



ECON 1010

Final Exam-AID

Review Package

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This document is directed to ECON 1010 students at York University whom are looking for an additional resource to aid them with studying for the course final exam. It has been created with regard to the Winter 2011 course and is subject to change for future courses.

References:

1. Parkin, Michael, and Robin Bade. *Macroeconomics : Canada in the Global Environment*. 7th ed. Upper Saddle River: Pearson Education Canada, 2010.

Chapter 20 – Measuring GDP and Economic Growth

Gross Domestic Product (GDP)

Definition – the *market value* of all *final* goods and services produced *within* a country in a *given time period*

- “market value” – the value of a product/service in dollars
- “final goods and services” – an item that is bought by its final user; intermediate goods are goods purchased by a company to use to make another product
 - Ex. flour purchased by a baker to make pastries is an intermediate good, but the pastries purchased by a customer for consumption are considered final goods (note: if the customer purchased flour from the baker, the flour would be considered a final good)
- “within a country” – simply means produced within the physical boundaries of the country
- “given time period” – usually a year (this would be annual GDP), sometimes a 3 month period (quarterly GDP)

Components

- Consumption expenditure – the total payment for all the goods and services purchased by households
- Investment – goods bought for future use (i.e. they will not be consumed quickly, but will last some time)
 - Note: investment does not only refer to businesses; families can make purchases such as houses which will provide future benefit and are considered investments, not consumption
- Government expenditure – goods and services bought by federal, provincial, and municipal governments
- Net exports – this is equal to exports minus imports (what we pay to other countries minus what we get from other countries)

GDP Equation and Circular Flow

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- $Y = C + I + G + X - M$, where Y is GDP, C is consumption expenditure, I is investment, G is government expenditure, X is total exports, and M is total imports
- Y is also called income. This means $GDP = Income = Y$. Also notice that C, I, G, and (X-M) are expenditures, and so we can say Expenditures = Income. This is called circular flow. All this is saying is that one person's expenditure is another's income, and eventually, that income will become expenditure when that person buys goods, and so on.

Measuring GDP

Two Methods to calculate GDP (or as mentioned above, also known as Y):

- Expenditure approach: add up all expenditures
 - Equation: $Y = C + I + G + X - M$
- Income approach: add up all the income earned
 - Equation: $Y = \text{wages, salaries, and supplementary income earned} + \text{corporate profits} + \text{interest and miscellaneous income} + \text{farmer's income} + \text{income from no-farm unincorporated businesses} + \text{indirect taxes} - \text{subsidies} + \text{depreciation}$
- Remember, both approaches will yield the same value of Y because of circular flow
- **Nominal GDP** – the value of Y expressed in dollars
- **Real GDP** – goods and services produced valued at the prices of a reference base year (still in dollars)

Limitations of GDP

- **Nominal GDP**
 - GDP can appear to increase even if production stayed the same (this is because rising prices will inflate the market value in dollars of good/services)
- **Real GDP**
 - Does not take into account household production such as preparing meals, cleaning, caring for children
 - Does not take into account underground activity (eg. Illegal, “under the table” transactions)
 - Does not take into account things of value which are hard to quantify, such as health and life expectancy, leisure time, environmental quality, and political freedom and social justice

Chapter 21 – Monitoring Jobs and Inflation

Why is unemployment a problem?

- 1) Lost production for the economy and lost income for the individual
- 2) Lost human capital – a laid off worker becomes “out of touch” after prolonged unemployment, and doesn't have the new skills necessary to land a job

Labour Force Survey – monthly survey conducted by Statistics Canada

- **Working age population** – number of people aged 15 and over; consists of people either in the labour force or not
- **Labour force** – members of the working age population who are employed or unemployed (but to be counted as unemployed, you must be looking for work or waiting to be called back to work or waiting to start a new job)
- **Four Labour Market Indicators**
 - 1) Unemployment rate = $\text{number of people unemployed} / \text{labour force} \times 100$, where the labour force = $\text{number of people employed} + \text{number of people unemployed}$
 - 2) Involuntary part time rate = $\text{number of involuntary part time workers} / \text{labour force} \times 100$
(Note: an involuntary part time worker is a part time worker who wants to work full time)

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- 3) Labour force participation rate = labour force / working age population x 100
 - 4) Employment to population ratio = number of people unemployed / working age population x 100
- **Marginally attached worker** – a person who is not working or looking for work, but wants to work
 - **Discourage worker** – marginally attached worker who has stopped looking for work because of repeated failure to find one

Types of Unemployment

- **Frictional unemployment** – caused by the time it takes workers to find the right job (even if the right employer for you is out there, it is impossible to find them immediately)
- **Structural unemployment** – when changes in technology or international competition change the skills necessary to perform jobs, people must switch to other industries and often relocate; this takes time
- **Cyclical unemployment** – unemployment due the swings in the business cycle
- **Natural unemployment** – the sum of frictional and structural unemployment (the normal state of the economy); this is also known as full employment

Inflation – a change in the average level of prices

- Inflation is a problem because 1) it arbitrarily redistributes money between lenders and borrowers and 2) entices people to start speculating, thus diverting them from doing their job

Measuring Inflation

- The inflation rate is approximated by the percentage change in the Consumer Price Index (CPI). The CPI is a statistic calculated monthly by Statistics Canada to measure the average price paid by an urban consumer for a fixed basket of goods.
- **Calculating the CPI**
 - 1) Construct the “basket of goods/services” by choosing items which are purchased by the average urban consumer. Assign weights to the items based on how much they cost.
 - 2) Record the monthly price of each item.
 - 3) Calculate the cost of the CPI basket by weighting the items against current prices and base year prices (the base year is an arbitrarily chosen to have a CPI of 100).
 - 4) $\text{CPI} = \text{cost of CPI basket at current prices} / \text{cost of CPI basket at base year prices} \times 100$
- Inflation rate = percentage change in CPI

Chapter 22 – Economic Growth

Economic Growth – sustained growth in *potential* GDP (see below)

- Economic growth rate = percentage change in real GDP

Potential GDP – level of real GDP when the quantity of labour employed is at the full employment (or natural) level

- **Finding potential GDP**
 - 1) Find the equilibrium quantity of labour hours by locating the intersection of the labour demand and labour supply curves
 - 2) For this quantity of labour hours, find the corresponding real GDP output on the aggregate production function
 - The aggregate production function graphs the relationship between real GDP and labour hours
 - 3) The quantity of real GDP at the equilibrium labour hours quantity is the potential GDP

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- **Growth Determinants of Potential GDP**

- 1) Growth of the supply of labour: the labour supply curve shifts to the right, the equilibrium labour quantity increases, shift up along the aggregate production function to a higher potential GDP
- 2) Increase in labour productivity: the demand for labour increases because labour is more efficient, the labour demand curve shifts to the right and the equilibrium labour quantity increases, this is represented on the aggregate production function by an upwards vertical stretch

Growth Determinants of labour Productivity

- **Physical capital growth** – increase in capital per worker increase worker output
- **Human capital growth** – increase in skill level of workers increases worker output
- **Technological advances** – more productive capital and efficient processes lead to increased worker output

Growth Theories

- **Classical growth theory** – GDP growth is temporary because as soon as GDP increases, people are healthier and have more children, thus reducing the GDP per capita back to subsistence levels
 - Proposed by Adam Smith, David Ricardo, and Thomas Malthus, known as the Malthusian Theory
- **Neoclassical growth theory** – sole determinant of economic growth is technological growth
 - Proposed by Robert Solow, known as the Solow model
- **New growth theory** – economic growth is a product of knowledge capital; i.e. entrepreneurs are the lifeblood of the economy (note: knowledge capital is not subject to diminishing returns, and so can produce endless growth)
 - Developed by Paul Romer, based on the ideas of Joseph Schumpeter
 - Suggestions for achieving (faster) growth: 1) stimulate saving to encourage investment in new ideas, 2) stimulate research and development to accelerate scientific progress, 3) encourage international trade to take advantage of specializing, and 4) improve the quality of education to enhance research

Chapter 23: Finance, Saving, and Investment

Financial Institutions and Markets

- Physical Capital vs. Financial Capital: physical capital: tools, machines, equipment produced in the past to product goods today; financial capital: funds used to buy physical capital
- Gross investment is total amount spent on new capital. Net investment is the change in value of capital.
- Wealth is the value of the things we own. Saving increases wealth, it is whatever that is not spent or paid in taxes.

Markets for Financial Capital

- **Loan markets:** businesses get loans for expenditures such as inventories, households get loans for high-priced items e.g. mortgage
- **Bond markets:** Trade bonds, which are a promise to make set payments on specific dates, terms of bonds vary
- **Stock markets:** Shares of a corporations stocks are sold, stocks represent ownership of the company, and have a claim on the company's profits

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Financial Institutions

Operate as both a borrower and lender in financial markets.

- Banks: Use deposits to buy government bonds and securities and make loans
- Trust and Loan Companies: Similar to banks, administer estates, trusts, pension plans
- Credit Unions and Caisses Populaires: owned, operated by depositors and borrowers, limited to their own provincial boundaries, small but common
- Pension Funds: receive pension contributions from firms, workers, use funds to buy portfolio of bonds and funds to generate income
- Insurance Companies: provide risk-sharing services e.g. home, car, theft, funds that are not paid out as claims are used to buy bonds and stocks to generate additional income

Solvency and Liquidity

- Net worth: market value of what a firm has lent minus market value of what it borrowed, if this is positive, the firm is solvent, they can remain in business
- Liquidity is the ability of the firm to pay its obligations – a firm can be solvent but not liquid

Interest Rates and Asset Prices

- Financial assets: stocks, bonds, short-term securities, if the asset price rises and everything else remains the same, the interest rate falls

The Market for Loanable Funds

- Financial investment comes from three sources: Household saving, government budget surplus, borrowing from international sources, all the individual financial markets form the loanable funds market
 $I = S + (T - G) + (M - X)$, a government budget surplus will contribute to investment, while a deficit competes with investment
- Private saving S and government saving $(T - G)$ equals national saving
- Nominal rate is interest paid/amount borrowed while real interest rate adjusts for inflation and is approximately equal to nominal interest rate minus the inflation rate
- **Demand for loanable funds** : relation between quantity of loanable funds demand and the real interest rate: affected by the real interest rate and expected profit (which is influenced by the real interest rate), therefore: higher interest rate, smaller quantity of loanable funds demanded and vice versa; if expected profit increases (e.g. expansion), investment and demand will increase
- **Supply of Loanable Funds** is the relationship between quantity of loanable funds supplied and the real interest rate: 5 factors that affect it are real interest rate, disposable income, expected future income, wealth and default risk
Higher interest rate = greater quantity of loanable funds supplied and vice versa
Increase in disposable income/ decrease in future income/ decrease in wealth/ greater default risk will increase the supply of loanable funds
- **Equilibrium in Loanable Funds Market**: when demand curve and supply curve intersect
Surplus of funds: supply > demand, interest rate falls to restore equilibrium
Shortage of funds: demand > supply, interest rate rises to restore demand
Changes in demand: an increase in demand (e.g. increase in expected profit) shifts demand curve right, interest rate rises and quantity supplied rises, decrease would be the opposite
Changes in supply: an increase in supply (e.g. increase in disposable income) shifts supply curve right, lower interest rate, quantity demanded rises, decrease would be the opposite

Government in the Market for Loanable Funds

- Government surplus: increases supply, decreases interest rate which decreases household saving and quantity of private funds supplied, lower interest rate leads to increase in quantity demanded and therefore investment increases
- Government deficit: increases demand of loanable funds, real interest rate rises which increase household savings and private funds supplied, higher interest rate decreases quantity of funds demanded and investment
- Crowding-Out Effect: Government budget deficit raises real interest rate and decreases (“crowds out”) investment

Chapter 24 – Money, the Price Level and Inflation

What is Money?

Money

- any commodity or token that is generally acceptable as the means of payment
- medium of exchange – generally accepted in exchange for goods and services
 - **barter** – exchanged one good or service directly for another, before money came into use
 - barter also required a double coincidence of wants
- unit of account – agreed measure for stating the prices of goods and services
- store of value – anything that can be held and exchanged later for goods and services
- **Means of payment** – method of paying for goods and services or of settling a debt
- Consists of - **Currency** – coins and Bank of Canada notes, declared by the government
 - Deposits at banks and other financial institutions
- Not money: cheques, debit cards, credit cards

Official measures of Money

M1 - currency held outside the banks, demand deposits at chartered banks (owned by individuals and businesses)

M2+

- M1 in addition to personal savings deposits and non-personal deposits at trust and mortgage loan companies, credit unions, caisses populaires, and other financial institutions
- **Liquidity** – property of being instantly convertible into a means of payment with little loss in value
- M2+ is considered to be liquid asset, thus part of money, because it can be easily converted to currency

The Banking System

Depository Institutions

- private firm that takes deposits from households and firms and makes loans to others, three types as follows:
- **Chartered banks** – private firm, chartered under the Bank Act of 1992 to receive deposits and make loans
- **Credit union** – cooperative organization that receives deposits from and make loans to its members
- **Trust and mortgage loan company** – privately owned depository institutions
- **Reserves** – currency in a bank’s vault plus its deposit at the Bank of Canada
- Bank owns four types of assets: overnight loans, liquid assets, investment securities, loans
- Economic functions: create liquidity, minimize the cost of borrowing, minimize the cost of monitoring borrowers, pool risk

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Central Bank

- public authority that supervises other banks and financial institutions, financial markets, and payments system and conducts monetary policy, it has three roles as follows
- Banker to banks and government, Sole issuer of bank notes
- **Lender of last resort** – ready to make loans when the banking system as a whole is short of reserves

Payments system – banks make payments to each other to settle transactions by their customers, consists of the following

- **Large value transfer payments (LVTP)** – electronic payments system that allows financial institutions and their customers to make large payments instantly and with the sure knowledge that payments have been made
- **Automated clearing settlement system (ACSS)** – system through which non-LVTP transactions are handled

How Banks Create Money

Quantity of deposits is limited by:

- **Monetary base** – sum of Bank of Canada notes outside the Bank of Canada, banks' deposits at Bank of Canada, and coins held by households, firms and banks
- Desired reserves – the reserves that banks wish to hold, as oppose to bank's actual reserves
 - **Reserve ratio** – fraction of a bank's total deposits that are held in reserves
 - **Desired reserve ratio** – ratio of reserves to deposits that a bank wants to hold
 - **Excess reserves** – actual reserves minus desired reserves
- Desired currency holding –
- **Currency drain ratio** – ratio of currency to deposits, measures the leakage of currency from banking system

Money creation process: banks have excess reserves → lend excess reserves → deposits increase → quantity of money increase → new money used to make payments → part of new money remains on deposit → some of new money is currency drain (leakage of currency from banking system) → desired reserves increase because deposits increased → excess reserves decrease, but remain positive

Money multiplier – ratio of the change in the quantity of money to the change in monetary base ; $M = (1+a)/(a+b) \times MB$

- M – quantity of money; MB – monetary base; a – current drain ratio; b – desired reserve ratio

Quantity of money that people choose to hold depends on: price level; interest rate; real GDP; financial innovation

Demand for money curve

- relationship between the quantity of real money demanded and the interest rate when all other influences on the amount of money that people wish to hold is the same
- Leftward and rightward shifts because of increase or decrease in real GDP; shifts along the curve determined by increase or decrease in interest rate

Interest Rate Determination

- **Interest rate** – amount received by the lender and paid by a borrower expressed as a percentage of the amount of loan
 - When calculating perpetuity (bond that promises to pay a fixed amount of money each year forever):
 - Interest rate = dollar payment per year ÷ price of bond × 100

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-Money market equilibrium – balanced by Bank of Canada through target the quantity of money or the interest rate

Quantity Theory of Money

- Increase in the quantity of money brings an equal percentage increase in the price level
- $P=M(V/Y)$ V/Y is independent of M , therefore increase in price level brings equal increase in money supply
- Inflation rate- money growth rate – real GDP growth rate

Chapter 25: Exchange Rate and Balance of Payments

Currencies and Exchange Rates

- Foreign exchange market: currency of one country is exchanged for the currency of another
- Exchange rate: price at which one currency trades for another
- Nominal exchange rate is how exchange rate is normally stated e.g. in units of foreign current per Canadian dollar
- Real exchange: relative price of good compared to price of good in foreign country
- Exchange rate exhibits instant response to changes in variables (i.e. changes rapidly)

The Foreign Exchange Market

- Demand for one currency is supply of another
- Quantity of Canadian \$ demanded depends on exchange rate, world demand for Canadian exports, interest rates in Canada and other countries, expected exchange rate in the future. Supply of Canadian dollars is similar expect that it depends on demand for imports rather than exports.
- **Law of Demand:** The higher the exchange rate, the smaller is the quantity of Canadian dollars demanded due to the export effect (high exchange rate means Canadian goods are more expensive, less demand for Canadian dollars) and expected profit effect (higher exchange rates have a lower potential to appreciate in value, therefore less demand for Canadian dollars).
- **Law of Supply:** The higher the exchange rate, the greater is the quantity of Canadian dollars supplied due to import effect (higher exchange rate means foreign goods are less expensive, supply more Canadian dollars when we buy these foreign goods) and expected profit effect (when exchange rate is high, higher profit from selling Canadian dollars than if it was low).

Demand for Canadian dollars increases (curve shifts right):

- **When:** world demand for Canadian exports increase, Canadian interest rate differential rises, expected future exchange rate rise, decreases in the opposite scenario

Supply of Canadian dollars increases (curve shifts right):

- **When:** Canadian imports increase, Canadian interest rate differential falls, expected future exchange rate falls, decreases in the opposite scenario

***Note:** Important to know how combinations of changes in demand and supply will change the exchange rate.

Interest Rate Parity

- Equal rates of return, takes into account appreciations/depreciations of currency (exchange rate expectations)

Purchasing Power Parity

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- Equal money of value, if you take exchange rate into account, prices of identical goods in different countries *should* be the same

Nominal vs. Real Exchange rate

- Nominal: Nominal Exchange Rate $E = RER \times (P^*/P)$
- Real Exchange Rate $RER = E \times (P^*/P)$
 P^* =foreign price level, P =Canadian price level

Balance of Payments Accounts

- Current account= exports – imports – net interest income – net transfers
- Capital account= foreign investment in Canada – Canadian investment abroad + Statistical Discrepancy *Note in exams, normally do not deal with statistical discrepancy
- Official Settlements Account= Change in official accounts (usually given)
- ***The sum of these three accounts should equal 0.
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Borrowers and Lenders, Debtors and Creditors

Net borrowers are borrowing more from the world than they lend and net lenders are lending more than they borrow. Debtor nations are net borrowers looking at their entire history and creditor nations are net lenders during their entire history.

Net Exports: exports of goods and services minus imports

Government sector balance: net taxes minus government expenditures

Private sector balance: savings minus investment

Exchange Rate Policy

- Flexible: exchange rate is determined by demand and supply (most countries today)
- Fixed: exchange rate is set at a value determined by the government
- Crawling peg: exchange rate changes periodically based on a set target (China)

Chapter 26: Aggregate Supply and Demand

Aggregate Supply

- Long-run: relationship between the quantity of real GDP supplied (how much firms produce) and the price level when money wage rate changes with price level to achieve full employment, VERTICAL
- Short-run: relationship between quantity of real GDP supplied and price level when money wage rate and prices of other resources remain constant UPWARD SLOPING
- Changes in potential GDP: shifts LAS curve, increases will shift it right, potential GDP increases when full employment quantity increases, quantity of capital increases, or there is technological advancement
- Changes in money wage rate: shift SAS, increases in wage rate shift the SAS curve left
The money wage changes either due to changes in full employment or expectations of inflation.

Aggregate Demand

- Quantity of real GDP demanded depends on: price level, expectations, fiscal and monetary policy, world economy
- Relationship between quantity of real GDP demanded and price level
- Slopes downward due to wealth effect (if price level decreases, real wealth increases) and substitution effects (if price level rises, substitute future consumption for current consumption)
- When price level changes, there is a movement along the AD curve.
- Increase in expected future income increases aggregate demand (shifts right)

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- Fiscal Policy: tax cuts or increases in transfer payments increases aggregate demand
- Monetary Policy: increase in quantity of money increases aggregate demand
- Increases in aggregate demand shifts AD curve right, decrease shift AD curve left.

Short-Run Macroeconomic Equilibrium

- Occurs at the point of intersection of AD curve and SAS curve
- Example: if price level is above equilibrium price level, demand is less than supply and firms lower their prices

Long-Run Macroeconomic Equilibrium

- Occurs at the point of intersection of LAS and AD curve
- Money wage rate adjusts to put SAS curve through the full employment level
- Economic growth is represented by rightward shift of LAS curve

The Business Cycle

- Below full-employment equilibrium: potential GDP exceeds real GDP, the gap is known as an output gap, which is also known as a *recessionary gap*
- Full-employment equilibrium: real GDP equals potential GDP, no output gap
- Above full-employment equilibrium: real GDP exceeds potential GDP, output gap is called inflationary gap

Fluctuations in Aggregate Demand

- Short-run effect: increase in aggregate demand shifts aggregate demand right, real GDP and price level increase, inflationary gap exists
- Long-run effect: with an increase in demand and price level, workers demand higher wages, higher wages shift the SAS curve and full employment is restored

Fluctuations in Aggregate Supply

- Example: oil prices rise, firms decrease production, SAS curve shifts leftward, real GDP falls and price level increase= stagflation
- When supply shock ends, economy returns to full employment

Macroeconomic Schools of Thought

- Classical View: economy is self-regulating and always at full employment
- New Classical: business cycle responses are efficient responses of well-functioning market economy
- Keynesian: if left alone, economy would not operate at full employment, need fiscal and monetary policy
- Monetarist: economy is self-regulating and should operate at full employment with steady money growth and sound monetary policy

Chapter 27: Expenditure Multipliers

Y: real GDP/aggregate income; Y_d= Disposal income; C: planned consumption expenditure; I: investment; G: government expenditures on goods and services; Net import=X (exports)-M (imports); S: planned savings

Real GDP=Y=C+I +G+(X-M)

Disposal income=Y_d=Y-NT=C+S

Marginal Propensity to Consume: the fraction of change in disposal income that is consumed.

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Chapter 28: Inflation, Unemployment and Business Cycle

Inflation - continual increase in price level which is the average of price of goods and services; money is losing value

- Calculated by the annual percentage change in the price level which = $(\text{Price level this yr} - \text{Price level last yr}) / \text{Price level last yr}$

- ❖ Long-run inflation happens when quantity of \$ grows faster than potential GDP.

Short run inflation:

Demand-pull inflation – from an initial increase in aggregate demand, arise from:

- Increase in the quantity of money – when government buys bonds, money supply ↑, aggregate demand ↑, price ↑
- Increase in government expenditure
- Increase in exports
- Increase in investments

Cost-push inflation – inflation that results from an initial increase in costs, arises from

- Increase in money wage rates;
- Increase in the money prices of raw materials, which results in:

Firms willing to supply smaller amounts, aggregate supply ↓, price level ↑ and real GDP ↓, known as stagflation. This results in higher unemployment rate, which government responds by increase money supply to induce aggregate demand, restore full employment, but there is a further increase in price level. If government does not respond, the economy has high unemployment until the price of raw materials falls.

- ❖ Inflation is costly when it's unexpected, so people devote resources from producing goods & services to forecast inflation; this shifts LAS curve leftward.

Effects of Inflation:

Failure to anticipate inflation imposes costs in:

Labour market – redistribution of income: high inflation rate leads to ↑ profit for employer, ↓ purchasing power for employee

- Departure from full employment

Market for financial capital – redistribution of income: high inflation rate transfer money from borrower to lender

- Too much or too little lending and borrowing

Forecasting inflation – made difficult by sources of inflation (demand-pull or cost-push); speed of change

Rational expectation – most accurate forecast possible, based on all the relevant information available

Correctly anticipated inflation – money wage rate rises according to inflation, results in natural unemployment rate

- There are still costs:
- Transaction costs – time spent by people to avoid incurring loss from the falling value of money
- Tax effects – dollar return on investment is effected, which in turn effects the tax collected on these returns
- Increased uncertainty – about future long-term inflation rate

Interest rates and inflation:

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- Nominal interest rate-the return% on an asset such as bonds; the opportunity cost of holding money; – adjusts to balance the demand for money and the quantity of money in each nation’s money market. The higher the inflation is, the higher the nominal interest rate is.
- Real interest rate--the return% on an asset in terms of what can buy; adjusts to balance investment demand and savings supply in the global market for financial capital.
Real interest rate= (Nominal interest rate-inflation rate)/1+inflation rate

Inflation rate influences interest rate

- 1% rise in inflation rate leads to 1% rise in nominal interest rate
- Equilibrium nominal interest rate (approximately) = real interest rate + expected inflation rate
- Real interest rate keeps constant, borrowers must adjust the nominal interest to keep pace with the inflation rate to keep lenders willing to lend

The Phillips Curve:

Phillips curve – shows relationship between inflation and unemployment, long-term or short-term

- Change in natural rate of unemployment shifts both the SR and LR Phillips curve

Short-run Phillips curve

- tradeoff between inflation and unemployment, expected inflation rate and natural rate of unemployment constant
- shifts downward when the expected inflation rate falls

Long-run Phillips curve

- relationship between inflation and unemployment when the actual inflation rate equals the expected inflation rate
- vertical at the natural rate of inflation
- when expected inflation rate changes, SR Phillips curve shifts, but LR Phillips curve remains constant

Chapter 29: Fiscal Policy

Fiscal Policy

- Fiscal policy is a change in taxes or spending by the government to achieve full employment, price stability, and L-T economic growth.

Federal Budget: Surplus--- revenue>outlays (expenditures)

Deficit--- revenue<outlays

Balanced--- revenue=outlays

- Gov. Rev-Personal income taxes+ corporation taxes+ indirect taxes.
- Gov. Exp-transfer payments+ debt interest payments+ expenditures on goods and services.

(Transfer payments= autonomous transfer payments+ induced transfer payments)

Effects of taxes increase and cut:

Discretionary fiscal policy & Automatic fiscal policy:

Fiscal policy multipliers:

1. Gov’s Expenditure Multiplier=change in equilibrium income/change in government expenditures:

$$\Delta Y = \text{Gov's expenditure multiplier} \times \Delta G$$

2. Autonomous Tax Multiplier

3. Balanced Budget Multiplier

Limitations of discretionary fiscal policy:

-Recognition Lag: the time it takes to figure out that fiscal policy actions are need

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- Law-making Lag: the time it takes Parliament to pass the laws needed to change taxes or spending
- Impact Lag: the time it takes from passing a tax or spending change to its effects on real GDP being felt

Budget Deficit over the business cycle:

- cyclical: the actual surplus or deficit minus the structural surplus or deficit
- structural: the budget balance that would occur if the economy was at full employment

Fiscal Policy and AD:

- Expansionary Fiscal Policy: increase in aggregate demand
- Contractionary Fiscal Policy: decrease in aggregate demand

The long-run Fiscal policy is 0.

Chapter 30: Monetary Policy

Monetary policy- based on controlling money supply and interest rates in order to combat inflation and changes in real GDP

- Bank of Canada tries to keep inflation between 1-3% annually
- **Operating band-** band of .50 % consisting of:
 - o **Bank rate-** interest rate Bank of Canada charges banks on loans
 - o **Overnight loans rate-** interest rates banks charge each other
 - o **Settlement balances rate-** rate bank pays interest on deposits from commercial banks
- If overnight rate exceeds the bank rate, bank would borrow from the B of C and lend for a profit
- If overnight rate below settlement balance rate, bank would earn profit by borrowing from another bank and increasing reserves in the B of C
- Equilibrium in the market for reserves determines the overnight rate

Important Rates:

Bank rate: the interest rate at which banks can borrow from the Bank of Canada.

Settlement balances rate: the interest rate banks earn on their reserves at the Bank of Canada.

Overnight loans rate: the short-term interest rate on overnight loans that banks make to each other.

Bank rate > overnight rate > settlement balance rate

- When banks want to slow inflation, it raised the overnight rate.

Open market inflations: changes in the reserves of the banking system

- If B of C buys securities, reserves of commercial banks increase
- If B of C sells securities, reserves of commercial banks decrease

Monetary Policy Transmissions:

- When B of C lowers the overnight rate:
R(interest rate) and e(exchange rate) decrease, money supply, credit loans, consumption & investment, aggregate demand, net exports, GDP and inflation increase.
- When B of C raises the overnight rate: Vice Versa

Conclusion:

- ✓ The B of C's goal is to keep the inflation rate around 2%/yr;
- ✓ Banks use an interest rate strategy targeting the overnight rate;
- ✓ Monetary policy is to manage inflation rate.

Interest Sensitive Expenditure- relationship between interest sensitive expenditure and real interest rate

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- Downward sloping curve i.e. inverse relationship between IE and r
- Interest-sensitive components are: autonomous consumption, investment and net exports

Package from Previous Years
BELOW



ECON 1000 Final Exam-AID Review Package

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Preface:

This document is directed to ECON 1000 students at York University whom are looking for an additional resource to aid them with studying for the course final exam. It has been created with regard to the Fall 2008 course and is subject to change for future courses.

References:

1. Parkin, Michael, and Robin Bade. *Macroeconomics : Canada in the Global Environment*. 6th ed. Upper Saddle River: Pearson Education Canada, 2006.

Chapter 1 – What is Economics?

Definition of Economics

- Our inability to satisfy all our wants is called **scarcity**
- The choices that we make depend on the incentives that we face. An **incentive**: a reward that encourages or penalty that discourages an action.

Economics social science that studies the choices that individual, businesses, governments and entire societies make as they cope with scarcity and the incentives that influence and reconcile those choices.

- two main parts: Microeconomics and Macroeconomics

Microeconomics

- Microeconomics study of choices that individuals & businesses make, the way choices interact in markets, and influence of governments.

Macroeconomics

- Macroeconomics study of performance of the national economy and the global economy.

Two Big Economic Questions

- How do choices end up determining *what, how* and *for whom* goods and services get produced?
- When do choices made in the pursuit of *self-interest* also promote the *social interest*?

What, How & For Whom

- **Goods & Services** the objects that people value and produce to satisfy human wants.

What determines the items that we produce

How

- factors of production:
 - Land is the natural resources
 - Labour is the work time and work effort
 - human capital, which is the knowledge and skill that people obtain.
 - Capital is the tools, instruments, machines, buildings that businesses use to produce goods and services.
 - Entrepreneurship is the human resource that organizes labour, land, and capital.

For Whom

- Land earns rents, Labour earns wages, Capital earns interest, and Entrepreneurship earns profit.

What, How and For Whom Tradeoffs

“What” Tradeoffs

- What goods and services get produced depends on choices made by each one of us, by our government, and by the business that produce the things we buy

“How” Tradeoffs

- How goods and services get produced depends on choices made by the businesses that produce the things we buy.

“For Whom” Tradeoffs

- Big tradeoff – the tradeoff between quality and efficiency

Opportunity Cost

- The highest-valued alternative that we give up to get something is the opportunity cost of the activity chosen.
- Central idea of economics: every choice involves a cost.

Choosing at a the Margin

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- The benefit that arises from an increase in an activity is called marginal benefit
- The cost of an increase in an activity is called marginal cost.

Responding to Incentives

- A change in marginal cost or a change in benefit changes the incentives that we face and leads us to change our choice.
- The central idea of economics is that we can predict how choices will change by looking at changes in incentives
- Less of an activity is undertaken when its marginal cost rises or marginal benefit falls

Human Nature, Incentives and Institutions

- Economists take human nature as given and view people as acting in their self-interest.

Economics: A Social Science

- What *is* statements are called *positive* statements and they might be right or wrong. We can test a positive statement by checking it against the facts
- What *ought to be* statements are called *normative* statements. These statements depend on values and cannot be tested.
- economic theory is a generalization that summarizes what we think we understand about the economic choices that people make and the performance of industries and entire economies

Unscrambling Cause and Effect

- *Ceteris paribus* is a Latin term that means "other things being equal" or "if all other relevant things remain the same"
- Economists try to avoid fallacies – errors of reason that lead to a wrong conclusion
- Two main types: Fallacy of Composition, *Post hoc* fallacy

Fallacy of Composition

- The fallacy of composition is the (false) statement that what is true of the parts is true of the whole or that what is true of the whole is true of the parts

Unscrambling Cause and Effect

- The *post hoc* fallacy is the error of reasoning that a first event causes a second event because the first occurred before the second

Chapter 2 – The Economic Problem

Production Possibilities and Opportunity Cost

- (PPF) is the boundary between those combinations of goods and services that can be produced and those that cannot.

Production Possibilities Frontier

- The PPF illustrates scarcity because we cannot attain the points outside the frontier.
- We can produce at all points inside the PPF and on the PPF.

Production Efficiency

- We achieve production efficiency if we cannot produce more of one good without producing less of some other good. When production is efficient, we are at a point on the PPF.
- If we are at a point inside the PPF production is inefficient

Tradeoff Along the PPF

- Every choice along the PPF involves a tradeoff – we must give up something to get something else
- All tradeoffs involve a cost – an opportunity cost

Opportunity Cost

- The opportunity cost of an action is the highest-valued alternative forgone.
- The PPF helps us to make the concept of opportunity cost precise and enables us to calculate it.
- Along the PPF, there are only two goods, so there is only one alternative forgone: some quantity of the other good

Opportunity Cost is a ratio

- Opportunity cost is a ratio
- It is the decrease in the quantity produced of one good divided by the increase in the quantity produced of another good as we move along the production possibilities frontier.
- ***REFER TO PAGE 36 IN TEXTBOOK***

Increasing Opportunity Cost

- This phenomenon of increasing opportunity cost is reflected in the shape of the PPF.

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- The PPF is bowed outward because resources are not all equally productive in all activities.

Using a Resource Efficiently

The PPF and Marginal Cost

- The marginal cost of a good is the opportunity cost of producing one more unit of it.
- We calculate marginal cost from the slope of the PPF. As the quantity increases, the PPF gets steeper and marginal cost increases.

Preferences and Marginal Benefit

- To describe preferences, economists use the concept of marginal benefit.
- Marginal benefit of a good or service is the benefit received from consuming one more unit of it.
- We measure the marginal benefit of a good or service by the most that people are willing to pay for an additional unit of it.
- It is a general principle that the more we have of any good or service, the smaller is its marginal benefit and the less we are willing to pay for an additional unit of it.

Efficient Use of Resources

- When we cannot produce more of any one good without giving up some other good we have achieved production efficiency, and were producing at a point on the PPF
- When we cannot produce more of any good without giving up some other good that we value more highly, we have achieved allocative efficiency and we are producing at the point on the PPF that we prefer above all other points

Economic Growth

- Expansion of production is called economic growth.
- Economic growth increases our standard of living.

The Cost of Economic Growth

- 2 factors influence economic growth: technological change and capital accumulation
- Technological change the development of new goods and of better ways of producing goods and services.
- Capital accumulation the growth of capital resources, which includes human capital
- To use resources in research and development and to produce new capital, we must decrease our production of consumption goods and services

Gains from Trade

- Concentrating on the production is called specialization.
- We can gain by specializing in the production of the good in which we have a comparative advantage and trading with others

The Cost of Economic Growth

- Comparative advantage is when one can perform an activity at a lower opportunity cost than anyone else
- A person who is more productive than others has an absolute advantage
- Absolute advantage involves comparing productivities – production per hour – while comparative advantage involves comparing opportunity costs
- absolute advantage does not mean you have a comparative advantage in every activity

Dynamic Comparative Advantage

- At any given point in time, the resources and technologies available determine the comparative advantages that individuals and nations have
- Learning by –doing is the basis of dynamic comparative advantage
- Dynamic comparative advantage is a comparative advantage that a person (or country) possesses as a result of having specialized in a particular activity and as a result of learning-by-doing, having become the producer with the lowest opportunity cost.

Economic Growth

- People gain by specializing in the production of those goods and services in which they have a comparative advantage and then trading with each other
- Central economic planning
- To make a decentralized coordination work, four complementary social institutions that have evolved over many centuries are required: firms, property rights, markets and money

Firms

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- A firm is a economic unit that hires factors of production and organizes those factors to produce and sell goods and services

Property Rights

- The social arrangements that govern the ownership use and disposal of resource goods, and services are called property rights
- Real property includes land and buildings
- Financial property includes stocks and bonds and money in the bank
- Intellectual property in the intangible product of creative effort

Markets

- A market is any arrangement that enables buyers and sellers tog et information and to do business with each other

Money

- Money is any commodity or token that is generally acceptable as a means of payment

Circular Flows Through Markets

- Households specialize and choose the quantities of labour, land and capital and entrepreneurship to sell or rent to firms. Firms choose the quantities of factors of production to hire. These flow through the factor markets.
- Households choose the quantities of goods and services to buy, and firms choose the quantities to produce. These flow through the goods markets.
- Households receive incomes and make expenditures on goods and services.

Coordinating Decision

- Markets coordinate individual decisions through price adjustments.

Chapter 3: Demand and Supply

Markets and Prices

- Competitive market – a market that has many buyers and sellers, so no single buyer or seller can influence the price
- Producers offer items for sale only if the price is high enough to cover their opportunity cost. And consumers respond to changing opportunity cost by seeking cheaper alternatives to expensive items
- The opportunity cost of an action is the highest valued alternative forgone
- The ratio of one price to another is called a relative price, and a relative price is an opportunity cost
- The normal way of expressing a relative price is in terms of a “basket” of all goods and services. To calculate this relative price, we divide the money price of a good by the money price of a “basket” of all goods (called a price index)
- The theory of demand and supply determine relative prices, and the word “price” means relative price

Demand

- Wants are the unlimited desires or wishes that people have for goods and services
- The quantity demanded of a good or service is the amount that consumers plan to buy during a given time period at a particular price.
- The quantity demanded is measured as an amount per unit of time

The Law of Demand

- The law of demand: *other things remaining the same, the higher the price of a goods, the smaller is the quantity demanded and the lower the price of a good, the greater the quantity demanded*
- Higher prices reduce the quantity demanded for two reasons: substitution effect and income effect

Substitution Effect

- each good has substitutes – other goods that can be used in its place. As opportunity cost of a good rises, people buy less of that good and more of its substitutes

Income Effect

- When a price rises certius paribus, the price rises relative to people’s incomes. So faced with a higher price and an unchanged income, people cannot buy all the things they previously bought. They decrease the quantities demanded of at least some goods and services, normally, the goods whose price has increases will be one of the goods the people buy less of

Demand Curve and Demand Schedule

- Demand refers to the entire relationship between the price of the good and quantity demanded of the good.
- Quantity demanded refers to a point on a demand curve – the quantity demanded at a particular price

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- Demand curve shows the relationship between the quantity demanded of a good and its price when all other influences on consumers' planned purchases remain the same

A Change in Demand

- When any factor that influence buying plans other than price of the good changes, there is a change in demand
- 6 factors change demand: price of related goods, expected future prices, income, expected future incomes, population, preferences

Price of Related Goods

- A substitute is a good that can be used in place of another good.
- A complement is a good that is used in conjunction with another good

Expected Future Prices

- If the price of a good is expected to rise in the future and if the good can be stored, the opportunity cost of obtaining the good for future is lower today than it will be when the prices has increased. They buy more of the good now before the price is expected to rise
- Your current demand increases and you future demand decreases
- Similarly, if the price of a good is expected to fall in the future, the opportunity cost of buying the good today is high relative to what is expected to be in the future

Income

- A normal good is one for which demand increases and income increase.
- An inferior good is one for which demand decreases as income increases

Expected Future Growth

- When expected future income increases, demand might increase

Population

- Demand also depends on the size and age structure of the population. The larger the population, the greater is the demand for all goods and services; the smaller the population, the smaller is the demand for all goods and services

Preferences

- Preferences are an individual's attitudes towards goods and services

A Change in the Quantity Demanded Versus a Change in Demand

- Changes in the factors that influence buyers' plans cause either a change in the quantity demanded or a change in demand. They cause either a movement along the curve or a shift of the demand curve
- A point on the demand curve shows the quantity demanded at a give price. So a movement along the demand curve shows a change in the quantity demanded.

Movement along the Demand Curve

- If the price of a good changes but everything else remains the same, there is a movement along the demand curve.
- A fall in the price of a good increases the quantity demanded and a rise in the price of a good decreases the quantity demanded

A shift of the Demand Curve

- If the price of a good remains constant but some other influence on buyers' plans changes, there is a change in demand for that good

Supply

- If a firm supplies a good or service, the firm: has the resources and technology to produce it, can profit from producing it, and plans to produce it and sell it
- The quantity supplied of a good or service is the amount that producers plan to sell during a given time period at a particular price

The Law of Supply

- law of supply: *certius paribus, the higher the price of a good, the greater the quantity supplied; and the lower the price of a good, the smaller is the quantity supplied.*
- Higher price increase the quantity supplied because marginal cost increase. As the quantity produced of any good increase, the marginal cost of producing the good increases

Supply Curve and Supply Schedule

- Supply refers to the entire relationship between the quantity supplied and the price of a good.
- Quantity supplied refers to a point on a supply curve – the quantity supplied at a particular price
- Supply curve shows the relationship between the quantity supplied of a good and its price when all other influences on producers planned sales remain the same

Minimum of Supply Price

- The supply curve can be interpreted as a minimum-supply-price curve. Shows the lowest price at which someone is willing to sell another unit.

A change in Supply

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- When any factors that influence the selling plans other than the price of the good changes, here is a change in supply. Factors: the price of resources used to produce the good, the prices of related goods produced, expected future prices, the number of suppliers, technology

Prices of Productive Resources

- If the price of a product resource rises, the lowest price of a producer of a good that uses that resources is willing to accept rises, so supply of the good decreases

Prices of Related Good Produced

- Substitutes in production – goods that can be produced by using the same resources
- Compliments in production – goods that must be produced together

Expected Future Prices

- If the price of a good is expected to rise, the return from selling the good in the future is higher than it is today. Supply of the good decrease today and increases in the future

Technology

- The term “technology” is used broadly to mean the way that factors of production are used to produce a good.
- A positive technology change occurs when a new method is discovered that lowers the cost of producing a good
- A positive technology change increases supply and a negative technology change decreases supply

A Change in the Quantity Supplied Versus a Change in Supply

- Changes in the factor that influence sellers’ plan causes either a change in the quantity supplied or a change in supply. They cause a movement along the supply curve of a shift of the supply curve
- A point on the supply curve shows the quantity supplied at a giving price. Movement along supply curve shows a change in the quantity supplied. A shift of the supply cure shows a change in supply.

Market Equilibrium

- Equilibrium is a situation in which opposing forces balance each other. Equilibrium in a market occurs when the price balances the plans of buyers and sellers
- The equilibrium price is the price at which the quantity demanded equals the quantity supplied.
- The equilibrium quantity is the quantity bought and sold at equilibrium price.
- A market moves towards its equilibrium because: price regulates buying and selling plans, price adjusts when plans don’t match

Price as a Regulator

- The price of a good regulates the quantities demanded and supplied

Price Adjustments

- If the price is below equilibrium there is a shortage
- If the price is above equilibrium there is a surplus
- A shortage forces the price up
- A surplus forces the price down
- The best deal available is when the quantity supplied and the quantity demanded are equal

CHANGES IN DEMAND AND SUPPLY

Demand:

1. When demand increases, both the price and the quantity increase
2. When demand decreases, both the price and quantity decrease

Supply

1. When supply increases, the quantity increases and price falls
2. When supply decreases, the quantity decreases and price rises

Demand & Supply change in SAME direction

1. When both demand and supply increase, the quantity increases and the price might increase decrease or remain the same
2. When both demand and supply decrease, the quantity decreases and the price might increase, decrease or remain the same

Demand & Supply change in OPPOSITE directions

1. When demand decreases and supply increases, the price falls and the quantity might increase, decrease or remain the same
2. When demand increases and supply decreases, the price rises and the quantity might increase, decrease or remain the same

Chapter 4: Elasticity

Price Elasticity of Demand

- The price elasticity of demand is a units-free measure of the responsiveness of the quantity demanded of a good to a change in its price when all other influences on buyers plans remain the same

Calculating Price Elasticity of Demand

$$\text{price elasticity of demand} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

- By using the average price and average quantity we calculate the elasticity at a point on the demand curve midway between the original point and the new point

Average Price and Quantity

- We use average point and average quantity because it gives the most precise measurement of elasticity – at the midpoint of the original price and the new price

Percentages and Proportions

- Elasticity is the ratio of two percentage changes
- The proportionate change in price is $\Delta P/P_{ave}$ and the proportionate change in quantity demanded is $\Delta Q/Q_{ave}$. So if we divide $\Delta Q/Q_{ave}$ by $\Delta P/P_{ave}$ we get the same answer we get by using percentage change

A Units-Free Measure

- Elasticity is a units free measure because the percentage change in each variable is independent of the units in which the variable is measured.

Minus Sign Elasticity

- Will always be positive because absolute values are always taken into account.

Inelastic and Elastic Demand

- If the quantity demanded remains constant when the price changes, then the price elasticity is zero and the good is said to have a perfect inelastic demand.
- If the percentage change in the quantity demanded equals the percentage change in price, then the price elastic equals 1 and the good is said to have a unit elastic demand.
- If the price elasticity is between 0 and 1 then the good is said to have an inelastic demand
- If the quantity demanded changes by an infinitely large percentage in response to a tiny price change, then the price elasticity to demand is infinity and the good is said to have a perfect elastic demand
- If the price elasticity is said to be greater than 1 then it is said to have an elastic demand

Elasticity along a Straight-Line Demand Curve

- On a straight line demand curve, elasticity decreases as the price falls and the quantity demanded increases.
- Demand is unit elastic at the midpoint of the demand curve.
- Above the midpoint, demand is elastic; below the midpoint, demand is inelastic

Total Revenue and Elasticity

- The total revenue from sale of a good equals the price of the good multiplied by the quantity sold
- When a price changes, total revenue also changes
- The change in total revenue depends on the elasticity of demand
- When demand is elastic, a price cut will increase total revenue
- When demand is inelastic, a price cut will decrease total revenue
- When demand is unit elastic, a price cut will leave total revenue unchanged
- TR follows Qd when demand is elastic, TR follows P when demand is inelastic
 - At unit elastic, total revenue is at its maximum

Your Expenditure and Your Elasticity

- When a price changes, the change in your expenditure on the good depends on your elasticity of demand.
- So if you spend more on a item when its price falls, your demand for that item is elastic; if you spend the same amount your demand is unit elastic; if you spend less, your demand is inelastic

The Factors That Influence the Elasticity of Demand

- closeness of substitutes
- proportion of income spent on the good
- time elapsed since a price change

Closeness of Substitutes

- The closer the substitute for a good or service, the more elastic is the demand for it.
- The degree of substitutability between two goods also depends on how narrowly (or broadly) we define them.
- A necessity is a good that has poor substitutes and that is crucial for our well-being. So generally, a necessity has an inelastic demand
- A luxury is a good has many substitutes, so a luxury generally has an elastic demand

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Proportion of Income Spent on the Good

- Certius paribus, the greater the proportion of income spent on a good, the more elastic is the demand for it

Time Elapsed Since Price Change

- The longer the time that has elapsed since a price change, the more elastic is demand

More Elasticities of Demand

Cross Elasticity of Demand

- We measure the influence of a change in the price of a substitute or complement by using the concept of the cross elasticity of demand
- The cross elasticity of demand is a measure of the responsiveness of the demand for a good to a change in the price of substitute or complement, other things remaining the same.
- We calculate the cross elasticity of demand by using the formula:

$$\text{Cross Elasticity of Demand} = \frac{\text{Percentage Change in Quantity Demanded}}{\text{Percentage Change in price of a substitute or complement}}$$

- The cross elasticity of demand can be positive or negative. It is positive for a substitute and negative for a complement

Substitutes

- EXAMPLE: a burger is a substitute for a pizza. When the price of a burger rises, the demand for pizza increases and the demand curve for pizza shifts rightward from D₀ to D₁. Cross elasticity of the demand is positive.

Complements

- EXAMPLE: soft drinks are a complement of pizza. When the price of soft drinks rises, the demand for pizza decreases and the demand curve for pizza shifts leftward from D₀ to D₂. The cross elasticity of the demand is negative.
- The magnitude of the cross elasticity of demand determines how far the demand curve shifts. The larger the cross elasticity (absolute value) the greater is the change in demand and the larger is the shift in the demand curve.
- If two items are very close substitutes the cross elasticity is large. If two items are close complements the cross elasticity is large

Income Elasticity of Demand

- The income elasticity of demand is a measure of the responsiveness of the demand for a good or service to a change in income, other things being equal
- The income elasticity of demand is calculated by using the formula:

$$\text{Income Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

- Income elasticities of demand can be positive or negative and fall into 3 categories: greater than 1 (normal good, income elastic), positive and less than 1 (normal good, income is inelastic), negative (inferior good)

Income Elastic Demand

- As income increases the quantity demanded of an item increases faster than income.

Income Inelastic Demand

- If the percentage increase in quantity demanded is less than the percentage increase in income, the income elasticity of demand is positive and less than 1.

Inferior Goods

- If the quantity demanded for a good decreases when income increases, the income elasticity of a good is negative.

Elasticity of Supply

- We measure the degree of responsiveness by using the concept of the elasticity of supply.

Calculating the Elasticity of Supply

- The elasticity of supply measures the responsiveness of the quantity supplied to a change in the price of a good when all other influences on selling plans remain the same.

$$\text{Elasticity of Supply} = \frac{\text{Percentage Change in Quantity Supplied}}{\text{Percentage Change in Price}}$$

- No matter how steep the supply curve is, if it is linear and passes through the origin, supply is unit elastic.

The Factors That Influence the Elasticity of Supply

- Resource substitution possibilities
- Timeframe for the supply decision

Resource Substitution Possibilities

- Some goods and services can be produced only by using unique productive resources. These items have a low, perhaps a zero, elasticity of supply.
- Other goods & services can be produced by using commonly available resources that could be allocated to a wide variety of alternative takes. - high elastic of supply

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- The quantity produced can be increased but only by incurring a higher cost. If a higher price is offered, the quantity supplied increases. Such goods and services have an elasticity of supply between zero and infinity.

Time Frame for Supply Decisions

- 1. Momentary supply; 2. Long-run supply; 3. Short-run supply
- Momentary supply curve shows the response of the quantity supplied immediately following a price change
- Long-run supply curve shows the response of the quantity supplied to a change in price after all the technologically possible ways of adjusting supply have been exploited.
- Short-run supply curve shows how the quantity supplied responds to a price change when only some of the technologically possible adjustments to production have been made.

Chapter 5: Efficiency and Equity

Resource Allocation Methods

- Resources might be allocated by:
 - ➔ Market price
 - ➔ Command
 - ➔ Majority rule
 - ➔ Contest
 - ➔ First come first serve
 - ➔ Lottery
 - ➔ Personal characteristics
 - ➔ Force

Market Price

- When a market price allocates a scarce resource, the people who are willing and able to pay that price get that resource

Command

- A command system allocates resources by the order (command) of someone in authority

Majority Rule

- Majority rule allocates resources in the way that a majority of voters choose.

Contest

- A contest allocates resources to a winner.

First-Come, First-Served

- A first-come, first-served method allocates resources to those who are first in line
- By serving the user who arrives first, this method minimizes the time spent waiting for the resources to become free

Lottery

- Lotteries allocate resources to those who pick the winning number, draw the lucky cards, or come up lucky on some other gaming system
- Lotteries work best when there is no effective way to distinguish among potential users of a scarce resource

Personal Characteristics

- When resources are allocated on the basis of personal characteristics, people with the “right” characteristics get the resources

Force

- It provides the state with an effective method of transferring wealth from the rich to the poor, and it provides the legal framework in which voluntary exchange in markets take place.

Demand and Marginal Benefit

- To determine whether a competitive market is efficient, we need to see whether, at the market equilibrium quantity, marginal benefit equals marginal cost

Demand, Willingness to Pay, and Value

- The value of one more unit of a good or service is its marginal benefit. And we measure marginal benefit by the maximum price that is willingly paid for another unit of the good or service.
- Demand curve is a marginal benefit curve

Individual Demand and Market Demand

- The market demand curve is the horizontal sum of the individual demand curves and is formed by adding the quantities demanded by all the individuals at each price

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- The market demand curve is the economy's marginal social benefit curve (MSB curve).

Consumer Surplus

- When people buy something for less than it is worth to them, they receive a consumer surplus.
- A consumer surplus is the value (or marginal benefit) of a good minus the price paid for it, summed over the quantity bought.
- All goods and services have decreasing marginal benefit. So people receive more benefit from their consumption than the amount they pay.
- ***REFER TO PG. 107 IN TEXTBOOK***

Supply and Marginal Cost

Supply, Cost, and Minimum Supply-Price

- Producers distinguish between cost and price. Cost is what a producer gives up, and the price is what a producer receives
- The cost of one more unit of a good or service is its marginal cost. And marginal cost is the minimum price that producers must receive to induce them to offer to sell another unit of the good or service. But the minimum supply price determines supply.
- A supply curve is a marginal social cost curve

Individual Supply and Market Supply

- The market supply is the horizontal sum of the individual supply curves and is formed by adding the quantities supplied by all the producers at each price

Producer Surplus

- When price exceeds marginal cost, the firm receives a producer surplus.
- A producer surplus is the price received for it minus minimum-supply price (or marginal cost) of a good, summed over the quantity sold
- Consumer surplus and producer surplus can be used to measure the efficiency of a market

Is the Competitive Market Efficient?

Efficiency of a Competitive Equilibrium

- The marginal social benefit curve (MSB = Demand) and marginal social cost curve (MSC = supply) intersect where supply and demand intersect
- So at the equilibrium price and quantity, marginal social benefit equals marginal social cost.
- But when marginal social benefit equals marginal social cost, resources are allocated efficiently. So the competitive equilibrium is efficient and resources are allocated to their highest-value uses
- When efficient quantity is produced, total surplus (the sum of consumer surplus and producer surplus) is maximized.

Efficiency

Competitive equilibrium occurs when the quantity demanded equals the quantity supplied. Consumer surplus is the area under the demand curve and above the price. Producer surplus is the area above the supply curve and below the price. Resources are used efficiently when marginal social benefit, MSB, equals marginal social cost, MSC. The efficient quantity market is the same as the equilibrium quantity. The competitive market produces the efficient quantity.

The Invisible Hand

- Smith was the first to suggest that competitive markets send resources to the uses in which they have the highest value

The Invisible Hand at Work Today

- The market economy performs to achieve an efficient allocation of resources.
- Market forces persistently bring marginal social cost and marginal social benefit to equality and maximize total surplus

Underproduction and Overproduction

- Inefficiency can occur because either too little of an item is produced – underproduction – or too much is produced – overproduction

Underproduction

- The scale of inefficiency is measured by deadweight loss, which is the decrease in total surplus that results from inefficiency
- ***READ EXAMPLE ON PG. 112***

Overproduction

- The total surplus is smaller than its maximum by the amount of the dead weight loss.

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- The deadweight loss is borne by the entire society. It is not a loss for the consumers and a gain for the producer. It is a social loss.

Obstacles to Efficiency

- The obstacles to efficiency that bring underproduction or overproduction
- Price and quantity regulations
- Taxes and subsidies
- Externalities
- Public goods and common resources
- Monopoly
- High transaction costs

Price and Quantity Regulations

- Price regulations sometimes block the price adjustments that balance the quantity demanded and the quantity supplied sometimes lead to underproduction.

Taxes and Subsidies

- Taxes increase the price paid by buyers and lower the prices received by sellers. So taxes decrease the quantity produced and lead to underproduction.
- Subsidies decrease the prices paid by buyers and increase the prices received by sellers. So subsidies increase the quantity produced and lead to overproduction.

Externalities

- An externality is a cost or a benefit that affects someone other than the seller to the buyer of a good

Public Goods and Common Resources

- A public good is a good/service that is consumed simultaneously by everyone even if they don't pay for it. (national defence).
- Competitive markets would under produce a public good because of a free-rider problem – it is in each person's interest to free ride on everyone else and avoid paying.
- People ignore the costs of their own use of common that fall on others, which leads to overproduction.

Monopoly

- A monopoly is a firm that is the sole provider of a good one service.
- The self-interest of a monopoly is to maximize its profit. To achieve its goal, a monopoly produces too little and charges too high a price. It leads to underproduction.

High Transaction Costs

- Economists call the opportunity costs of making trades in a market transaction costs
- To use market price as the allocator of scarce resources, it must be worth bearing the opportunity cost of establishing a market.
- When transaction costs are high, the market may under produce

Alternatives to the Market

- There is no one efficient mechanism for allocating resources efficiently. But supplemented by majority rule, bypassed inside firms by command systems and by occasionally suing first-come first-served markets do an amazingly good job

Are Markets Fair?

- All ideas about fairness can be divided into two broad groups. They are: it's not fair if the result isn't fair. It's not fair if the rules aren't fair.

It's Not Fair if the Result isn't Fair

- Everything is not equal and everyone does not get a fair share of the pie

Utilitarianism

- Idea that only equality bring efficiency
- Principle that states that we should strive to achieve “the greatest happiness for the greatest number”
- “the greatest happiness for the greatest number,” income must be transferred from the rich to the poor up to the point of complete equality
- The greater a persons' income, the smaller is the marginal benefit of a dollar.

The Big Tradeoff

- Recognizing the cost of making income transfers leads to what is called the big tradeoff, which is a tradeoff between efficiency and fairness
- Income can be transferred from t people with high incomes to people with low incomes only by taxing the high incomes.

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- Taxing people's income from employment makes them work less → results in the quantity of labour being less than the efficient quantity
- Taxing people's capital makes them save less → results in the quantity to capital being less than the efficient quantity
- With smaller quantities of both labour and capital, the quantity of goods and services produced is less than the efficient quantity

Making the Poorest as Well Off as Possible

- A fair distribution of the income makes the poorest person as well off as possible.

It's Not Fair If the Rules Aren't Fair

- Based on a symmetry principle
- The symmetry principle is the requirement that people in similar situations be treated similarly.
- Equality of opportunity
- Price and quantity regulations
- Taxes and subsidies
- Externalities
- Public goods and common resources
- Monopolies
- High transaction costs

Chapter 6: Markets in Action

Housing Markets and Rent Ceiling

Short-Run Supply

- The short-run supply curve shows the change in the quantity of housing supplied as the rent changes while the number of houses and apartment buildings remain constant

Long-Run Supply

- The long-run supply curve shows how the quantity of housing supplied responds to a change in price after enough time has elapsed for new apartment buildings and houses to be erected or for existing ones to be destroyed
- The long-run supply curve is perfectly elastic

Equilibrium

- The equilibrium rent and quantity are determined by demand and short-run supply

Long-Run Adjustments

- The long-run supply curve tells us that in the long run, housing is supplied at a rent of \$16 a month
- ***REFER TO PAGE 125***

A Regulated Housing Market

- A price ceiling is a regulation that makes it illegal to charge a price higher than a specified level
- The effect of a price ceiling depends on whether it is imposed at a level that is above or below the equilibrium price.
- A price ceiling set above the equilibrium price has no effect.
- But a price ceiling below the equilibrium price has powerful effect on a market. The reason is that the price ceiling attempts to prevent the price from regulating the quantity demanded and supplied.
- Price ceilings create shortages
- When a rent ceiling creates a housing shortage, two developments occur. They are: search activity and black markets

Search Activity

- The time spent looking for someone with whom to do business is called search activity
- When a price is regulated and there is a shortage, search activity increases
- The opportunity cost of a good is equal not only to its price but also to the value of search time spent finding the good.
- So the opportunity cost of housing is equal to the rent plus the time and other resources spent searching for the restricted quantity available
- A rent ceiling controls the rent portion of the cost of housing, but it does not control the opportunity cost which might even be higher than the rent would be if the market were unregulated

Black Markets

- A black market is an illegal market in which the price exceeds the legally imposed price ceilings.

Inefficiency of Rent Control

- In an unregulated market, the market determines the rent at which the quantity demanded equals the quantity supplied.

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- Marginal social benefit = Marginal social cost

Are Rent Ceilings Fair?

- According to the fair rules view, anything that blocks voluntary exchange is unfair, so rent ceilings are unfair. But according to the fair results view, a fair outcome is one that benefits the less well off
- Blocking rent adjustments doesn't eliminate scarcity. Rather, because it decrease the quantity of housing available, it creates and even bigger challenge for the housing market.
- Possibilities of allocating markets: a lottery, a queue, and discrimination
- When rent adjustments are blocked, other methods of allocating scarce housing resource operate that do not produce a fair outcome

Rent Ceilings in Practice

- Rent ceilings definitely create a housing shortage.
- They lower rent for some but raise them for others
- The bottom line is that in principle and in practice rent ceilings are inefficient and unfair.

The Labour Market and Minimum Wage

- Lower wage rate = higher quantity demanded for labour
- Greater the wage rate = higher quantity supplied of labour
- The wage rate adjusts to make the quantity of labour demanded equal to the quantity supplied
- Equilibrium wage rates give some people high incomes but leave many more people with low incomes
- In the short-run there are a given number of people who have a given skill, training, and experience. Short-run supply of labour describes how the number of hours of labour supplied by this given number of people changes as the wage rate changes.
- In the long run, people can acquire new skills and find new types of jobs. The number of people in the low-skilled labour market depends on the wage rate in this market compared with other opportunities.
- The long-run supply of labour is the relationship between the quantity of labour supplied and the wage rate after enough time has passes for people to enter or leave the low-skilled labour market.
- If people can freely enter and leave the low skilled labour market, the long-run supply of labour is perfectly elastic
- Long-run supply is assumed to be perfectly elastic

A Minimum Wage

- A price floor is a regulation that makes it illegal to trade at a price lower than a specified level. When a price floor is applied to labour markets, it is called a minimum wage.
- If a minimum wage is set below the equilibrium wage, the minimum wage has no effect. But a minimum wage set above the equilibrium wage is in conflict with market forces, and it does have some effects on the labour market

Inefficiency of a Minimum Wage

- In an unregulated labour market, everyone who is willing to work for the going wage rate gets a job. And the market allocates the economy's scarce resources to the jobs in which they are valued most highly.
- The minimum wage rate upsets the market mechanism and results in unemployment

Provincial Minimum Wage Laws and Their Effects

- Most economists believe that the minimum wage was a big contributor to high unemployment among low-skilled young workers
- One effect of the minimum wage is an increase in the quantity of labour supplied

A Living Wage

- A living wage has been defined as an hourly wage rate that enables a person who works a 40 hour work week to rent adequate housing for not more than 30 percent of the amount earned

Tax Incidence

- Tax incidence is the division of the burden of tax between the buyer and seller.
- When the government imposes a tax of the sale of good, the price paid by the buyer might rise by the full amount of the tax, by a lesser amount, or not at all
- If the price paid by the buyer rises by the full amount of the tax, then the burden of the tax falls entirely on the buyer. If the price paid by the buyer rises by a lesser amount than the tax, then the burden of the tax falls partly on the buyer and partly on the seller. And if the price paid by the buyer doesn't change the price at all, then the burden of the tax falls entirely on the seller

Equivalence of Tax on buyers and Sellers

Can we Share the burden equally?

- The key point is that when a transaction is taxed, there are two prices: the price paid by buyers, which includes the tax; and the price received by sellers, which excludes the tax

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- Buyers respond only to the price that includes the tax, because that is the price they pay. Seller respond only to the price that excludes the tax, because that is the price they receive
- A tax is like a wedge between the buying price and the selling price. It is the size of the wedge, not the side of the market on which the tax is imposed that determines the effect of the tax

Tax division and Elasticity of Demand

- The division of the tax between the buyers and seller depends in part on the elasticity of demand
- When demand is perfectly inelastic, buyers pay entire tax, when demand is perfectly elastic, sellers pay the entire tax.
- In the usual case demand is neither perfectly inelastic nor elastic and the tax is split between buyers and sellers.
- But the division depends on the elasticity of demand. The more inelastic the demand, the larger is the amount of the tax paid by buyers.

Tax Division and Elasticity of Supply

- The division of the tax between buyers and sellers also depends, in part, on the elasticity of supply
- When supply is perfectly inelastic, sellers pay the entire tax and when supply is perfectly elastic, buyers pay the entire tax.
- In the usual case supply is neither perfectly inelastic nor elastic and the tax is split between buyers and sellers
- But how the tax is split depends on the elasticity of supply. The more elastic the supply, the larger is the amount of the tax paid by buyers

- Perfectly inelastic demand – buyers pay
- Perfectly elastic demand – sellers pay
- Perfectly inelastic supply – sellers pay
- Perfectly elastic supply – buyers pay

Taxes in Practice

- The most heavily taxed items are those that have either a low elasticity of demand or a low elasticity of supply. For these items, when a tax is imposed the equilibrium quantity doesn't decrease much. So the government collects a large tax revenue and the dead-weight loss from the tax is small
- It is unusual to tax an item heavily if neither its demand nor its supply is inelastic. With an elastic supply and demand, a tax brings large decrease in the equilibrium quantity and a small tax revenue

Taxes and Efficiency

- The price that buyers pay is also the buyers' willingness to pay, which measures marginal benefit.
- The price that sellers receive is also the sellers' minimum supply price, which is equal to marginal cost
- A wedge between marginal benefit and marginal cost creates inefficiency. With a higher buyer's price and a lower sellers' price, the tax decreases the quantities produced and consumed and a deadweight loss arises
- In the extreme cases of perfectly inelastic demand and perfectly inelastic supply, a tax does not change the quantity bought and sold and there is no deadweight loss. The more inelastic is either demand or supply, the smaller is the decrease in quantity and the smaller is the deadweight loss.
- When demand is perfectly inelastic, the quantity remains constant and no deadweight loss arises

Subsidies and Quotas

Subsidies

- A subsidy is a payment made by the government to a producer
- Because the supply curve is the marginal cost curve, and the demand curve is the marginal benefit curve, a subsidy raises marginal cost above marginal benefit and creates a deadweight loss from overproduction

Production Quotas

- A production quota is a upper limit to the quantity of a good that may be produced in a specified point
- The effect of a production quota depends on whether it is set below or above the equilibrium quantity
- The quota not only raises the price but also lowers the marginal cost
- A production quota is inefficient because it results in underproduction. At the quota quantity, marginal benefit is equal to the market price and marginal cost is less than the market price, so marginal benefit exceeds marginal cost.

Market for Illegal Goods

- The markets for many goods and services are regulated, and buying and selling some goods is illegal

A Free Market for Drugs

- If drugs were not illegal, the quantity bought and sold would be Q_c and P_c .

A Market for Illegal Drugs

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- When a market is illegal, the cost of trading in the good increases
- The larger the penalties and the more effective the policing, the higher are the costs. Penalties might be imposed on sellers, buyers or both

Penalties on Sellers

- If penalties were imposed only on sellers, supply would decrease

Penalties on Buyers

- If penalties were imposed only on buyers, demand would decrease

Penalties on Sellers and Buyers

- If penalties are imposed on both sellers and buyers, both supply and demand will decrease

CHAPTER 7: UTILITY AND DEMAND

- Household consumption choices are constrained by:
 1. Income
 2. Prices of goods/services
- **Household's budget line** – describes the limits to its consumption choices (see Figure 7.1)
- **Relative price** – price of one good divided by the price of another good (is also the slope of the budget line)
- **Change in price** = change in the slope of the budget line (see Figure 7.2)
- **Real income** – expressed as quantity of goods household can afford
- Change in income causes the budget line to shift (see Figure 7.3)
- **Utility** – benefit or satisfaction that a person gets from the consumption of a good or service (see figure 7.3)
- **Total utility** – total benefit a person gets from the consumption of goods and services
- More consumption = more utility
- **Marginal utility** – change in total utility that results from a one-unit increase in the quantity of a good consumed
- **Diminishing marginal utility** – decrease in marginal utility as the quantity of the good consumed increases
- **Fundamental economic problem** – scarcity
- **Consumer equilibrium** – is a situation in which a consumer has allocated all his or her available income in the way, that given prices of goods and services, maximizes his or her total utility
- Consumer's total utility is maximized when – spend all the available income and equalize the marginal utility per dollar for all goods
- **Marginal utility per dollar** – the marginal utility from a good divided by its price (see page 158 - 159 for example of how this works)
- Fall in the price of a substitute of a good decreases demand for that good and a rise in income increases the demand for a normal good
- **Fall in price** – change in quantity demanded (movement along the demand curve)
- **Rise in price** – change in quantity (shift of demand curve) – (refer to pages 160-161)
- When the price changes, the consumer can substitute the good/service with something more affordable
- **Marginal utility theory predicts:**
 1. When the price of a good rises, the quantity demanded of that good decreases
 2. When prices of one good rises, the demand for another good the can serve as a substitute increases
- Review Table 7.7 (page 163)
- **Larger income** – the consumer always buys more of the normal good and less of the inferior good
- **Marginal benefit** – maximum price a consumer is willing to pay for an extra unit of a good or service when utility is maximized

CHAPTER 8: POSSIBILITIES, PREFERENCES, AND CHOICES

- **Divisible goods** – can be bought in any quantity desired
- **Budget equation:**
 - Expenditure = income
 - Expenditure = sum of the prices of each good x quantity bought
- **Real income** – household's income expressed as the quantity of goods the household can afford to buy

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- **Relative price** – price of one good divided by the price of another good (=opportunity cost – best alternative forgone)
- **Change in price** – change in budget line (lower the price the flatter the budget line)
- **Change in income** – changes real income but not relative price – result is a shift in the budget line but no change in its slope
- The smaller the households income the farther to the left is the budget line
- **Indifference curve** – a line that shows the combinations of goods among which a consumer is indifferent (see Figure 8.3)
- **Marginal rate of substitution** – rate at which a person will give up good y to get an additional unit of good x and at the same time remain indifferent
- If the **indifference curve is steep**, the marginal rate of substitution is high
- If the **indifference curve is flat**, that marginal rate of substitution is low
- **Diminishing marginal rate of substitution** – general tendency for a person to be willing to give up less of good y to get one more unity of good x, and at the same time remain indifferent, as the quantity of x increases (see Figure 8.4)
- **Degree of substitutability**
 1. Close substitutes – very easily substitutable
 2. Complements – go together
- see Figure 8.5
- **Best affordable point** – he/she is on their budget line and have the highest attainable indifference curve
- **Price effect** – the effect of a change in price on the quantity of a good consumed
- **Demand curve** – downward sloping (law of demand – the lower the price the higher the quantity demanded)
- **Income effect** – effect of a change in income on consumption (see Figure 8.8)
- **Normal good** – a fall in price always increases the quantity bought
- **Substitution effect** – effect of a change in price on the quantity bought when the consumer remains indifferently between the original situation and the new one
- When the relative price of a good falls, the consumer substitutes more of that good for the other good
- For a normal good, the income effect reinforces the substitution effect
- **Inferior goods** – good whose consumption decreases and income increase (income effect is negative)
- Labour vs. leisure
- More we spend on leisure – the lower our income
- **Income-time budget line** – represents the relationship between leisure and income
- **Labour supply curve** (see Figure 8.10)
- Higher wage rate has both substitution effect and an income effect
- Higher wage rate increases opportunity cost of leisure so leads to a substitution effect away from leisure – higher wage rate increases income and so leads to an income effect towards more leisure

Chapter 9 – Organizing Production

- **Firm** – Institution that hires + organizes factors of production [goal = profit maximization]
- **Opportunity Cost for firms:**
 - **Explicit Costs** (paid in money) [all expenses like utilities + wages]
 - Money could've been used for x other good
 - **Implicit Costs** (no payment made) [could've rented out its capital to another firm]
 - Incurred when:
 - uses its own capital [implicit rental rate]
 - owner's time or financial resources
- **Economic Profit** = Total Revenue – Opportunity Cost [explicit + implicit costs]
- **Limits to profit maximization:**
 - Technology constraints [avail. resources + technology]
 - Information constraints [lim. info + uncertainty about workforce, pot. cus., and comp.]
 - Market constraints [lim. demand for output; marketing efforts of comp.]

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- **Technological efficiency** – using least inputs to produce x output
- **Economic efficiency** – least cost of producing x output
- Organize production by:
 - **Command systems**: based on managerial hierarchy
 - **Incentive systems**: to overcome problems of limited information and uncertainty
- **Principal-Agent problem**: agents (employees) do not act in interest of principals (employers)
 - Strategies of coping: ownership, incentive pay, and long-term contracts
- To cope with **limited information**: sole proprietorship, partnership, corporation
- Types of market structures:
 - **Perfect competition** [many firms; identical products; easy entry of new firms]
 - **Monopolistic competition** [many firms; slightly differentiated products; easy entry]
 - **Oligopoly** [few firms; identical or differentiated products; some barriers to entry]
 - **Monopoly** [single firm; product with no close substitutes; high barriers to new entry]
- Competitiveness of a market:
 - **Four-firm concentration ratio** [% of industry sales made by largest four firms]
 - **Herfindahl-Hirschman Index (HHI)** [sum of squared market shares of 50 largest firms]
 - Higher concentration ratios = lower degree competition
 - Problems: national [many industries regional/global], no indication of barriers to entry or turnover, firms operate in other industries
- Firm coordinates economic activity in a market when:
 - **Lower transaction costs** [costs arising from finding someone with who to do business]
 - **Economies of scale** [lower unit cost of producing good as out rate increase]
 - **Economies of scope** [lower unit cost from producing range of goods and services]
 - **Economies of team production** [individuals in production process specializing in mutually supportive tasks]

Chapter 10 – Output and Costs

- **Short run** [quantities of some resources fixed while others variable]
 - Fixed resources = technology, buildings, capital, and management
 - Variable resources = labour
 - Decisions easily reversible
- **Long run** [quantities of all resources variable]
 - Sunk cost [past cost of buying a new plant]
 - Irrelevant to decision making [only labour and changing plant matter]
 - Decisions not easily reversible
- **Short-run production**:
 - **Total Product curve (TP)** [maximum attainable output with fixed quantity capital as quantity labour varies]
 - **Marginal Product curve (MP)** [ΔTP resulting from one-unit increase variable input]
 - **Average Product curve (AP)** [TP per unit variable input]
 - \uparrow variable input = MP \uparrow (\uparrow marginal returns) > reaches max. > \downarrow
 - MP > AP (AP \uparrow)
 - MP < AP (AP \downarrow)
 - MP = AP (max. AP)
- **Law of Diminishing returns**: with x quantity fixed inputs, as firm uses more variable input, its MP eventually diminishes
- **Total cost (TC) = TFC + TVC**
 - **Total fixed cost (TFC)** [cost of fixed inputs, inc. normal profit]
 - **Total variable cost (TVC)** [cost of variable inputs]

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- **Marginal Cost (MC)** [Δ TC resulting from one-unit increase in outputs]
- **Average Total Cost (ATC)** = AFC + AVC
 - **Average fixed cost (AFC)** [total fixed cost per unit output]
 - **Average variable cost (AVC)** [total variable cost per unit output]
 - AFC curve decreases constantly as output increases
 - AVC, ATC, and MC curves are U-shaped
 - As output increases, MC decreases, reaches min., and then increases
 - $MC < ATC$ (ATC ↓)
 - $MC > ATC$ (ATC ↑)
 - $MC = ATC$ (min. ATC)
 - Same relation MC and AVC
- **Long-run cost** [cost of production when all inputs adjusted to economically efficient quantities]
 - **Production function** [relationship between max. attainable output and quantities of all inputs [describes long-run costs]]
- **Long-run average cost curve (LRAC)** [plant size and quantity of labour to use to minimize cost]
 - **Economies of scale** [% increase in firm's output > % increase in inputs] (LRAC slopes ↓)
 - **Constant returns to scale** [% increase in firm's output = % increase in inputs] (LRAC hor.)
 - **Diseconomies of scale** [% increase in firm's output < % increase in inputs] (LRAC slopes ↑)
- **Minimum efficient scale** [smallest quantity of output yielding minimum LRAC]

Chapter 11 - Perfect Competition

Perfect competition:

- Firms sell identical products
- There are no restrictions on entry into the industry
- Established firms have no advantage over new ones
- Sellers and buyers are well informed about prices
- ❖ Arises if minimum efficient scale is small relative to the demand for the good/service
 - A firm's minimum efficient scale is the smallest quantity of output at which long-run average cost reaches its lowest level
 - Perfect competition arises if each firm is perceived to produce a good/service that has no unique characteristics.
- ❖ Price takers: perfect competition firms cannot set price
 - Price taker: a firm that cannot influence the price of a good or service
- ❖ A firm's goal is to maximize economic profit = total revenue – total cost
 - Total cost = opportunity cost of production, which includes normal profit (return entrepreneur can expect to receive on the average in an alternative business)
 - Total revenue: price of its output multiplied by the number of units of output sold
 - Marginal revenue: the change in total revenue that results from a one-unit increase in the quantity sold.

Short Run decisions

- ❖ Short run: time frame in which each firm has a given plant and the number of firms in the industry is fixed. Firm must react to short-run price fluctuations and decide
 - Whether to produce or to shut down
 - If the decision is to produce, what quantity to produce.

Long Run decisions

- ❖ Firm must decide:
 - To increase or decrease its plant size
 - To stay or leave the industry
- ❖ Breakeven point: when firm's economic profit = 0

Marginal Analysis

- ❖ Compare marginal revenue and marginal cost
 - Where marginal cost intersects marginal revenue curve, marginal cost is rising
 - When $MR=MC$ profit is maximized

Profits and Losses in Short Run

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- ❖ If price equals average total cost a firm breaks even – makes normal profit
- ❖ If price exceeds total cost firm makes economic profit
- ❖ If price is less than average total cost then firm makes economic loss

Firm's Short-run supply curve

Temporary plant shutdown

- Shutdown point: output and price at which the firm just covers its total variable cost

- ❖ Short-run industry supply curve: shows the quantity supplied by the industry at each price when the plant size of each firm and the number of firms remain constant.

Output, Price, and Profit in Perfect Competition

- ❖ In the long run, an industry adjusts in two ways:
 - Entry and exit
 - Firms enter industry when making economic profit, leave when making economic loss
 - When there is economic profit in an industry, it is a signal for new firms to enter the industry.
 - ◆ As new firms enter the market, price falls and economic profit of existing firms decreases
 - When there is economic loss, firms exit the industry thus leading to a decrease in economic loss for remaining firms
 - Changes in plant size

Long-run Equilibrium

- ❖ Firms neither enter nor exit industry, old firms neither expand nor downsize, each firm earns normal profit.

External Economies and Diseconomies

- External economies: factors beyond the control of an individual firm that lower the firm's costs as the industry output increases
- External diseconomies: factors outside the control of the firm that raise the firm's costs as industry output increases.
- Long-run industry supply curve: shows how the quantity supplied by an industry varies as the market price varies after all the possible adjustments have been made, including changes in plant size and the number of firms in the industry.

Technological Change

- ❖ Long run competition eliminates economic profit, technological change brings only temporary gains to producers.

Chapter 12 - Monopoly

- ❖ Market power and competition are the 2 forces that operate in most markets
- ❖ Market power: that ability to influence the market, and in particular the market price, by influencing the total quantity offered for sale.
- ❖ Monopoly: an industry that produces a good or service for which no close substitute exists and in which there is one supplier that is protected from competition by a barrier preventing the entry of new firms.
- ❖ Monopoly has 2 key features:
 - No close substitutes
 - Barriers to entry: legal or natural constraints that protect a firm from potential competitors
- ❖ Legal monopoly: a market in which competition and entry are restricted by granting of a public franchise, government license, patent, copyright
- ❖ Natural monopoly: an industry in which one firm can supply the entire market at a lower average total cost than two or more firms can.

Monopoly Price-Setting Strategies

2 broad monopoly situations that create different tradeoffs:

- Price discrimination: the discrimination of selling different units of a good or service for different prices
- Single Price: a firm that must sell each unit of its output for the same price to all its customers

Marginal revenue and elasticity

- ❖ Single price monopoly, marginal revenue is related to the elasticity of demand for its good.
- ❖ A profit-maximizing monopoly never produces an output in the inelastic range of its demand curve. If it did so, it could charge a higher price, produce a smaller quantity, and increase its profit.
- ❖ A monopoly doesn't set the price at the maximum possible price. At the maximum possible price, the firm would be able to sell only one unit of output.
- ❖ For a monopoly, price exceeds marginal revenue, so price also exceeds marginal cost.

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- A monopoly can make a positive economic profit and continue to do so indefinitely.
 - ❖ Compared to a perfectly competitive industry, a single-price monopoly restricts its output and charges a higher price.
- Efficiency
- ❖ Smaller output and higher price drive a wedge between marginal social benefit and marginal social cost and create a deadweight loss.
 - ❖ Monopoly damages social interest:
 - Produces less
 - Increases cost of production
 - Increases price
 - ❖ Rent seeking: any attempt to capture a consumer surplus, a producer surplus or an economic profit.
 - ❖ Rent seekers pursue their goals in 2 ways:
 - Buy a monopoly
 - Create a monopoly
 - ❖ To be able to price discriminate a monopoly must:
 - Identify and separate different buyer types
 - Sell a product that cannot be resold
 - ❖ Firms discriminate in 2 ways:
 - Among units of a good
 - Among groups of buyers
 - ❖ Perfect price discrimination: extracts the entire consumer surplus
 - ❖ The more perfectly the monopoly can price discriminate, the closer its output gets to the competitive output and the more efficient is the outcome.
The main reason why monopolies exist
 - Incentives to innovation
 - Economies of scale and economies of scope
 - ❖ Marginal cost pricing rule: sets price equal to marginal cost. It maximizes total surplus in the regulated industry.
 - ❖ Average cost pricing rule: pricing to cover cost including normal profit means setting price equal to average total cost

Chapter 13 - Monopolistic Competition and Oligopoly

- ❖ Monopolistic competition: market structure in which:
 - A large number of firms compete
 - Each firm produces a differentiated product
 - Firms compete on product quality, price and marketing
 - Firms are free to enter and exit
- ❖ There is free entry and exit, thus a firm cannot make an economic profit in the long run
- ❖ 2 key differences between monopolistic competition and perfect competition:
 - Excess capacity: if firm produces below its efficient scale
 - Mark-up: in monopolistic competition buyers pay a higher price than perfect competition and also pay more than marginal cost.
- ❖ Compared to complete product uniformity, monopolistic competition is probably efficient

Product Development and Marketing

- ❖ A firm with a new and differentiated product faces a less elastic demand curve.
- ❖ Advertising costs raise costs of monopolistic competition firm over perfectly competitive or monopoly.

Oligopoly

- ❖ Market structure where:
 - Natural or legal barriers prevent the entry of new firms
 - Small number of firms compete
- ❖ Duopoly: oligopoly market with 2 firms
- ❖ Interdependence: before deciding to do something firms must decide what the impact will be from the responses of other firms, thus they are interdependent.
- ❖ Cartel: a group of firms acting together – colluding – to limit output, raise price, and increase economic profit.

Two traditional oligopoly models

- Traditional models

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- Game theory models
 - ❖ Kinked demand curve: assumption that each firm believes that if it raises prices, other will not follow, but if it cuts its price others will cut theirs.
 - ❖ Dominant firm oligopoly: the firm has a big cost advantage over the other firms and produces a large part of the industry output. Dominant firms sets price.
- Oligopoly Games:
- ❖ Game theory: tool for studying strategic behaviour – behaviour that takes into account the expected behaviour of others and the recognition of mutual interdependence.
 - ❖ All games share 4 features:
 - Rules
 - Strategies
 - Payoffs
 - Outcome
 - ❖ Payoff matrix: table that shows the payoffs for every possible action by each player for every possible action by each other player.
 - ❖ Nash equilibrium: player a takes the best possible action given the action of player B, and player b takes the best possible action given the action of player A.
 - ❖ Collusion agreement: an agreement between 2+ producers to form a cartel to restrict output, raise the price, and increase profits. The strategies that firms in a cartel can pursue are:
 - Comply
 - Cheat
 - ❖ A duopoly that colludes is indistinguishable from a monopoly.
 - ❖ Dominant strategy equilibrium: equilibrium in which the best strategy of each player is to cheat (deny) regardless of the strategy of the other player.
 - ❖ In the real world many games are sequential rather than simultaneous
 - ❖ Cooperative equilibrium: which the players make and share the monopoly profit is possible.
 - ❖ Trigger strategy: one where a player cooperates if the other player cooperates but plays the Nash equilibrium strategy forever thereafter if the other player cheats.
 - ❖ Contestable markets: a market in which firms can enter and leave so easily that firms in the market face competition from potential entrants.
 - ❖ Limit pricing: sets the price at the highest level that inflicts a loss on the entrant.

CHAPTER 15: EXTERNALITIES

- Externality: A cost or a benefit that arises from production or consumption and falls on a non-involved party.
 - Production externalities
 - ❖ Positive: The pollination of surrounding crops by the bees of a honey producer
 - ❖ Negative: Pollution from factories
 - Consumption externalities
 - ❖ Positive: People's enjoyment from a pretty garden
 - ❖ Negative: The excessive pollution from an SUV
- Marginal private cost (MC): Cost of producing or consuming an additional unit that is borne by the producer or consumer
 - Additional fuel expense when purchasing one SUV
- Marginal external cost: Cost of producing or consuming an additional unit that **isn't** borne by the producer or consumer
 - Additional pollution from one more SUV
- Marginal social cost (MSC): The cost borne by the entire society - the producer/consumer and everyone else - from an additional unit
 - $MSC = MC + \text{Marginal external cost}$
MSC = the cost of fuel and pollution to the entire society

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- The inefficiency of producing and consuming with an external cost arises because Marginal Social Cost exceeds the Marginal Social Benefit. The **Coase theorem** proposes that if Property rights exist, if only a small number of parties are involved, and if transactions costs (the opportunity cost of making a transaction) are low, then there are no externalities because the transacting parties take all the costs and benefits into account
- Government Actions to reduce externalities:
 - Taxes-
 - Emission charges
 - Marketable permits

Positive Externalities

- Marginal private benefit (MB): benefit from an additional unit of a good or service that the consumer receives
 - A student's benefit from completing a university degree
- Marginal external benefit: benefit from an additional unit of a good or service that people other than the consumer receive
 - Society's benefit from the student's education
- Marginal social benefit (MSB): The marginal benefit enjoyed by the entire society - the producer/consumer and everyone else - from an additional unit
 - $MSB = MB + \text{Marginal external benefit}$

MSB = the student is more educated and might earn a higher income as a result (MB) as well as society's benefit from having one more university graduate (Marginal external benefit)

- Government Actions in the face of external benefits:
 - Public provision – public schools and universities
 - Private subsidies
 - Vouchers
 - Patents and copyrights – Intellectual property rights

CHAPTER 16: PUBLIC GOODS AND COMMON RESOURCES

Excludable resource: it is possible to prevent someone from enjoying its benefit

A pizza at Tuchner's

A rock concert at the ACC

The 407 (toll highway)

Non-excludable resource: not possible to prevent someone from benefiting from it

Police service

A rock concert on national television

The 401

Rival resource: its use by one person decreases the quantity available for someone else

A pizza at Tuchner's

The oil reserves in the world

A rock concert at the ACC

Non-rival resource: its use by one person doesn't decrease the quantity available for anyone else

A rock concert on national television

Police service

The beauty of a sunset

- Private Good- Excludable and a Rival resource (A pizza at Tuchner's)
- Public Good- Non-excludable and a Non-rival resource (Police service)
- Common resources- Non-excludable and a Rival resource (fish in the ocean)
- Natural Monopolies- Excludable and a Non-rival resource (the view from the CN tower)

Free rider problem: the lack of incentive for people to pay for what they use. Associated with public goods

The tragedy of the commons: the lack of incentive for people to prevent the overuse and depletion of a resource.

Associated with common resources

CHAPTER 17: PUBLIC GOODS AND COMMON RESOURCES

Raising Marks, Raising Money, Raising Roofs

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Factor prices- The income received by the owner of a factor of production

- Labour → wage
- Capital → interest
- Land → rent

Derived demand- The demand for a factor of production that is derived from the demand for the good or service produced by that factor

Demand for labour

Profit is maximized when:

1. Wage rate = Marginal revenue product (marginal revenue X marginal product)

And

2. Marginal revenue = Marginal cost

The lower the wage rate, the more workers a firm hires

- Movements along the demand curve for labour

Wage rate increases or decreases

- Shifts in the demand curve for labour

If the price of the firm's output changes

If the price of a substitute changes

If the price of a complement changes

If a new technology changes the Marginal Product of Labour

The supply of labour is backward bending → above a certain rate, people would prefer to leisure more, and work less

Demand for Capital

Firms demand for capital depends on the interest rate → the higher the interest, the more expensive it is to borrow money. As a result, firms invest less and the demand for capital decreases

The supply of capital depends on people's savings.



People's savings depend on:

- Income; higher income increases savings
- Expected future income; a lower expected income increases savings (people save for retirement because they don't expect to earn much when they're retired)
- Interest rate; the higher the interest rate, the higher the savings

Demand and Supply of Land

- Renewable natural resources

Supply is fixed, price depends only on demand

- Non-renewable natural resources

Price determined by supply (when oil prices become too low, OPEC decreases production in order to "stabilize" the price)

Economic rent – is the difference between what a factor of production is paid and how much it would need to be paid to remain in its current use. Example: Chris Bosh of the Toronto Raptors earns \$15,000,000 this season. However, he would probably be willing to play basketball for only \$1,000,000 a season. In this case, Chris' economic rent is \$14,000,000