

# **I. Introduction**

# **What is Macroeconomics?**

\* The study of the structure and performance of the aggregate economy.

# Different Schools of Thought

Economists often disagree on how to analyze or study the Economy

Major schools of thought in Economics include:

Classical, Keynesian, Austrian, Neo-Classical, New Keynesian, Monetarist, Marxian, Ecological, Feminist, and more

# Common Questions

- \* What influences economic growth?
- \* What affects unemployment?
- \* Why does the economy fluctuate?
- \* How do government policies affect the economy?
- \* Are some groups affected differently than others?

# Goals

1. To analyze the effects of potential government policies
2. To monitor the economy and make optimal decisions at the individual level

# Two Broad Types of Analysis

- \*Theoretical

- \*Empirical

# Model Evaluation

1. Are the assumptions realistic?
2. Is it understandable and manageable enough to be used in studying problems?
3. Does it have implications that can be tested using available data?
4. When the implications and the data are compared, are they consistent?

# **Normative vs Positive Statements**

Positive economics: what are the effects of a policy?

Normative economics: should a policy be implemented?



- \*Normative statements are about value judgments
- \*This course focuses on positive economics, learning a variety of tools to analyze economy and make predictions
- \*With the analysis you create using these tools, you and others will make normative judgments
- \*It is important to think about the normative implications of your analysis.

# Key Macroeconomic Variables & Terms

GDP

Capital good

Depreciation

Value added

Intermediate goods and services

Final goods and services

National income accounting

Income-expenditure identity

GNP

Current Account

Private disposable income

Savings

Wealth

Budget deficit

Stock

Flow

Price index

GDP deflator

CPI

Nominal

Real

Inflation

Interest rates

Expected real interest rate

Use-of-saving identity

Net foreign assets

Net factor payments from abroad

Net exports

National saving

Fundamental identity of national

Income accounting

Consumption

## **II. Measurement & Accounting**

Remember some common questions asked in macroeconomics:

e.g., What influences economic growth? What affects unemployment?

In order to answer these, and other questions, it is important to have good measures – accurate & consistent data.

# **System of National Accounts (SNA)**

- \*Used to compile accurate and systematic measures of aggregate economic activity of a nation or jurisdictional area.
- \*Sets up standardized measurement of macroeconomic variables based on a set of accounting principals.
- \*One of the common macroeconomic measures generated using the System of National Accounts is GDP.

"Economic growth in Canada is forecast to pick up gradually and average 2¼% over the projection." (Source: Bank of Canada Monetary Policy Report, October 2024)

What growth are they referencing?

\*GDP is one of the most commonly cited measures of economic activity

\*changes in GDP are frequently used as a yardstick for growth.

**GDP** (Gross Domestic Product): the market value<sup>§</sup> of all final goods and services produced in an economy during a fixed period of time.

<sup>§</sup>market value: the value of good(s) at market prices.

How is GDP calculated?



# **Three Ways to Measure GDP**

## **1. The Product Approach**

Sum all final goods and services produced in the economy at their market value.

Note: final output excludes intermediate production to avoid double counting.

**Intermediate goods and services:** those used up in the production of final goods and services within a fixed period of time.

**Value added (of a producer):** the value of its output minus the value of its inputs purchased from other producers.

### *Example:*

Imagine an economy produced one pizza and that pizza is purchased within the year. The pizza parlour buys flour from a mill for \$5 and sells the pizza for \$25. The flour mill bought wheat from the farmer for \$3 to make the flour.

\$25 -Pizza

\$5 -Flour

\$3 -Wheat

Because Pizza is the only final product,  $GDP = \$25$ .

(If you came up with  $GDP = \$33$ , you would be double counting intermediate goods/services and GDP would be incorrect.)

### *Alternative Calculation:*

#### Value Added (Product) Approach

$25 - 5 = 20$  from pizza parlour

$5 - 3 = 2$  from flour mill

$3 - 0 = 3$  from farmer

Summing all value added in the economy gives us the same thing:  $GDP = 3 + 2 + 20 = 25$

## 2. The Expenditure Approach

sum all final goods and services  
purchased in the economy

Pizza example:

$GDP = \text{total spending} = 1 \text{ pizza} = \$25$

## **Detailed Expenditure Approach**

### Personal Consumption Expenditure (C)

- durable goods
- semi-durable goods
- nondurable goods
- services

### Business and Fixed Investment (I)

- residential construction
- nonresidential construction
- machinery and equipment
- Business Inventory Investment

### Government Expenditures (G)

- Investment
  - fixed capital
  - inventories
- Government Purchases of Goods and Services

### Net exports (NX)

- exports – imports

### Statistical Discrepancy

## Income Expenditure Identity:

$$\text{GDP} = C + I + G + NX$$

### 3. The Income Approach

Sum all income received by workers, the government and firms (wages, taxes, and profits)

Pizza Economy Example:

\*Pizza parlour pays a wage of \$5 to its one employee, pays \$5 to the mill for flour, and pays \$5 in taxes.

\*Mill pays an employee \$1.75, pays \$3 to the farmer for wheat, and pays \$0.25 to government in taxes.

\*Farmer pays \$0.05 tax. So....

$$\begin{aligned}\text{parlour profits} &= \text{sales} - \text{wages} - \text{inputs}(\text{flour}) - \text{taxes} \\ &= \$25 - \$5 - \$5 - \$5 \\ &= \$10\end{aligned}$$

$$\begin{aligned}\text{flour mill profits} &= \text{sales} - \text{wages} - \text{inputs}(\text{wheat}) - \text{taxes} \\ &= \$5 - \$1.75 - \$3 - \$0.25 \\ &= \$0\end{aligned}$$

$$\begin{aligned}\text{farm profits} &= \text{sales} - \text{taxes} \\ &= \$3 - \$0.05 \\ &= \$2.95\end{aligned}$$

GDP using the income approach is:

wages:  $\$5.00 + \$1.75 = \$6.75$

taxes:  $\$5.00 + \$0.25 + \$0.05 = \$5.30$

profits:  $\$10.00 + 0 + \$2.95 = \$12.95$

$\text{GDP} = \$6.75 + \$5.30 + \$12.95 = \$25.00$

# **Detailed Income Approach**

Labour Income

Corporate Profits

Interest and Investment Income

Unincorporated Business Income

(total=net national income at factor cost)

Indirect Taxes less Subsidies

(total=net domestic product at market prices)

Statistical Discrepancy

Capital Consumption Allowances/Depreciation

(total=gross domestic product)



## **Fundamental Identity of National Income Accounting:**

**Total Production = Total Expenditure = Total Income**

This is true by definition.

No matter which approach we use, product, income or expenditure, we have the same GDP.

Each method for measuring GDP gives us a different perspective on which components contribute the most to an economy's production activities within a given time frame (e.g. within a year).

# Issues of Measurement: GDP

Does anyone have any concerns with these measurements of production?

## *Questions you might ask:*

- is GDP comparable across countries?
- does it measure progress accurately?
- what about costs of resources not included?
- what about costs of pollution paid by all of us (dirty air, water, etc.)?
- do these GDP measures adequately capture quality or value?
- what about happiness?
- should GDP include home production?
- what about unpaid child care?

Some economists have argued that we need to commodify goods and services for which markets may be missing.

Others have argued against the commodification of household production.

GDP measures "value", but how accurate is the total value when half of it is omitted from the equation? And what if the unmeasured portion grows faster/slower than the measured portion?

Economists are concerned about the adequacy of our measures of GDP, and this has led to a series of studies and some alternative (satellite) systems which address some (not all) of the concerns listed here.

# Further Elements of SNA

**GNP** (Gross National Product): the total market value of production by all of the national factors of production

What is the difference between GDP and GNP?

**NFP** (Net Factor Payments): income earned abroad by Canadian factors minus income earned in Canada by foreign factors.

$$\mathbf{GNP = GDP + NFP}$$

# Saving Identities & Formulas

**Saving** = current income - current spending

**Yd** = private disposable income  
= the income that households have to spend  
= income received from all sources, less taxes  
=  $GDP + NFP + TR + INT - T$

**Yd** = **Y + NFP + TR + INT - T**

## **Private Saving:**

$S_{pvt}$  = private disposable income – consumption

$$\begin{aligned} S_{pvt} &= Y_d - C \\ &= (Y + NFP + TR + INT - T) - C \end{aligned}$$

## **Government Saving:**

$S_{govt}$  = net gov't income – gov't purchases

$$S_{govt} = (T - TR - INT) - G$$

if  $S_{govt} < 0$  then gov't has a budget deficit

## National Saving:

$$\begin{aligned} S &= S_{\text{pvt}} + S_{\text{govt}} \\ &= (Y + \text{NFP} - T + \text{TR} + \text{INT} - C) + (T - \text{TR} - \text{INT} - G) \end{aligned}$$

$$S = Y + \text{NFP} - C - G$$

National Saving = total income – total spending of economy



Recall that  **$Y = \text{GDP} = C + I + G + \text{NX}$** , so...

$$S = Y + \text{NFP} - C - G$$

$$S = (C + I + G + \text{NX}) + \text{NFP} - C - G$$

$$\boxed{S = I + \text{NX} + \text{NFP}}$$

# International Components in Savings

**CA (Current Account):** payments received from abroad less payments made to foreign countries by the domestic economy.

$$CA = NX + NFP$$

so

$$S = I + CA$$

Now we have

$$S = S_{pvt} + S_{govt} = I + CA$$

so

$$\boxed{S_{pvt} = I + (-S_{govt}) + CA}$$

This is the uses-of-saving identity.

# Saving Vs Wealth (Measurement Type)

**Stock Variable:** calculated at point in time

**Flow Variable:** calculated over (within) a period of time

**Wealth:** the difference between an agent's assets & liabilities

**National Wealth**

= total wealth of all residents of a country

= domestic physical assets + net foreign assets

**net foreign assets**

= foreign financial & physical assets – foreign liabilities

# Further Measurement Issues

## *Real versus Nominal Variables*

**Nominal Variable:** a variable measured in terms of current market values

**Real Variable:** a variable measured in terms of a base unit