Introduction To Macroeconomics

Intro to Macro

• The economy is aggregated into 5 sectors:
  – Households
  – Firms
  – Government
  – Foreign
  – Financial
• These sectors interact with each other in three sets of markets:
  – Goods and services
  – Factors of production (e.g. labor)
  – Financial assets (money, bonds)

Circular Flow in the Economy

• These are the interactions between each of the five sectors of the economy
• Each of these interactions takes place in markets.
National Income and Product Accounting

- **Intermediate Goods** – used as inputs in the production of other goods and services
- **Final Goods** – ultimate result of the production process – not used to produce other goods
- **Domestic Product** – total output of goods and services produced within a certain boundary given that:
  - Final Goods
  - Produced within a certain time period

GDP vs GNP

- GDP – includes:
  - Includes production in US by foreign firms
  - Excludes production by US firms abroad
- GNP – includes:
  - Includes production abroad by US firms
  - Excludes production in US by foreign firms

Measuring GDP

- We can measure the value of GDP at current market prices (Nominal GDP) or at constant prices (Real GDP)
- **Nominal GDP** – GDP measured with current prices
  \[ GDP_t = \sum_i P_t^i q_t^i \]
  Where \( P_t^i \) = price of the good \( i \) in year \( t \)
  \( q_t^i \) = quantity of good \( i \) in year \( t \)
Real GDP
- Real GDP – GDP measured with constant prices - these prices are from a chosen base year
  \[ gdp_t = \sum_i P_{by}^i q_t^i \]
  where \( P_{by}^i \) is the price of good \( i \) in the base year

Decomposing GDP
- We can look at GDP in two ways:
  - What is paid for these goods and services
  - What it costs to produce them
- These two methods give us exactly the same level of GDP
- **Aggregate Expenditures** (Q) – the total amount that is paid for the goods and services
- **Aggregate Income** (Y) – the amount received by household for supplying the factors of production
- So, \( Y = Q \)

Aggregate Expenditure
- We can decompose GDP in this method by where these goods/services are allocated
- C – Consumption
- I – Investment
- G – Government
- EX – Exports
- IM - Imports
- \( SO, GDP = Q = C + I + G + EX - IM \)
Decomposing GDP

• Note that consumption can be disaggregated into autonomous consumption and induced consumption
  – Induced consumption is based on the amount of disposable income
  – Marginal Propensity to Consume – fraction of each additional dollar of disposable income that is allocated to consumption.
  – Marginal Propensity to Save – fraction of each additional dollar of disposable income that is allocated to savings.

Decomposing GDP

• We can also assume that
  – Investment is autonomous – not dependant upon income level
  – Government spending is autonomous – not dependant upon income levels

• Therefore, we can write GDP as the following:

\[ \text{GDP} = \bar{C} + I + G + \text{EX} - \text{IM} \]
\[ C = \bar{C} + \text{mpc} (y - \bar{t}) \]
\[ G = \bar{G} \]
\[ I = \bar{I} \]
\[ X = \bar{X} \]
Aggregate Income

- We know that the income that is earned from producing GDP can be split into 5 categories
  - Wages
  - Rent
  - Interest Payments
  - Proprietor’s Income
  - Profit

Thus, $Y = WRIPP$

Measuring GDP

- GDP is measured by the value of final goods
- However, we could also view GDP as the sum of “value added” at each step of the production process
- View production as a pipeline

Prices and Inflation

We can use our GDP measures to determine how prices change in the economy – Inflation

\[
\text{GDP deflator} = \left( \frac{\text{Nominal GDP}}{\text{Real GDP}} \right) \times 100
\]

Note that the GDP deflator = 100 in the base year. Why?
**GDP Deflator Example**

- Suppose Nominal GDP in 2000 = $146
- Suppose Real GDP in 2000 = $109.5

- The GDP deflator_{2000} = \((146/109.5) \times 100 = 133.3\)

- This indicates that the price level in 2000 is 33.3% higher than in the base year

- We can use the GDP deflator to determine inflation rates

**Inflation**

- Inflation is the rate of change in a price index

  - Suppose
    - GDP deflator_{2000} = 133.3
    - GDP deflator_{2001} = 140.2

  - Then the Inflation rate is
    - \([(140.2-133.3)/133.3] \times 100 = 5.18\%

**Use of the GDP deflator**

- Once you find the GDP deflator for a given year, you can “deflate” any nominal value for that year

- Example – suppose your nominal wage is $15.00 per hour – what is your “real wage” -what is your purchasing power with that wage?
**Other Price Indicies**

- **Consumer Price Index (CPI)**
  - Uses a “basket” of goods that would be consumed by an urban family

- **Producer Price Index (PPI)**
  - Looks at prices producers must pay for their inputs