ECON 2123 Fall 2021
Macroeconomics

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Chapter 01 & 02 **Basics**

1 Overall introduction

How can we describe an economy?

- Output
- Unemployment rate
- Inflation rate

How the crisis happened?

- Housing market → whole financial system. How such a small part of financial system affected an entirely system? Nearly the whole US finance.
- How from financial sector → real-side economy?
- How from US domestic *rar* world-wide crisis? The great depression confined in US, but why 2008 crisis affected all over the world?

Why China *seemed* to be intact in 2008 Financial Crisis?

The adverse effect on demand was nearly fully offset by a major fiscal expansion by Chinese government. (a major increase in public investment)

2 GDP: "Aggregate Output"

2.1 Measure GDP

GDP: Gross **D**omestic **P**roduct

- Gross: we care about the whole, total, aggregate value, not individually.
- Domestic: as long as in the region, no matter who produce, differ from "GNP"
- Product: care about output.

How to measure? By **national income and product accounts**, which is an accounting system to measure aggregate economic activity.

Example:

Steel Company (Firm 1)			Car Company (Firm 2)		
Revenues from sales		$100	Revenues from sales		$200
Expenses		$80	Expenses		$170
Wages	$80		Wages	$70	
			Steel Purchases	$100	
Profit		$20	Profit		$30

How to calculate GDP? $300 = 100 + 200$? This double counts **intermediate** goods. $50 = 20 + 30$? This is profit income, not total output, which underestimate the total output.

- Only care about value of **final goods.** Just the revenues of the car: 200. Final goods aim for **final consumption.**
- Value **added** in the company.(like contributions) $100 + (200 - 100) = 200$, since in company 2, it add 100 to make steel into cars.
- Income side: income for workers(labor income) + income for company(profit income). $80 + 20 + 70 + 30 = 200$.

Someone buy a piece of fish for eat, the fish is a **final good**, but if he cook it and sell it to his neighbor, then it will become an **intermediate** good.

In summary, we can calculate GDP from two sides, in three ways:

Production side:

- the value of the **final** goods and services produced in the economy during a given period.
- the sum of **value added** in the economy during a given period.

Income side:

- the sum of **incomes** in the economy during a given period.

During a given period, **aggregate production = aggregate income.**

Quiz: A firm's value added equals *its revenue minus its cost of intermediate goods.* A firm's profit equals *its revenue minus its costs.*

2.2 nominal & real GDP

nominal: in current price, **real:** in a fixed price, more like in quantity.

Nominal GDP not only captures the changes in **product capacity**, but also captures the changes in **prices**(inflation).

Year	Quantity of Cars	Price of cars	Nominal GDP	Real GDP (in 2005 dollars)
2004	10	$20,000	$200,000	$240,000
2005	12	$24,000	$288,000	$288,000
2006	13	$26,000	$338,000	$312,000

However, real GDP doesn't show us the improvement of quality: a 1990 car has the same price as a latest car. To account for that, we use "Hedonic pricing", where instead of focusing on the car as a whole, we break it into parts and evaluate the improvements individually. (refer to ch2 focus box)

Another problem: why do we use real GDP, rather then directly use the quantity of things we make as the GDP number? For example, economy A produces 100 planes and 1 car, while B produces 1 plane and 100 cars. Which one is more powerful? $P \times Q$ suggests that country that makes more planes are more powerful than the one makes more cars.

More than one good, real GDP is a **weighted average** of the output of all final goods, and **relative prices** determine the weights, which change over time! So this weights actually reflect relative prices and **changes over time.** The measure is called **real GDP in chained(2005) dollars.** (refer to ch2 appendix)

2.3 GDP level & growth rate

- **the level of real GDP:** gives the economic size of a country.
- **real GDP per person:** standard of living of the country.
- **GDP growth:** $\frac{Y_t - Y_{t-1}}{Y_{t-1}}$ for **real** GDP.

Periods of negative GDP growth are called **recessions**, positive growth are called **expansions.**

2.4 useful?

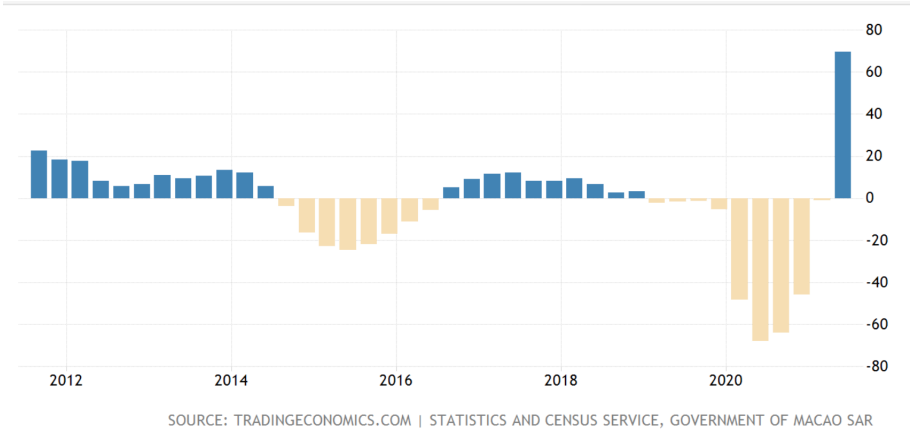
What can be measured in GDP?

- Goods and services available for consumption
- Consumers' **valuation** on these items.
- *A good measure of the material life??*

What cannot be measured in GDP?

- Goods and services without **market prices**: government services, owner-occupied housing etc.
- Goods and services **not traded** in markets: leisure, housework
- depletion of natural and environmental resources.

Actually, GDP or its rate cannot precisely reflect the living standard of a country/region. Like the data of Macau as shown below. Therefore, unemployment rate is introduced.



Yet the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile.

—— Robert F. Kennedy

3 Unemployment Rate

- **employment:**(N) the number of people who have a job
- **unemployment:**(U) the number of people who do not have a job but **are looking for one.** (those who do not have a job and are not looking for one are counted as **not in the labor force**)
- **labor force:**($L = N + U$) sum of employment and unemployment.
- **unemployment rate:** $u = \dfrac{U}{L}$
- **participation rate:** $= \dfrac{L}{total\ population\ of\ working\ age}$.

However, this number is hard to calculate, since it's difficult to decide whether someone is "looking for a job". US uses a survey called Current Population Survey (CPS) and classify a person as "unemployed" if he or she does not have a job and *has been looking for a job in the last four weeks.*

When the economy slows down, we typically observe both an **increase in unemployment** and an **increase in the number of people who drop out of the labor force(lower participation rate)**.

Why unemployment rate is important?

- has direct effect on the welfare of the unemployed: if unemployment increases, it becomes more **widespread** and more **painful**. **Discouraged workers:** without jobs who give up looking for work.(low partic rate)
- it provides a signal that the economy may not be using some of its resources efficiently

4 Inflation Rate

- **inflation**: a sustained rise in the general level of **prices** (**price level**)
- **deflation**: a sustained decline in the price level
- **inflation rate**: the rate at which the price level increases.

Usually there are two measures of price level: (**two price indexes**)

- the **GDP deflator**
- the **Consumer Price Index**

4.1 GDP deflator

If we see nominal GDP increase faster than real GDP, the difference must come from an **increase in prices.** This motivates the definition of the GDP deflator.

$$P_t = \frac{\text{Nominal GDP}_t}{\text{Real GDP}_t} = \frac{\$Y_t}{Y_t}$$

The GDP deflator is called an **index number**. Its level has no economic interpretation. But its rate of change, $\pi_t = \frac{P_t - P_{t-1}}{P_{t-1}}$, has a clear economic interpretation: It gives the rate at which the general level of prices increases over time: i.e., **the rate of inflation.**

Moreover, this also implies a simple relation among nominal GDP, real GDP, and the GDP deflator:

$$\$Y_t = P_t \cdot Y_t$$

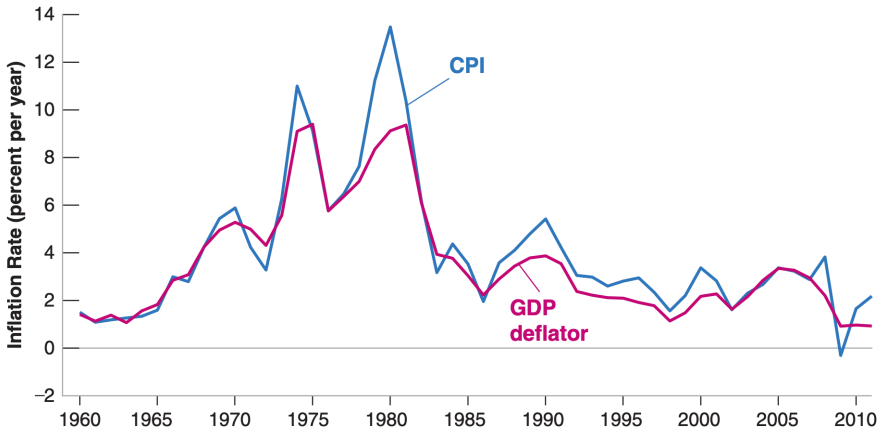
Thus, the **rate of growth of nominal GDP** is equal to the **rate of inflation** plus the **rate of growth of real GDP**.

4.2 Consumer Price Index

The GDP deflator gives the average price of **output**: the final goods produced in the economy. But consumers care about the average price of **consumption**: the goods they consume. The two prices need not be the same: The set of goods produced is not the same as the set of goods purchased by consumers:

- Some goods in GDP are sold not to consumers but to firms/government/foreigners.
- Some goods bought by consumers are imported from abroad.

To measure the average price of **consumption**, or, equivalently, the **cost of living**, we look at **the Consumer Price Index(CPI)**.



- The CPI and the GDP deflator **move together** most of the time.
- Exceptions: GDP deflator is the price of goods *produced*, whereas the CPI is the price of goods *consumed*.

Why inflation rate is important?

If a higher inflation rate meant just a faster but **proportional** increase in all prices and wages(pure inflation), inflation would be only a minor inconvenience, as **relative prices would be unaffected**.

However, this is not the case:

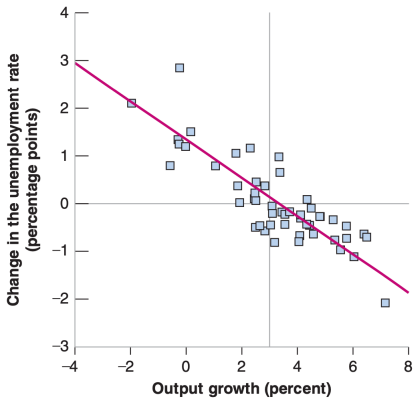
- not all prices and wages rise proportionately. e.g. retirees.
- inflation leads to other distortions. e.g. firms more uncertain about future investment; bracket creep: higher tax.

But what about deflation?

We expect the price to be lower and lower in the future, so we just wait, instead of buying it now. Firms, also, lose motivations to buy machines, and their goods are cheaper and cheaper, therefore have no incentives to improve, don't want to make investment. All those cause a **worse** economy.

5 Okun's Law

negative relationship between **GDP growth** and **change in unemployment rate**. (if output growth is high, unemployment will decrease)

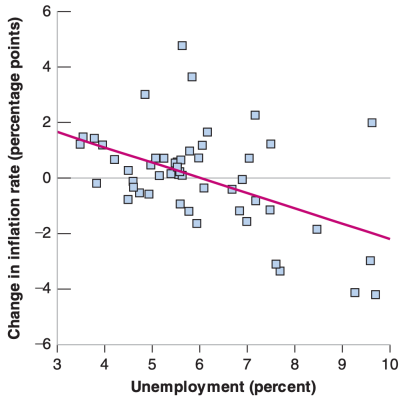


This vertical line crosses the horizontal axis at the point where output growth is roughly equal to 3%: It takes a growth rate of about 3% to keep unemployment constant. Two reasons:

- population, thus labor force, increase over time.
- output per worker is also increasing with time, implies that output growth is higher than employment growth.

6 The Phillips Curve

negative relationship between **unemployment rate** and **change in inflation rate**. (when unemployment becomes very low, the economy is likely to overheat, and that this will lead to upward pressure on inflation.)



When unemployment has been below 6%, inflation has typically increased, suggesting that the economy was **overheating**, operating above its potential.

Notice, this curve is not always true, there are exceptions.

This is the end of lecture note. Last modified: Sep 8.