

# ECON 1012: Principles of Macroeconomics Spring 2019

(\*) **How to use:** This is a cumulative study guide of everything that's covered in Macroeconomics, including graphs and models taken directly from professor Tien's power-point presentation. This is the primary study guide I used to earn an A- in required course. This study guide organized all the topics under subtopics for easy navigation of the materials, lays down all the formulas, graphs, and theories you need to know to be successful in this class.

## 1. Measures of output and income

Total of output = total income = total expenditure.

### Income Approach:

Total economic activities = workers' wages + firm profits.

### Expenditure approach:

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

C: does not include purchase of housings

I: does not include any purchase of financial assets.

G: does not include transfer payment such as social security and welfare.

### Product approach:

GDP = Total products - intermediate goods

- Only newly produced goods and services within the time period are counted.  
Intermediate goods and services: goods and services produced and then used up in the production of other goods and services within the same time period.
- Capital goods are final: something that are used to produce other goods but not used up in the same period that itself is produced.
- Inventory investments are final.

### Real vs Nominal GDP

$$\text{Nominal GDP} = P_1 Q_1 + P_2 Q_2 \dots$$

P: is the market price of goods/services

Q: is the quantity of goods/services

$$\text{Real GDP} = P_1^b Q_1 + P_2^b Q_2 \dots$$

P<sup>b</sup>: base year price of goods/services

-> For the base year: Nominal GDP = Real GDP

The changes in Nominal GDP reflects both prices and quantities

The changes in Real GDP is the amount that GDP would change if the price remain constant

## Type of Price Measures

### GDP Deflator:

$$\text{GDP Deflator} = (\text{Nominal GDP} / \text{Real GDP}) * 100$$

Measures the current level of prices relative to the level of prices in the base year

GDP deflator for base year always equal to 100

Percentage change in x for period t =  $(x_t - x_{t-1} / x_{t-1}) * 100$

Inflation rate for 2018 =  $(P_{2018} - P_{2017} / P_{2017}) * 100$

### PCE (Price Index/Deflator):

A measure of price level based on comprehensive evaluation of how much consumers spend each month, counting expenditures on durable goods, consumer products, and services.

Takes into account changes in relative prices.

=> Calculated using the “consumption” component of GDP.

### Consumer Price Index (CPI):

[Computed by BLS]

To compute the CPI:

1. Fix the basket
2. Find the prices
3. Compute the basket's cost
4. Choose a base year and compute the CPI
5. Compute the inflation rate

Problems with CPI:

#### Substitution bias:

- Over time, some price rises faster than others. Therefore, consumers substitute toward goods that become relatively cheaper, mitigating the effects of price increases.
- The introduction of new goods increases variety.
- Improvements in quality of goods.

=>The CPI misses this substitution because it uses a fixed basket of goods. Thus, the CPI overstates in cost of livings.

### Differences between the Price Indices:

CPI uses fixed basket

GDP deflator uses basket of currently produced goods and services (contains prices of goods and services in C, G, I, and NX)

PCE Price Index uses a basket of currently produced goods and services (but only contains prices of goods and services in C)

### **Correcting variables for inflation:**

Amount in today's dollars = amount in year t dollar \* (price level in today/ price level in year t)

Real vs Nominal interests:

$$r = i - \pi$$

Real interest rate = nominal interest rate - inflation rate

### **Measuring Unemployment**

#### **Identifying unemployment**

Produced by Bureau of Labor Statistic (BLS)

#### **Basic concepts:**

- Employed: people with jobs (can be paid employees, self-employed, or unpaid workers in family businesses)
- Unemployed: people who are jobless, looking for a job (for the last 4 weeks), and available for work.
- The labor force is made up of unemployed and employed

Labor force = unemployed + employed

Unemployed rate = (number of unemployed/ labor force)\*100

Labor force participation rate = (labor force/ civilian noninstitutional population population 16 years old and over)\*100

- Civilian noninstitutional population population 16 years old and over = labor forces + those not in labor force

#### **Problems with identifying unemployment:**

Not a perfect indicator of joblessness or the health of labor market

It excludes discouraged workers

It does not distinguish between full-time and part-time work

Some people misreport their work status

#### **The natural rate of unemployment**

##### **Natural rate of unemployment:**

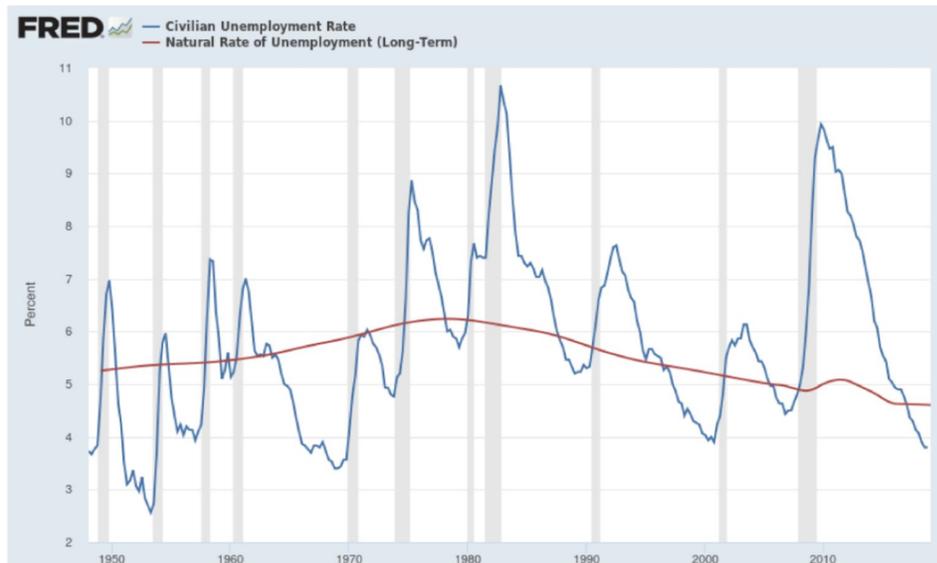
Normal rate of unemployment around which the actual unemployment rate fluctuates

##### **Cyclical Unemployment:**

Deviation of unemployment rate from its natural rate

Associated with business cycles.

## A Comparison Between Unemployment Rate and the Natural Rate



Difference between unemployment rate and natural rate is cyclical unemployment

*Why does the natural rate exist?*

### **Frictional unemployment:**

- Occurs when workers (firms) spend time searching for the jobs that best suits their skills and tastes.
- Short term for most workers

### **Public policy and job search:**

Job search: is the time it takes for the right workers to match up

Policy that affects job search will influence frictional unemployment and the natural rate.

Ex of policies that facilitate job search:

- Government employment agencies.
- Public training programs
- Technological inventions may also facilitate job search process.
- Unemployment insurance. -> increases frictional unemployment

### **Sectoral shifts:**

Changes in the composition of demand across industries or regions in the countries.

-> Displaced workers must search for new jobs appropriate for their skills and tastes.

### **Structural unemployment:**

Occurs when there are fewer jobs than workers which caused by:

- Minimum wage laws: min wage may exceed the equilibrium wage for unskilled workers
- Union: unions exert market power to negotiate higher wages for workers.
- Efficiency wages: firms voluntarily pay for higher wages to boost workers' productivity.

-> Usually long-term