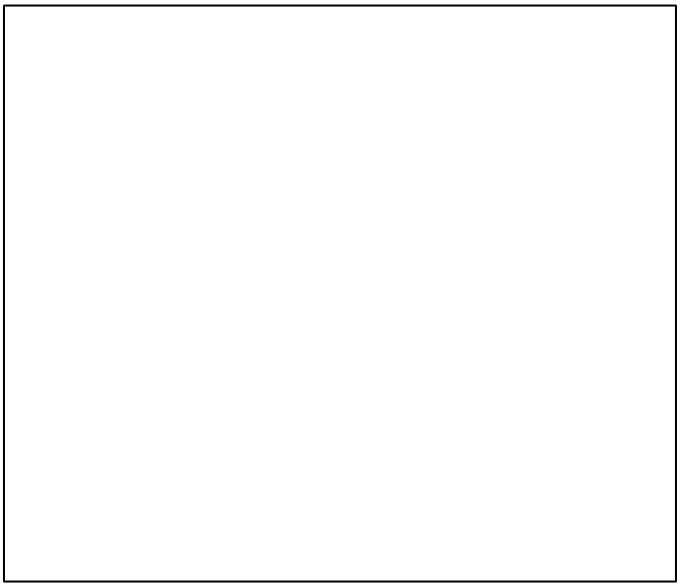
2) Bank of Canada does not control the amount of money commercial banks choose to lend

CHAPTER 11 – MONEY GROWTH AND INFLATION

- Quantity theory of money is often called "classical" theory
- Inflation is more about value of money than value of goods
- A rise in the price level means a lower value of money (each dollar buys less)
- The quantity of goods and serves that can be bought with $1 = 1/P
    - P = price in terms of money, 1/P value of money in terms of goods and services
- Supply and demand determinants for value of money
    - Supply: Bank of Canada and banking system
    - Demand: Reflects how much wealth people want to hold in liquid form
- A higher price level (lower value of money) increases the quantity of money demanded
- In the long-run, the overall level of price adjust to the level at which the demand for money equals the supply

Quantity Theory of Money: *Asserts that the quantity of money available determines the price level and that the growth rate in the quantity of money available determines the inflation rate*

- Immediate effect of monetary injection is to create an excess supply of money
- Quantity of money supplied now exceeds the quantity demanded; the injection of money increases the demand for goods and services
- Since economy's ability to supply goods and serves has not change, the greater demand causes prices to rise



Nominal Variables: *Variable measured in monetary units ($)*
Real Variables: *Variables measured in physical units*
Classical Dichotomy: *The theoretical separation of nominal and real variables*
**Dollar prices are nominal variables; relative prices are real variables
Monetary Neutrality: *The proposition that changes in the money supply do not effect real variables*

Velocity of Money: *The rate at which money changes hands*

$V = (P * Y)/M$ or $(P * Y) = (V * M)$

%change P + %change in Y = %change in V + %change in M

** P = price level (GDP deflator), Y = quantity of output (real GDP), M = quantity of money

Quantity Equation: *The equation $V * M = P * Y$ which relates the quantity of money, the velocity of money, and the dollar value of economy's output of goods and services*

Explaining the equilibrium price level and inflation rate:

1) Velocity of money is relative stable over time
2) Velocity is stable, leading to proportional changes in the nominal value of output (P * Y)
3) Economy's output mainly determined by factor supplies and technology
4) With output (Y) determined by factor supplies and technology, the change in (M) and (P * Y) are reflected in (P) price level
5) Bank increases money supply rapidly, leading to high inflation rate

- When government wants to spend (ex. Repair roads, pensions), must raise necessary funds
- Raises revenue by printing more money – leads to inflation tax

Inflation Tax: *The revenue the government raises by creating money*
**When government prints money, price level rises, and the dollars in your pocket are less valuable

Real Interest Rate = Nominal Interest – Inflation Rate
Nominal Interest Rate = Real Interest Rate + Inflation Rate

Fisher Effect: *The one-for-one adjustment of nominal interest rate to inflation rate*

- When the Bank of Canada increases rate of money growth, results in both higher inflation rate and a higher nominal interest rate
- Fisher effect is crucial to understanding changes in nominal interest rate over time

Why does public feel inflation rate is bad?

- Robs them of their purchasing power
- In reality, inflation does not in itself reduce people's real purchasing power
- Real income determined by real variables; nominal income determined by those factors and overall price level

Shoeleather Costs: *The resources wasted when inflation encourages people to reduce their money holdings*

- Inflation tax is not a cost to society – transfer of resources from household to government
- Causes deadweight losses, like shoeleather costs
- You must make more trips to bank because you don't want to keep as much money on you

Menu Costs: *The costs (for firms and business) of changing prices*

- Due to inflation making prices change more often
- Inflation distorts relative prices, causing consumer decisions to be distorted, leading markets to be less efficient in allocation
- Inflation also distorts taxes and discourages things like capital gains

Capital Gains: *The profits made by selling a product for more than purchase price*

- Inflation exaggerates size of capital gains; increases the tax burden
- Causes confusion and inconvenience: Inflation erodes the real value of the unit account; investor can sometimes not tell between successful and unsuccessful firms
- Also causes arbitrary redistribution of wealth

CHAPTER 12 – OPEN ECONOMY MACRO: BASIC CONCEPTS

Trade allows each country to specialize in producing goods and services in which is had comparative advantage.

Closed Economy: *Economy that doesn't interact with other economies worldwide*
Open Economy: *Economy that interacts freely with other economies worldwide*
Exports: *Goods and services that are produced domestically, sold abroad*
Imports: *Goods and services that are produced abroad, sold domestically*
Net Exports (Trade Balance): *The value of nation's exports (minus) value of imports*
Trade Surplus: *Excess of exports over imports*
Trade Deficit: *Excess of imports over exports*

Balanced Trade → imports = exports

Net Capital Outflow (NCO): *The purchase of foreign assets by domestic residents (minus) the purchase of domestic assets by foreigners*

- Differences between foreign and direct investment and foreign portfolio investment
- Positive NCO: Domestic residents buy more foreign goods than foreigners buy domestic goods
- Negative NCO: Domestic residents buy less foreign goods that foreigners by domestic goods
- Important variables influencing NCO:
  - Real interest rates paid on foreign assets
  - Real interest rates paid on domestic assets
  - Perceived economic and political risk about holding foreign assets
  - Government policies affecting foreign ownership of domestic assets

$$NCO = NX$$

- Because every international trade is an exchange
- Seller country transfers good/service, buyer country gives up an asset to pay
- Value of that asset = value of good/service
- Net value of goods/services sold (NX) = net value of assets acquired
- Trade surplus $NX > 0$, $NCO > 0$ (capital is flowing out)
- Trade deficit $NX < 0$, $NCO < 0$ (capital is flowing in)
- Total expenditure on the economy's output of goods and services is the sum of expenditure on consumption, government purchases, and net exports
- Recall, national saving is income that is left after consumption and government purchases
- National Savings $= Y - C - G$
- Therefore $Y - C - G = NX + I$
  $S = NX + I$
  $S = NCO + I$
- Closed economy $NX = 0$, in contrast, open economy has two uses for saving: domestic investment and net capital outflow

TRADE DEFICIT	BALANCE TRADE	TRADE SURPLUS
• Exports < Imports • Net Exports < 0 • NCO < 0 (inflow) • Y < C + I + G • Saving < Investment	• Exports = Imports • Net Exports = 0 • Y = C + G + I • Saving = Investment • NCO = 0	• Exports > Imports • Net Exports > 0 • NCO > 0 (outflow) • Saving > Investment • Y > C + G + I

- Macroeconomics also studies at what prices these international transactions take place
- International prices help coordinate the decisions of consumers and producers as they interact in world markets

Nominal Exchange Rate: *The rate at which a person can trade the currency of one country for the currency of another*

- Exchange rate can be expressed in two ways: 80 yen per dollar, or 1/80 dollar per yen

Appreciation: *An increase in the value of a currency as measured by the amount of foreign currency it can buy*

Depreciation: *A decrease in the value of a currency as measured by the amount of foreign currency it can buy*

- Example: start → 80 yen per dollar, change → 80 yen to 90 yen
  - The dollar depreciated ($1 can now buy more yen)
  - The yen depreciates (the yen now buys less dollar)
- For any country, there are nominal exchange rates
- An exchange rate index turns these many exchange rates into a single measure of the international value of the currency
- Appreciating/depreciating refers to an exchange rate index that takes into account many individual exchange rates

Real Exchange Rate: *The rate at which a person can trade the goods and services of one country for the goods and services of another*

- Ex. German beer twice as expensive as Canadian beer; can say real exchange rate is ½ of German beer for one Canadian beer
- Real and nominal exchange rate closely related

Real Exchange Rate = (Nominal Exchange Rate * Domestic Price)/Foreign Price

Real Exchange Rate = (e * P) / P*

e = nominal exchange rate between countries, P = domestic price basket, P* = foreign price basket

- Depreciation REX: goods have become cheaper (compared to foreign goods)
- Appreciation of REX: goods have become more expensive

Purchasing-Power Parity: *A theory of exchange rates whereby a unit of any given currency should be able to buy the same quantity of goods in all countries*

- Money economists believe that purchasing-power parity describes the forces that determine exchange rates in the long run
- PPP based on principle called law of one price

Law of One Price: *Asserts that a good must sell for the same price in all locations; otherwise, opportunities for profit would be left unexploited*

Arbitrage: *Process of taking advantage of differences in prices in different markets*

- Arbitrage leads to a good in two places to eventually be the same price (due to supply and demand)
- PPP tells us that the nominal exchange rate between 2 currencies of different countries depends on the price levels in those countries

EXAMPLE → P = price basket in Canada, P* = price basket in Japan, e = nominal exchange rate

- Quantity of dollar at home? P = price level, purchasing power of $1 at home is 1/P
- Abroad, a dollar can be exchanged into e units of foreign currency; therefore, purchasing power e/P*

$$1/P = e/P^*$$

$$1 = eP / P^*$$

- If purchasing power of the dollar is always the same at home and abroad, then the real exchange (relative price of domestic goods and foreign goods) cannot change

e (nominal exchange rate) = P* (foreign price level)/P (domestic price level)

- According to the theory of purchasing-power parity, nominal exchange rate between the currencies of 2 countries must reflect the different price levels in those countries

- Nominal exchange rates depend on price level, also depends on each country's money supply and demand
- When Central Bank prints lots of money, loses value both in terms of amount of goods and services it can buy and amount of other currencies it can buy

PPP not always accurate – exchange rates do not always move to ensure that a dollar has the same real value in all countries all the time.

- 1st Reason: Many goods are not easily traded
- 2nd Reason: Not always perfect substitutes when produced in different countries

Small Open Economy: *An economy that trades goods and services with other economies and, by itself, has a negligible effect on world prices and interest rates*
Perfect Capital Mobility: *Full access to world financial markets*

- Country is both small open economy and has perfect capital mobility, then r (domestic interest rate, real) should equal r^{world} (world interest rate, real)

$$r = r^{world}$$

- As long as the Canadian and the foreign assets are close substitutes, the difference in interest rates provides an arbitrage opportunity for either borrowers or savers

Interest Rate Parity: *A theory of interest rate determination whereby the real interest rate on comparable financial assets should be the same in all economies with full access to world financial markets*

There are limitations to interest rate parity as well…

1) Financial assets carry with them the possibility of default
    - Higher default risks, higher interest rate
2) Financial assets offered for sale in different countries not necessarily perfect substitutes for one another (ex. Taxes)

- Therefore interest rates of small open economies are expected to be near but not always exactly the same as the world interest rate

CHAPTER 13 – A MACROECONOMIC THEORY OF OPEN ECONOMY

Many Canadians are employed in industries that depend on international trade, and many also consume goods and services that are available only because of trade.

- Past 40 years NCO < 0, meaning foreigners buy more Canadian goods then Canadians buy foreign goods

- In 1999, NCO became positive – some people demand you do something about this (don't like the fact money is flowing out of Canada)
- To understand what factors determine a country's trade balance and how government policies can affect it, we need a macroeconomic theory of open economy; model states…
    - Takes economy's GDP as given (real GDP determined by the supplies of factors of production and available production technology that turns input into output)
    - Takes the economy's price level as given
    - Real interest rate is given
- Simply, theory applies the tools of supply and demand to an open economy

Market for loanable funds: coordinates the economy's saving, investment, and the flow of loanable funds abroad (NCO)

Saving (S) = Domestic Investment (I) + Net Capital Outflow (NCO)

- The above identity emphasizes in an open economy the amount a nation saves does not have to equal amount it spends to purchase domestic capital (also is made up of money spent on foreign goods)
- Demand for loanable funds comes from domestic investment
- Higher interest rate = less investment (but more people want to save) – lower demand, lower interest rate = more investment (but less people want to save) – more demand
- In small open economy with perfect capital, interest rate = world interest rate, and we need to also consider role played by savings of foreigners

(1) World interest rate > Canadian = excess supply of funds is NCO

(2) World interest rate < Canadian = savings/supply by Canadians not enough, therefore capital is flowing in and NCO < 0

- NCO = NX; therefore, Net exports are determined by the difference between the supply of loanable funds due to national saving (S) and demand for loanable funds (I) at the world interest rate

Market for foreign currency exchange: coordinates people who want to exchange domestic currency for foreign currency

- Exists because people want to trade goods, services, and financial assets with people in other countries (want to be paid in own currency)
- Supply of dollars (vertical because it is not determined by real exchange rate) is from NCO
- Demand for dollars is determined by NX (which represents the imbalance between exports and imports of goods and services)
    - Downward sloping because a higher exchange rate makes domestic goods more expensive
- The price that balances the supply and demand for foreign currency is the real exchange rate (equilibrium)

NCO is the variable that links these two markets…

- Market for loanable funds, supply = national saving, demand = domestic investment + NCO
- Market for foreign currency, supply comes from NCO (and demand from NX)
- Key determinant of NCO is world interest rate
- A change in NCO means a Canadian is buying or selling a foreign asset
- Because a person who wants to buy a foreign asset, he/she must supply dollars in order to exchange them for the foreign currency; therefore, a change in NCO affects the market for foreign currency exchange

How do changes in policy and other events alter the economy's equilibrium?

- Increase in world interest rate (causes NCO to go up)
- Government budget deficits and surpluses
    - Deficit: Reduces S (supply of loanable funds), reduces NCO → reduction in supply of dollars in market for foreign-currency exchange, and causes exchange rate to appreciate (NX also falls)
    - Surplus (or reduction of deficit): Causes the dollar to depreciate and causes NX to rise

Trade policies: *A government policy that directly influences the quantity of goods and services that a country imports and exports*

Tariff: *A tax on goods produced abroad and sold domestically*

Import Quota: *Limit on quantity of good produced abroad and sold domestically*

- A trade policy that restricts imports makes NX rise, therefore demand for dollars in the market for foreign-currency exchange is shifted to right
    - In the end an import quota reduces both imports and exports, but NX are unchanged (exchange rate appreciates; therefore, imports go up and exports go down)
    - Trade policies do not affect the trade balance – Policies that directly influence exports or imports do not alter net exports

$$NX = NCO = S - I$$

- Effects of trade policy are more microeconomic than macroeconomic

- Political and economic stability are important; therefore, when there is political instability and capital flight then there will be changes in the economy

Capital Flight: *A large and sudden reduction in the demand for assets located in a country*

- Increase in risk (in holding country's assets) means interest rate must go up to include risk (risk premium); the demand for the country's assets shifts to the left but interest rate goes up meaning the NCO goes up
- Supply of currency goes up in foreign-currency exchange market, which causes the exchange rate to depreciate and makes NX increase

CHAPTER 14 – AGGREGATE DEMAND AND SUPPLY

Because increase in the labour force, increases in the capital stock, and advances in technological knowledge, the economy can produce more and more over time.

Recession: *A period of declining real incomes and rising unemployment*

Depression: *A severe recession*

Three key facts about economic fluctuations…

1) Economic fluctuations (often called business cycle) are irregular and unpredictable
- Rapid growth in GDP = business is good; real GDP falls (recession) = business is bad

2) Most macroeconomic quantities fluctuate together
- Most macroeconomic variables that measure some type of income, spending, or production fluctuate closely together
- Real GDP falls in a recession so do personal income, corporate profits, consumer spending, investment spending, industrial production etc.
- They may fluctuate together, but fluctuate by different amounts

3) As output falls, unemployment rises
- When GDP declines (ex. During recessions), unemployment rises

How the short-run differs from the long run?

- Most economist believe the classical theory describes the world in the long run but not in the short run
    - Changes in money supply affect nominal variables, not real in long run
    - Assumption: monetary neutrality is not appropriate when studying year-to-year changes in the economy
- Two variables are used to develop a model to analyze the short-run fluctuations
    - The economy's output of goods and services measured by real GDP
    - The overall price level measured by the CPI or the GDP deflator

Model of Aggregate Demand and Aggregate Supply: *The model that most economists use to explain short-run fluctuations in economic activity around its long-run trend*

Aggregate-Demand Curve: *A curve that shows the quantity of goods and services that households, firms and government want to buy at each price level*
Aggregate-Supply Curve: *A curve that shows the quantity of goods and services that firms choose to produce and sell at each price level*

- Need macroeconomic theory to understand why demand curve slopes downwards and supply curve slopes upwards

The aggregate-demand curve tells us the quantity of all goods and services demanded in the economy at any given price level.

- A fall in the economy's overall level of prices tends to raise the quantity of goods and services

Why is the aggregate-demand curve slope downwards? Remember GDP = C + I + G + NX. It is assumed government spending is fixed by policy. The other three depend on economic conditions (particularly, price level). How does price level affect the quantity of goods and services demanded for consumption, investment, and NX?

- The Price Level and Consumption (The Wealth Effect)
  - Real value of money is not fixed (although nominal value is fixed)
  - When prices fall, these dollars are more valuable because they can be used to buy more goods and services
  - Consumers feel wealthier and spend more; larger quantity of goods and services are demanded
- The Price Level and Investment (The Interest Rate Effect)
  - When price level falls, household try and reduce their holdings in money by lending some of it out
  - As households try to convert some of their money into interest-bearing assets, they drive down interest rates
  - Lower interest rates leads to investment at a lower price and encourages firms to borrow more to invest in new capital/households to invest in new housing
  - Therefore, lower interest rate increases the quantity of goods and services demanded
- The Price Level and Net Exports (Real Exchange-Rate Effect)
  - Compute the real exchange rate between Canada and other countries:

Real exchange rate = (e (nominal exchange rate) * P (Canadian Basket)) / P* (foreign basket)

  - For a given nominal exchange rate, a lower price level reduces the real exchange rate
  - Fall in real exchange rate causes an increase in the quantity of goods and services demanded
  - An increase in Canadian price level causes the real exchange rate to appreciate, and this reduces Canadian NX and decreases the quantity of goods and services demanded
- The downward slope of the aggregate demand curve shows that a fall in the price level raises the overall quantity of goods and services demanded

- When one of the other factors that affects the quantity of goods and services demanded changes, then the aggregate demand curve shifts
- What are some things that could shift the aggregate-demand curve? Changes in consumption, investment, government purchases, or NX

In the long run, aggregate-supply curve is vertical. In the short run, the aggregate-supply curve is upward sloping.

- Aggregate-supply curve tells us the total quantity of goods and services that firms produce and sell at any given price level
- Why is it vertical in the long run?
    - An economy's production of goods and services (its real GDP) depends on its supplies of labour, capital, natural resources, and on the available technology used to turn these factors of production into goods and services
    - Because price level does not affect these long-run determinants of real GDP, the long-run aggregate-supply curve is vertical
    - Remember classical macroeconomic theory is based on the assumption that real variables do not depend on nominal variables
    - Vertical at the natural rate of output; also referred to as potential output or full-employment output

Why the long-run aggregate supply curve might shift…

- Any change that alters the natural rate of output shifts it
- Shifts can be categorized according to the various factors in the classical model that affect output: Labour, capital, natural resources, technological knowledge
- Short-run fluctuations in output and price level should be viewed as deviations from the continuing long-run trends

Why does the aggregate-supply curve slopes upward in the short run?

- In short run, an increase in overall level of prices in the economy tends to raise the quantity of goods and services supplied
- A decrease in the level of prices tends to reduce the quantity of goods and services supplied (all in the short run of course)
- If AS slopes up, then shifts in the AD do affect output and employment
- The quantity of output supplied deviates from its "natural" level when the price level deviated from the level that is expected to prevail
- Economic theories explain these deviations:

Sticky-Wage Theory: *Nominal wages are slow to adjust because they are based on expected prices (or are "sticky" in the short run). Nominal wages to not respond immediately when the actual price level turns out to be different than expected*

**The slow adjustment of nominal wages is attributable to long-term contracts between workers and firms that fix nominal wages, sometimes for as long as three years

**This slow adjustment may be attributable to social norms and notions of fairness that influence wage setting and that change only slowly over time

Sticky-Price Theory: *Prices of some goods and services adjust sluggishly in response to changes in economic conditions*

**Partly due to costs (menu costs) associated with changing prices

**Because not all prices adjust instantly to changed conditions, an unexpected fall in price level leaves some firms with higher-than-desired prices, and these higher-than-desired prices depress sales and induce firms to reduce the quantity of goods and services they produce

Misperceptions Theory: *Changes in the overall price level temporarily mislead suppliers about what is happening in the markets in which they sell their output*

**As a result of these short-run misperceptions, suppliers respond to changes in the level of prices, and this response leads to an upward-sloping aggregate-supply curve

**A lower price level causes misperceptions about relative prices, and these misperceptions make suppliers to respond to the lower price level by decreasing the quantity of goods and services supplied (because they think only their selling price has decreased – not also cost of production)

**Opposite: Until misperceptions are corrected, they respond to higher price level by increasing the quantity of goods and services supplied

- All three theories suggest that output deviates from its natural rate when the price level deviates from the price level that people expected

Quantity of output supplied = Natural Rate of output + a(Actual price level – expected price level)

A = a number that determines how much output responds to unexpected changes in the price level

- Assumption: in long run, wages and prices are flexible rather than sticky; therefore, people are not confused about relative prices, leading to vertical long run aggregate-supply curve…

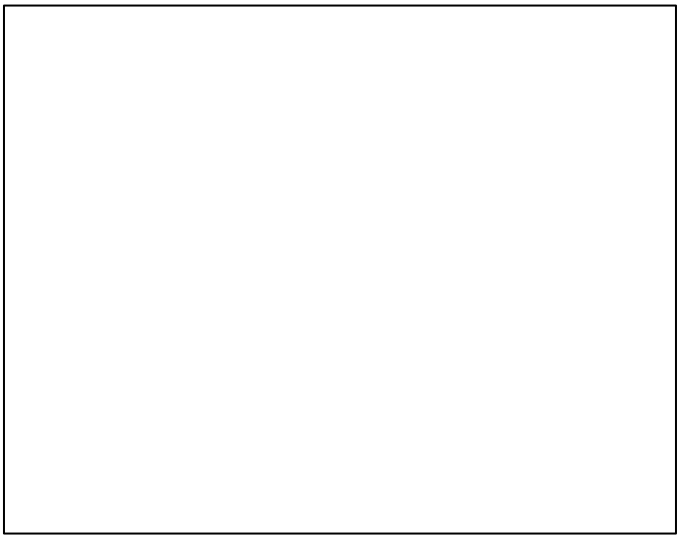
Quantity of output supplied = Natural level of output

Why the short-run aggregate-supply curve might shift…

- Changes in labour, capital, natural resources, technology, expected price level
- If the expected price level
  - Increases, the quantity of goods and services supplied falls and shifts the short-run aggregate supply curve to the left
  - Decreases, the quantity of goods and services supplied rises and shifts the short-run aggregate supply curve to the right

Two causes of (short run) economic fluctuation: Shifts in aggregate demand and aggregate supply

- Shifts in aggregate demand:
  - Short run, shifts in aggregate demand cause fluctuations in the economy's output of goods and services
  - Long run, shifts in the aggregate demand affect the overall price level but do not effect output



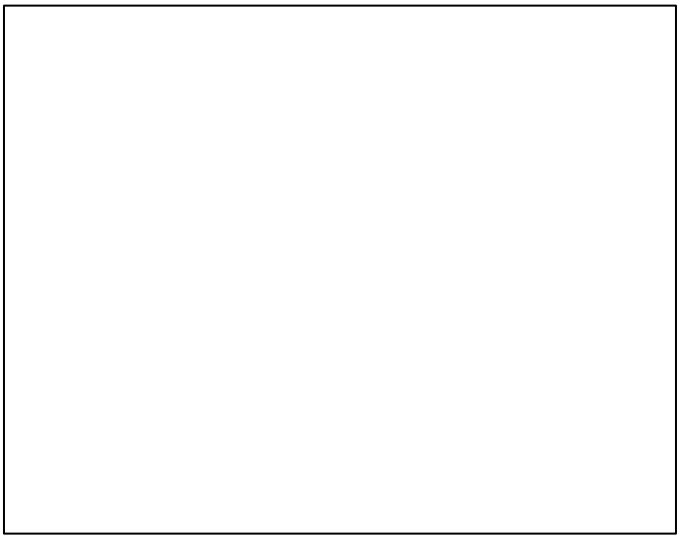
A Contraction in AD

- *A fall in aggregate demand (pessimism) shifts AD from AD1 to AD2*
- *Economy moves from point A to B*
- *Output falls from Y1 to Y2 and price level falls from P1 to P2*
- *Over time (wages prices and perceptions adjust) AS curve shifts to right from AS1 to AS2*
- *Economy reaches point C*
- *Price level falls to P3 and output returns to its natural rate at Y1*

- A shift in aggregate supply:
  - Shifts in aggregate supply can cause stagflation

Stagnation: *A period of falling output and rising prices*

- According to the sticky-wage theory, the key issue is how stagflation affects nominal wages – firms and workers may at first respond to the higher level of prices by raising their expectations of the price level and setting higher nominal wages (firms' costs will rise again) ← this phenomenon of higher prices leading to higher wages, and in turn leading to even higher prices, is sometimes called a wage-price spiral
- If policymakers leave an adverse shift in aggregate-supply then the wage-price spiral will eventually slow down. Low level of output and high unemployment will push nominal wages down. This leads producing goods and services to be more profitable and the short-run aggregate shifts back to it' original place and there is no permanent change



Accommodating an Adverse Shift in the AS

- *AS1 to AS2 (adverse shift in AS curve) makes policymakers try and influence AD curve to the right from AD1 to AD2*
- *The economy would move from point A to point C*
- *This policy would prevent supply shift from AS1 to AS2 from reducing output in the short run, but the price level would permanently rise from P1 to P3*

CHAPTER 15 – THE INFLUENCE OF MONETARY AND FISCAL POLICY ON AGGREGATE DEMAND

Remember that the aggregate demand curve slopes downward for three reasons: the wealth effect, the interest-rate effect, and the exchange-rate effect (which is most important of these effects for the Canadian economy.

The Theory of Liquidity Preference: *Keyne's theory that the interest rate adjusts to bring money supply and money demand into balance*

- The nominal interest rate is the interest rate as usually reported, and the real interest rate is the interest rate corrected for effects of inflation
- No inflation = two rates are the same
- When borrowers and lenders expect prices to rise over the course of a loan, they agree to a nominal interest rate that exceeds the real interest rate (by the expected rate of inflation)
- When nominal interest rate rises or falls, the real interest rate that people expect to earn rises or falls as well
- Money supply: assumed fixed by Bank of Canada (BoC) and does not depend on interest rate
    - Open-market operations
    - Changing the bank rate
- Money demand reflects how much money want to hold in liquid form
- Household wealth includes only to assets (assumption)
    - Money – liquid but pays no interest
    - Bonds – pay interest but not as liquid
    - Household's "money demand" reflects its preference for liquidity
- Equilibrium in the money market (assume the following about the economy:
    - The price level is stuck at some level
    - For any given price level, the interest rate adjusts to balance the supply and demand of money
    - The level of output responds to aggregate demand for goods and services

Suppose real income (Y) rises and other things stay equal – what happens to money demand?

- If Y rises, households what to buy more goods and supplies so they need more money (to get money they sell bonds, and there is an increase in money demand)

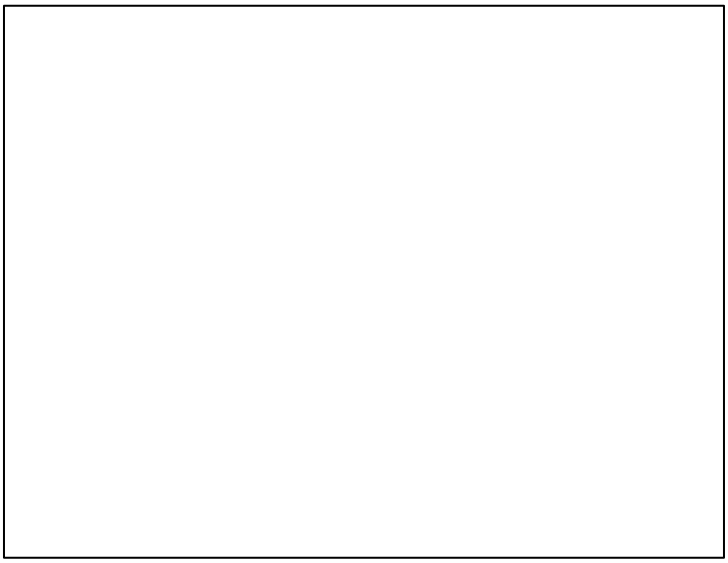
How is "r" determined? (r being equal to interest rate, particularly at equilibrium interest rate)

- Money supply is vertical because changes in r do not effect MS
- MD curve is downward sloping; therefore, a fall in r increases money demand

The downward slop of the aggregate demand curve…

- The price level is one determinant of the quantity of money demanded
- Higher price level increases the quantity of money demanded for any given interest rate

- Higher money demand leads to a higher interest rate
- Quantity of goods and services demanded falls
- In an open economy, the other important influence is the real exchange-rate effect
    - An increase in the price level causes the real exchange rate to increase
    - Canadian-produced goods are more expensive relative to foreign-produced goods and both foreigners and Canadians substitute away from Canadian-produced goods (Canada's NX falls); end result is that there is a negative relationship between the price level and the quantity of goods and services demanded
- How the interest-rate effect works



When Bank of Canada uses monetary policy to impact aggregate demand…

- Increases money supply, the interest rate falls and increases the quantity of goods and services demanded for any given price level, increasing AD
- Contracts money supply, the interest rate rises and reduces the quantity of goods and services demanded for any price level, lowering AD (a decrease in AD would also reduce the demand for money)

Open economy considerations include:

- A monetary injection by the BoC
    - Causes the dollar to depreciate in value, causing NX to rise
    - There is an addition increase in demand for Canadian-produced goods and services not realized in a closed economy (foreigners also want Canadian-produced goods – under world interest rate); and
    - In the end, a monetary injection in an open economy shifts the aggregate-demand curve farther to the right than in a closed economy
    - BoC cannot control the money supply (change it) and used a fixed exchange rate – cannot simultaneously choose value of Canadian dollar and size of money supply

How does fiscal policy influence aggregate demand curve?

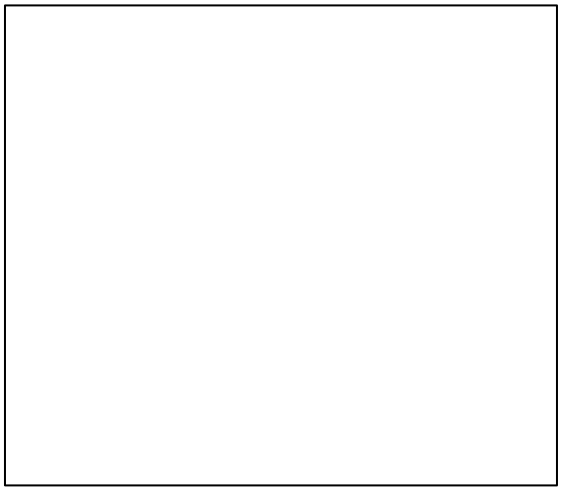
Fiscal policy: *The setting of the level of government spending and taxation by government policymakers*

- Expansionary fiscal policy
  - An increase in government spending (G) and/or decrease in taxes (T)
  - Shifts AD to the right
- Contractionary fiscal policy
  - A decrease in government spending and/or increase in taxes (T)
  - Shifts aggregate demand to the left
- Fiscal policy has two effects on AD
  - Multiplier effects and crowding-out effect

Multiplier Effect: *The additional shifts in aggregate demand that result when expansionary fiscal policy increases income and thereby increases consumer spending*

Let's use numerical example:

- Government buy $20B of planes from Boeing (Boeing revenue increase 20B) which means AD increases
- Revenue is distributed to Boeing's workers (wages) and owners (profits/dividends)
- These people are also consumers and will spend a portion of extra income
- Extra income = extra consumption and further increases AD



How big is the multiplier effect? Depends on how much consumers respond to increases in income

Marginal Propensity to Consume (MPC): *The fraction of extra income that households consume rather than save*

Multiplier = (1 + Marginal Propensity to consume (MPC) + MPC2 + MPC3) x earnings

Multiplier = 1/(1-MPC)

Change in Y = [1/(1 – MPC)] Change in G

Marginal Propensity to Import (MPI): *The fraction of extra income that a Canadian household spends on imported goods*

Multiplier = 1/(1 – MPC – MPI)

- A bigger MPC means changes in Y cause bigger changes in C, which in turn cause more changes in Y

Other applications of the multiplier effect…

- The multiplier effect: each $1 increase in government spending can generate more than a $1 increase in AD
- Also true for other components of GDP

- Example – Suppose a recession overseas reduces demand for U.S. net exports by $10B
- Initially, AD falls by $10B, and fall in GDP (Y) causes fall in consumption (C), which further reduces AD and income

The crowding-out effect on investment…

- Fiscal policy has another effect on AD that works in the opposite directions
- A fiscal expansion shifts AD to the right, but also raises r (interest rate), which reduces investment and, thus, reduces the net increase in AD
- So, the size of the AD shift may be smaller than the initial fiscal expansion
- Example: Government increases purchases by $20B, AD for goods and services could rise by more or less that $20B, depending on whether the multiplier effect or the crowding-out effect is larger

What about in an open economy? What must you take into account?

- Canada's interest rate = world interest rate
- Interest rate increased as a result in government spending
- Higher interest rate increases demand for Canadian assets; therefore, increase in demand for Canadian dollar

Flexible Exchange Rates:

- If BoC allows the exchange rate to be flexible, dollar appreciates, which makes Canadian-produced goods and services more expensive (relative to foreign assets) making Canada's NX fall
- This is an additional crowding-out effect (on NX) that reduces the demand for Canadian-produced goods and services
- Fiscal policy has no lasting effect on AD

Fixed Exchange Rate:

- To prevent the appreciation of the dollar…
  - BoC increases the MS by selling dollars in market for foreign-currency exchange
  - This increase in the MS also prevents the interest rate from changing
  - As a result, both forms of crowding out are avoided
  - In the end, the fiscal expansion has a large effect on AD
- Summed up: If the BoC chooses to prevent any change in the exchange rate, expansionary fiscal policy will have no crowding-out effects and will therefore cause a very large increase in the demand for goods and services

Those in charge of fiscal and monetary policy must work together to create a balance that benefits the economy.

- Changes in Taxes – When government cuts personal income taxes, it increases households' take-home pay
  - Households save some of this additional income, but also spend it on consumer goods; therefore, increased spending causes AD curve to shift to the right

  - The size of shift in AD is affected by the multiplier and crowding-out effects; also determined by households' perceptions about the permanency of the tax change
  - In a small open economy, whether the change in the position of the AD is a lasting one depends on whether exchange rates are fixed (as we just learned)
- Deficit Reduction – Can be accomplished with reduced government spending, increased taxes, or a combinations
  - Can have a minimal impact of the level of AD if the central bank adopts the appropriate exchange-rate policy

In the economy there are often unexpected expansion and contractions that impose costs like unemployment, inflation, and uncertainty. If monetary and fiscal policy can be used to stabilize the economy, they can be used to offset the harmful effects of economic fluctuations.

- Some economists argue monetary/fiscal policy destabilizes economy
  - Because they affect economy with substantial lag
  - Suggest the economy should be left to deal with short-run fluctuations without any help

Automatic Stabilizers: *Changes in fiscal policy that stimulate aggregate demand when the economy goes into a recession without policymakers having to take any deliberate action*

- Automatic stabilizers include the tax system and some forms of government spending
- A flexible exchange rate as an automatic stabilizer (example): U.S. recession would cause Canadian net exports to fall, lowering aggregate demand – but with flexible exchange rates
  - Lower Canadian income results in lower money demand, reducing the interest rate below world interest rate
  - Decreased demand for Canadian assets results in depreciation of the Canadian dollar, making Canadian-produced goods relatively less expensive (NX rise)

CHAPTER 16 – THE SHORT-RUN TRADE-OFF BETWEEN INFLATION AND UNEMPLOYMENT

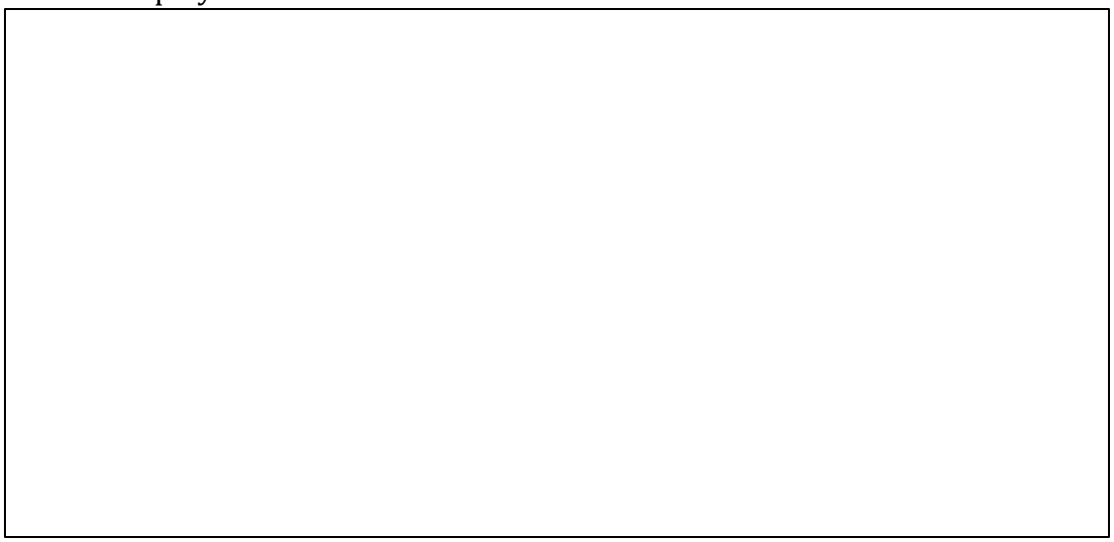
If monetary and fiscal policymakers expand aggregate demand and move the economy up along the short-run aggregate supply curve, they can lower unemployment temporarily, but only at the cost of higher inflation. If policymakers contract aggregate demand and move the economy down the short-run aggregate-supply curve, they can lower inflation, but only at the cost of temporarily higher unemployment. There is a connection, depicted by the Phillips curve…

Phillips Curve: *Shows the short-run combinations of unemployment and inflation that arises as shifts in the aggregate demand curve move the economy along the short-run aggregate supply curve*

- 1958: nominal wage growth was negatively correlated with unemployment
- 1960: negative correlation between inflation & unemployment

Deriving the Phillips Curve (example): Suppose P = 100 this year; the following are two possible outcomes next year:

A) Aggregate demand low, small increase in P (low inflation), low output, high unemployment
B) Aggregate demand high, big increase in P (high inflation), high output, low unemployment



- Some fiscal and monetary policy affect aggregate demand, the PC appeared to offer policymakers a menu of choices
  - Low unemployment and high inflations
  - Low inflation and high unemployment
  - Anything in between
- In the 1960's, Freidman and Phelps concluded inflation and unemployment are unrelated in the long run, leading to…
  - The long run Phillips curve is vertical at the natural rate of unemployment
  - Monetary policy could be affective in the short run, but not in long run
- Natural rate of unemployment just means that it is beyond the influence of monetary policy, not that it is the best rate for a country to be at

Natural-rate Hypothesis: *The claim that unemployment eventually returns to its normal/natural rate, regardless of the inflation rate*

**Based on the classical dichotomy and the vertical long-run aggregate supply curve

This difference in short term and long run Phillips curve brought up many questions for Phillips and Freidman.

- Evidence (from '60s): PC slopes downwards
- Theory (Friedman and Phelps' work): PC is vertical in long run

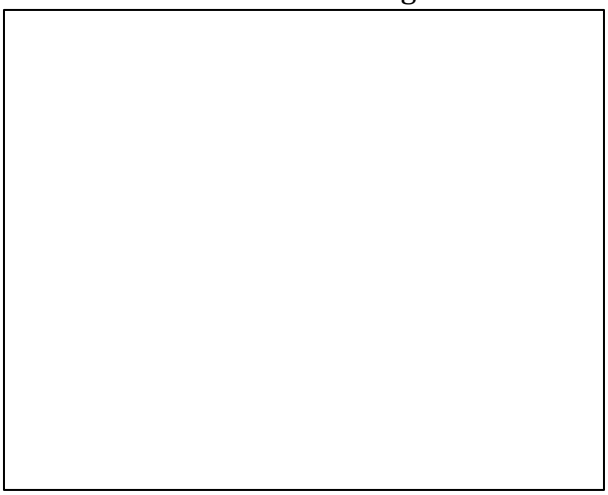
- To bridge the gap between theory and evidence, Freidman and Phelps introduced a new variable: expected inflation

Expected Inflation: *A measure of how much people expect the price level to change*

The Phillips Curve Equation:

Unemployment Rate (U) = Natural Rate of U. – a(Actual Inflation – Expected inflation)

- Short Run: Government can reduce u-rate below the natural u-rate by making inflation greater than expected
- Long Run: Expectation catch up to reality, u-rate goes back to natural u-rate whether inflation is high or low



The higher expected rate of inflation, the higher the short-run tradeoff between inflation and unemployment. At point A, expected inflation and actual inflation are both low, and unemployment is at its natural rate. If BoC pursues an expansionary monetary policy, the economy moves from point A to B in the short run. At point B, expected inflation is still low, but actual inflation is high. Unemployment is below its natural rate. In the long run, expected inflation rises, and the economy moves to point C.

Another thing that shifts the PC is supply shocks.

Supply Shocks: *An event that directly alters firms' costs and prices, shifting the AS and PC curves*

- Example: Large increases in oil prices
- In the 1970s, policymakers faced two choices when OPEC cut output and raised worldwide price of petroleum
    - Fight the unemployment battle by expanding aggregate demand and accelerate inflation
    - Fight inflation by contracting aggregate demand and endure even higher unemployment

What is the cost of reducing inflation?

Disinflation: *A reduction in the inflation rate*

- To reduce inflation, BoX must slow the rate of money growth, which reduces aggregate demand
- Short run: output falls and unemployment rises
- Long run: output and unemployment return to their natural rates
- Disinflation requires enduring a period of high unemployment and low output

Sacrifice Ratio: *The number of percentage points of annual output lost in the process of reducing inflation by 1% point*

- Typical estimate of sacrifice ratio is 2 to 5
  - Reducing inflation rate 1% = sacrifice of 2% to 5% of year's output
- Cost can be spread over time. Example: To reduce inflation by 6%, can either
  - Sacrifice 30% of GDP in one year
  - Sacrifice 10% of GDP for three years

An argument was made saying that rational expectations could lead to costless disinflation…

Rational Expectations: *A theory according to which people optimally use all the information they have, including information about government policies, when forecasting the future*

- Expected inflation explains why there is a tradeoff between inflation and unemployment in the short run but not in the long run
- How quickly the short-run tradeoff disappears depends on how quickly expectation adjust
- Implied that disinflation could be much less costly
- Example: Suppose the BoC convinces everyone it is committed to reducing inflation
  - Then, expected inflation falls, and the short-run PC shifts downward
  - Result: Disinflation can cause less unemployment that traditional sacrifice ratio predicts

Discussing Volcker Disinflation…

- Federal Chairman Paul Volcker
  - Appointed in late 1979 under high inflation and unemployment
  - Changed federal policy to disinflation
- In 1981 – 1984
  - Fiscal policy was expansionary, so federal policy needed to be very contractionary to reduce inflation
  - Success – Inflation fell from 10% to 4%, but at the cost of high unemployment

Some economists believe that if the central bank makes a credible statement of its intention to deflate, lower rates of inflation will come at lower costs. Therefore, in 1988, the BoC announced its zero-inflation target, and in 1989 monetary contraction began

- Target was reached in 1994, but unemployment rate now exceeded 10%
- Inflation fell from 4.5% to 1.1% (economists usually say 1% inflation is equal to 0 inflation)
- Unemployment remained above natural rate during 1989-1999 period
- Sacrifice ratio: 4.8 (twice that of the 1981-1989 period)
- The BoC clearly defined their intention to reduce inflation to zero, yet cost of reduction seemed to be larger

- Causes of this failure could include:
    - During this period government (both provincial and federal) were coming up with deficits
    - The BoC's credibility was low
    - Lack of coordination between BoC and government

CHAPTER 17 – FIVE DEBATES OVER MACROECONOMIC POLICY

Should monetary and fiscal policymakers try to stabilize the economy?

- (Pros follow) Left on own, economy fluctuates; policy can manage aggregate demand to offset this inherent instability and reduce severity of economic fluctuations
- Society should not have to suffer through the large booms and busts of the business cycle
- Monetary and fiscal policy can stabilize aggregate demand and, thereby, production and employment
    - Aggregate demand inadequate = should boost government spending, cut taxes and expand money supply
    - Aggregate demand excessive = should cut government spending, raise taxes, and reduce money supply
- (Cons follow) Monetary policy affects the economy with long and unpredictable lags between the need to act and the time policies take effect
- Fiscal policy lags due to long political process to change spending and taxes
- All too often they make economic fluctuation worse

Should monetary policy be made by an independent central bank?

- (Pros follow) Allowing elected officials to have influence in conducting monetary policy has two problems:
    - When given this power, politicians are sometimes tempted to use monetary policy to affect the outcome of elections (central banks can ally themselves with politicians, and discretionary policy can lead to economic fluctuations that reflect the electoral calendar – the political business cycle)
- Such inflation might lead to more inflation than is desirable
    - There may be a discrepancy between what policymakers say and what they will actually do (time inconsistency of policy)
    - Because policymakers are often so inconsistent, people are skeptical when central bankers announce their intentions to reduce inflation
- These problems can be countered by conducting monetary policy independent of political influence
    - Countries with most independent central banks = lowest inflation rate
- (Cons follow) Important advantage of elected officials having a say in conducting monetary policy is accountability
- The practical importance of time inconsistency is far from clear

- The idea elected policymakers might use monetary policy to generate political business cycles seems at odds with the concept of rational expectations

Should the central bank aim for zero inflation?

- (Pros follow) Inflation doesn't do any good for society, but has several costs: Shoeleather, menu, increased variability of relative prices, unintended changes in tax liabilities, confusion and inconvenience, and arbitrary redistribution of wealth
- Reducing inflation = temporary costs, permanent benefits
- Zero provides a more natural focal point for policymakers than any other number
- (Cons follow) Zero inflation is probably unattainable and to get there the costs are too high
- Policymakers can reduce many costs of inflation without actually reducing inflation

Should fiscal policymakers reduce government debt?

- (Pros follow) Government debt leads to a burden on future generation of taxpayers by raising taxes and lowering incomes
- When the debts and accumulated interest come due, future taxpayers will face difficult choice:
    - Pay higher taxes, enjoy less government spending or both
- Deficits reduce national saving, leading to smaller stock of capital, which reduces productivity and growth
- (Cons follow) Problems with the deficit are often exaggerated
- Transfer of debt to future may be justified because some of government purchases produce benefits well into the future
- Government debt can continue to rise because population growth and technological progress increase the nation's ability to pay interest on debt

Should the tax laws be reformed to encourage saving?

- (Pros follow) Nation's saving rate is key determinant of long-run economic prosperity
- Nation's productive capability is determined a lot by how much it saves and invests into future (higher savings → More resources invested into capital)
- Canadian tax system discourages saving (heavily taxing the income from capital and reducing benefits for those who accumulate wealth)
- The consequence of high capital income tax policies are reduce saving, reduced capital accumulation, lower labour productivity, lower economic growth
- GST is a consumption tax
    - To encourage greater saving, government introduced GST
    - A household pays taxes based on what it spends (not earns)

    - Income that is saved is exempt from taxation until the saving is later withdrawn and spent on consumption of goods
- (Cons follow) Many changes in tax laws to stimulate saving would primarily benefit wealthy (higher income, higher saving; therefore, helps wealthier)
- Economic theory does not give a clear prediction about whether a higher rate of return would increase saving
    - Outcome depends on relative size of substitution effect and income effect

Substitution effect: *A higher rate of return raises the benefit of saving (tends to raise saving)*

Income Effect: *A higher rate of return lowers the need for saving (tends to reduce saving)*

- Raising public saving by eliminating the government's budget deficit would provide a more direct and equitable way to increase national saving