

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:

$$GDP = C+I+G+EX-IM$$

$$C = \bar{C} + mpc(y - t)$$

$$G = \bar{G}$$

$$I = \bar{I}$$

$$Y = \bar{Y}$$

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

$$\text{GDP deflator} = \left(\frac{\text{Nominal GDP}}{\text{Real GDP}} \right) 100$$

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 $\text{GDPdeflator}_{2000} = (146/109.5)*100 = 133.3$
- 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
 - $\text{GDPdeflator}_{2000} = 133.3$
 - $\text{GDPdeflator}_{2001} = 140.2$
- Then the Inflation rate is
 - $[(140.2-133.3)/133.3]*100 = 5.18\%$

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 Indices

- 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
