

# Econ 1BB3 Summary

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## Chapter 1

**Natural experiments:** observing data before and after a natural change

**Productivity Production Frontier (PPF):** graph that compares production of 2 things by a given firm (person, country, factory, etc.); it is drawn by plotting points at the 2 locations where the production of each of the goods is at a maximum  $(0, y_{\max})$  &  $(x_{\max}, 0)$ ; when not given, it is assumed constant opportunity cost, which means a linear slope; in reality, it is bowed out because you cannot put computer engineers on a farm

**Autarky:** when a firm does not trade with other firms

In autarky, a firm can produce under its PPF, but not over it. However, producing under its PPF is inefficient.

**Opportunity cost:**

- what is given up to produce one more of a good
- slope of the PPF (inverse of the slope if you account the fact that economists don't know how to graph properly)
- When analyzing a PPF, the opportunity cost of one good is given in terms of the other good
- To find it, take a point or segment on the PPF and choose a common timeframe of production between the two goods (i.e. goods/hours), then find out how much of each is produced after the duration.
- *Opportunity cost of good A is how much of good B you would sacrifice to produce 1 A;  $B/A$*

**Price of trade:** a price range that 2 people can agree on for a given trade that is below the opportunity cost of the buyer and above the opportunity cost of the seller

**Microeconomics:** effect on consumers and firms; includes government policies

**Macroeconomics:** effect on economy (unemployment, inflation, growth, etc.)

**Positive statement:** don't have to be true, but measurable fact; no bias "too" or "improve" give away

**Normative statement:** immorality, etc.

**Reasons for Disagreements:**

- Values: (not monetary) personal opinion, policies
- Scientific judgement: taxes
- Perception and reality: doesn't exist

Specialization implies that the opportunity cost is different. Just think: would you ask an engineer to work on a farm?

**Absolute advantage:** who can make more of one of the goods (disregard opportunity cost)?

**Comparative advantage:** who has the lower opportunity cost?

**Substitute:** similar products that are almost the same; when the price of one causes increase in demand in the other

**Compliment:** prices of 2 products rise simultaneously, like mice and keyboards

**Inferior goods:** cheap things that you only buy because you can't afford the normal/luxury goods, such as Mac-and-cheese

**Luxury goods:** really expensive goods that are particularly affected too much by increasing prices

**Normal goods:** other stuff

### **Quantity demanded:**

- Affected by:
  - Price
  - Income
  - Prices of other goods (i.e. substitutes and compliments)
  - Tastes (including scientific discoveries about benefits of product)
  - Expectation of future prices or future income
- Keeping everything the same, the **law of demand** says that demand falls as price increases
- Increases cause right shift; decreases cause left shift (think about the change in the area under the curve for smart cookies who know integration)

### **Quantity Supplied:**

- Affected by:
  - Price
  - Input prices
  - Technology
  - Expectations
- Increases cause right shift; decreases cause left shift

Rarely will both the supply and demand curves shift simultaneously.

**Comparative statistics:** comparing before and after

**Stock variable:** snapshot

**Flow variable:** over period of time

## Chapter 5

### GDP

#### GDP:

- Each transaction can be in multiple categories
- $Y = C + I + G + NX$ 
  - Consumption
  - Investment
  - Government spending
  - Net eXports (Exports – imports)
  - Transactions can be in different categories based on intention
- Each good is only calculated *once*. If it's moved into a different category, it means you add it to the new category and subtract it from the previous category

$S_p$ : public saving =  $T - G$

**Transfer funds (a.k.a. transfer payments):** funds provided by government that do not count as GDP, such as a pension

**Intermediate good:** a partially produced good or good in storage that is meant to be sold later. It would count as investment. It does not change the GDP when it leaves the investment category, since GDP should not be counted multiple times

**Catch-up effect:** how developing countries have higher growth rate than developed countries, caused by diminishing marginal product

**Capital:** durable goods, i.e. physical wealth and money

**Gross National Product (GNP):** total value of all goods and services produced by a country's citizens domestically or foreign in a given period

- who, rather than GDP's where
- $GNP = GDP + NR - NP$  (Net payment outflow to foreign assets)
- NR: Net revenue from citizens abroad
- NP: Net payment outflow to foreigners in the country

**Nominal GDP:** increases when prices and output increases

**Real GDP:** increases when output increases;

**Diminishing Marginal Product:** adding more units of labour decreases the marginal product, unless constant returns to scale

### CPI

**Basket:** fixed amount of goods consumers will consume annually (doesn't include luxury goods)

**Consumer Price Index (CPI):**

- Fixed quantities, change in prices

- Prices of goods and services bought by typical consumers
- cost of  $\frac{\text{basket}_{\text{current}}}{\text{basket}_{\text{base}}}$
- It sucks because: keep in mind that surveys are only done every 10 years
  - Consumer substituting products for cheaper/more effective products due to changing prices
  - New goods that weren't around during survey, such as smart phones
  - Unmeasured quality change (such as technology in cars)

## GDP Deflator

### GDP Deflator:

- a measure of the price level
- Fixed prices, changing quantity
- Prices of goods and services produced domestically
- $100 \times \frac{\text{GDP}_{\text{nominal}}}{\text{GDP}_{\text{real}}}$
- Compared to [price level](#), GDP Deflator refers to the information from the whole year, whereas price level is instantaneous

To calculate the current value of a historic price, use the following equation:

$$\frac{\text{CPI}_{\text{current}}}{\text{CPI}_{\text{historic}}} = \frac{x}{\text{price}_{\text{historic}}}$$

### Inflation rate:

- %Δ price level from one year to the next
- Assuming  $p$  represents GDP deflator, you can calculate inflation rate using the following

formula:  $\frac{P_{\text{current}} - P_{\text{last year}}}{P_{\text{last year}}} \times 100\%$

## Chapter 6

**Interest rate:** opportunity cost of currently available funds

**Real interest rate:** interest rate with inflation

**Nominal interest rate:** interest rate without inflation

Nominal interest rate = Real Interest Rate + inflation

If there is a tax, it will be on the nominal.

In a closed economy, savings = investment ( $S = I$ )

**Inward-oriented policies:** policies that encourage domestic sales over exporting

## Chapter 7 – Production and Growth

### Production Function

**Production function:**  $Y = A \cdot F(K, L, H, N)$

Advancements (technology)

Kapital (physical capital): machinery or capital equipment

Labour

Human capital: knowledge/skills, e.g. understanding how to use company's accounting software

Natural resources

**Constant Returns to scale:** increased input by a factor causes the output to increase by the same factor;  $xY = AF(xL, xK, xH, xN)$

You can express the production function in terms of the output per worker due to constant rate of returns:

$$\frac{Y}{L} = A \cdot F\left(\frac{K}{L}, 1, \frac{H}{L}, \frac{N}{L}\right)$$

High population growth reduces GDP because it causes capital to have to be spread more thinly because you have to divide all the available capital amongst the newcomers.

**Kremer:** larger population results in larger technological productivity

**Malthus:** population only expands to the agricultural capacity to support it

### Government Policies that raise productivity and living standards

1. Encourage saving [K]
2. Allow foreign investment [K] (foreign investment is better than no investment)
3. More spending on education [H], although it may result in emigration due to brain drain
4. Improve property rights and reduce political instability [K,A]
5. Free trade [A]
6. Research & development [K,A] through grants, patent system

## Chapter 8 – Financial System

**Market for Loanable funds:** investments, bonds, etc.

If government gives tax exemption on them, firms will invest more, affecting demand

**Intermediary:** institutions that provide bonds or stocks

**Equity finance:** sales of stocks

**Debt finance:** sales of bonds

Think “debt” because when there is some financial instability, bondholders get money first.

**National Income Accounting Identity:** GDP without NX

**Private savings ( $S_p$ ):** higher with higher interest rate

**Government savings ( $S_g$ ):** depends on tax and government purchases

**Saving:** putting money on banks, stocks, or bonds (Supply)

**Investments:** the other part of investments (demand)

Supply curves for people are different; think people selling bonds from people

**Liquidity:** Money > mutual funds > bonds > fine arts / houses

**Term:** Length of time until a bond matures

### Crowding Out

**Crowding out:** Increases in government spending => decreases in private spending

This occurs because it results in an increased interest rate and decreases investment

## Chapter 9 – Unemployment

**Structural unemployment:** long run from change in labour costs, since loss in number of total jobs

**Frictional unemployment:** seasonal, sectoral, searching; short/long run from taking time between jobs from sectoral shifts (when work is no longer needed for something, such as a machine); it takes time for people to get the job that they want; decrease this time and decrease the unemployment

**Cyclical unemployment:** short run from large drop-off in demand by entire economy, such as recession (business cycles); only unemployment that is not **natural unemployment**—think unnatural

To be considered part of the adult population, you cannot be considered institutionalized (army—illegal to violate contract and leave work, seniors' home, jail)

Employment rate = number of employed/adult population

Unemployment rate = number of unemployed/labour force

## Chapter 10 – Monetary System

**Bank Reserves:** what the bank keeps in vaults, etc.

**Fractional-reserve banking:** a banking system in which a bank holds only a fraction of deposits as reserves (the rest is lent out for a higher interest rate than the increase from savings)

**Reserve ratio:** the fraction that is lent out

**Money multiplier:**  $1/\text{reserve ratio}$ ; used to calculate the amount of money

**Asset:** stored value

**Unit of account:** relative value; cost of one item in comparison to cost of another without the actual cost (i.e. A is more expensive than B)

**Intrinsic value:**

**Fiat money:** money without intrinsic value, such as paper money

Know current governor of the bank of Canada.

**Sterilization:** Bank of Canada buys Canadian money and uses the money to buy government bonds to support the Canadian exchange rate without making the supply fall

**Good:**

**Exports:** goods and services produced domestically and sold abroad, e.g. tourism

**Imports:** produced abroad, sold domestic

**Trade balance:** affected by:

- Trade barriers (i.e. Government trade policies): controlling how much crosses border, e.g. tariffs
- Exchange rate
- Transportation costs
- Regular factors that affect  $Q_d$ , such as:
  - Price
  - Tastes
  - Income

**Bank rate:** rate of interest BoC charges Banks who borrow from them

**Efficiency Wages:** increasing wages can affect worker productivity:

1. Worker health (3<sup>rd</sup> world country)
2. Higher incentive to stay (i.e. lower training/hiring costs)
3. Effort
4. Attracts higher quality workers

## Chapter 11 – Money, Growth, and Inflation

**Money:** set of assets in an economy that people regularly use to buy goods; has 3 functions:

1. **Medium of exchange:** buyers give to sellers to purchase goods
2. **Unit of account:** common measure of prices in given economy
3. **Store of value:** transfers purchasing power from present to future

**Wealth:** total assets, including savings/investments

**Income:** flow variable

**Nominal:** numerical

**Real:** physical units

**Inflation tax:** revenue the government raises by printing money

**Shoe-leather costs:** resources you spend to avoid the constantly falling real value of your money within a society with a high interest rate

**Menu costs:** the cost of printing new price lists, catalogues, menus, etc., to change them to accommodate rising inflation costs

**Fisher Effect:** when increase in interest rate (inflation) becomes the same as that for the nominal interest rate, to essentially balance the real interest rate to a consistent amount;  $\text{real} + \text{inflation} = \text{nominal}$

**Overnight rate:** interest rate banks charge each other for loans

**Monetary Neutrality:** changes in money supply affect nominal variables, not real variables

**Classical Dichotomy:** nominal interest rate  $\neq$  real interest rate

## Price Level

**Velocity of money:** number of times a given dollar is used in a transaction:  $V = \frac{P \times Y}{M}$ , P = Price level, Y = real GDP ( $Q_{\text{output}}$ ), M =  $Q_{\$}$ ,  $P \times Y$  = nominal GDP

Price level (not [GDP Deflator](#)):  $P = \frac{GDP_n}{GDP_r}$

**Rule of 70:** finds doubling time:

$$(1 - r)^{t_{\times 2}} = 2$$

$$\log(1 - r)^{t_{\times 2}} = \log(2)$$

$$t_{\times 2} \log(1 - r) = \log(2)$$

$$t_{\times 2} = \frac{\log(2)}{\log(1 - r)}$$

Divide your time by doubling time and multiply by your investment.

## Chapter 12 – Open-Economy

**Net Capital Outflow (NCO):** purchase of foreign assets by domestic residents – purchase of domestic by foreign; most complicated because 2 diagrams, 5 curves

$$\text{NCO} = \text{NX}$$

**Purchasing Power Parity (PPP):** exchange rates should equalize prices of goods in countries

Buying currency of another country is investment



**Small open economy:** Canada's real interest rate has a negligible effect on the world real interest rate, since our market is so small

**Factors of Trade balance:**

- Tastes
- Prices
- Exchange rates
- Income
- Transportation costs
- Government trade policies

Increase of income increases foreign spending, so NX decreases

**Foreign direct investment:** capital investment that is owned and operated by a *foreign entity*.

**Foreign portfolio investment:** financed by foreign, but operated by *residents*.

## Chapter 13

**Tariff:** import tax

**Import Quota:**

When the government imposes a tariff, it doesn't change the market for loanable funds

**Real Exchange Rate:**  $RER = \frac{e \cdot P}{P^*}$ , where e is the exchange rate, P is the domestic price level, P\* is the foreign price level

## Chapter 14 – Aggregate Demand and Aggregate Supply

**Aggregate demand:**

- Changed by changes in GDP [ $Y = C + I + G + NX$ ], i.e. shifts in GDP cause shifts in AD
- Negative slope because of:
  - Wealth Effect: illusion of feeling wealthier when prices go down ( $C \uparrow$ )
  - Interest Rate Effect: liquidity preference theory: people buy the same amount of stuff when interest rate decreases, but simply don't need as much money, so it only brought  $M_d$  and  $M_s$  closer to equilibrium
  - Real Exchange Rate Effect: when  $P \downarrow$ ,  $RER \downarrow$ , so domestic goods are cheaper, so  $NX \uparrow$

**Aggregate supply:**

- Positive slope because of:
  - Sticky wage:
  - Sticky price (great detail not necessary):
  - Misperceptions theory (great detail not necessary):
- Long Run (LRAS):  $\hat{Y}$ 
  - Based off the production function  $Y = A \cdot F(K, L, H, N)$

- Shocks: climate changes
- Short Run (SRAS):

$$Y = \hat{Y} + a(P - P^e)$$

$$Y - \hat{Y} = aP - aP^e$$

$$aP = Y - \hat{Y} + aP^e$$

$$P = \frac{Y - \hat{Y} + aP^e}{a}$$

- $a$  is a constant
- $P^e$  is the expected price level
- Shifts when  $P^e$  increases or when LRAS shifts; otherwise, all changes are movements along the AD curve
- Shocks: weather and changes in oil prices
- Positively-sloped because:
  - Sticky Wage Theory: decrease in real wages cause an increase in  $L_d$ , which causes an increase in output
  - Sticky Price Theory: menu costs
  - Misperceptions theory: when overall price level increases and a supplier wants to anticipate this, so they increase output

### Stagflation:

- price increases
- output decreases
  - unemployment increases

**Nominal wage:** dollars earned/hour (W)

**Real wage:**  $W/P$

**Business Cycles:** economic fluctuations are irregular and unpredictable

**Recession:** 2 consecutive quarters of declining GDP OR moving from Peak-trough on a stylized business cycle diagram

## Chapter 15

**Fiscal Policy:** government changes spending or taxation

**Monetary Policy:** changes in money supply

**Contractionary:** fiscal/monetary policy that decreases AD (i.e. when Y is too high)

**Expansionary:** fiscal/monetary policy that increases AD (i.e. when Y is too low)

Characteristic	Fiscal Policy	Monetary Policy
Flexible ER (Exchange	<ul style="list-style-type: none"> <li>• Effective contractionary policy</li> <li>• <math>G \downarrow, M_d \downarrow</math> (since <math>Y \downarrow</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• Effective expansionary policy</li> <li>• <math>M_s \uparrow</math></li> </ul>

Rate)	<ul style="list-style-type: none"> <li>• <math>r \neq r_w</math></li> <li>• RER changes</li> <li>• NX changes</li> <li>• Y changes <math>\Rightarrow M_d</math> shift</li> </ul>	<ul style="list-style-type: none"> <li>• <math>r \neq r_w</math></li> <li>• RER changes</li> <li>• NX changes</li> <li>• Y changes <math>\Rightarrow M_d</math> shifts</li> </ul>
Fixed ER	<ul style="list-style-type: none"> <li>• <b>Effective expansionary policy</b></li> <li>• <math>G \uparrow, M_d \uparrow</math> (since <math>Y \uparrow</math>)</li> <li>• <math>r \neq r_w</math></li> <li>• BoC changes <math>M_s</math> to keep <math>e</math> fixed</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Effective contractionary policy</b></li> <li>• <math>M_s \downarrow</math>, so because wealth effect: <math>AD \downarrow</math></li> <li>• Story: <math>Y \downarrow \Rightarrow \frac{w}{p} \downarrow \Rightarrow M_d \downarrow</math>, so back to <math>r_1</math></li> </ul>

### Shift Variables e.g.

AD: Government can shift the following

$$Y = \underbrace{C}_{\text{taxes}} + \underbrace{I}_{\Delta r} + \underbrace{G}_{\text{duh}} + \underbrace{NX}_{\text{RER}}$$

$$\text{SRAS: } Y = \hat{Y} + a(P - \underline{Pe})$$

LRAS:  $Y = A \cdot f(K, L, H, N)$   $\leftarrow$  all are variables that shift the LRAS as well as the SRAS

- **If gov't does nothing:** use Labour market story or sticky wage theory, where SRAS shifts to LR
- **Gov't steps in:**
  - **Monetary:**  $\Delta M_s$
  - **Fiscal:**  $\Delta G$  OR  $\Delta$  Consumption Taxes

**MPC:** Marginal propensity to consume; how much of each dollar earned is spent on consumption as opposed to savings

**MPI:** Marginal Propensity to Import

- only included when dealing with an open economy
- how much of each dollar earned is spent on imported goods
- since it is part of consumption, it overlaps with MPC

$$\text{Multiplier} = 1/(1 - \text{MPC} + \text{MPI})$$

**Multiplier effect:** when fiscal policy causes  $\text{Income} \uparrow \Rightarrow C \uparrow$ , it results in an amplification of the purchase by the multiplier. This is because the initial government purchase results in multiple changes in consumption. Each change is  $\text{MPC}^n \times \text{initial amount}$ , where  $n$  is the number of changes. Thus, the total change is the multiplier. It also results in [crowding out](#).

**Liquidity Preference Curve:** interest rate vs money supply