

Seminar 1: Measuring a Nation's Income

Suren Karapetyan

94880548@fsv.cuni.cz

Institute of Economic Studies

JEB102 - Principles of Economics II

February 21, 2024

Lectures and seminars

	Day	Time
Lectures	Wednesday	14:00-15:20
Seminars	Wednesday	15:30-16:50
	Wednesday	17:00-18:20
	Wednesday	18:30-19:50

Grading

To pass the course, students are required to score at least 50 % from the exam.

Grade	Interval
A	[100 ; 90)
B	[90 ; 80)
C	[80 ; 70)
D	[70 ; 60)
E	[60 ; 50)
F (Fail)	[50 ; 0)

Measuring a Nation's Income



Microeconomics vs Macroeconomics

□ Microeconomics

- ✓ *Microeconomics* is the study of how individual households and firms make decisions and how they interact with one another in markets.

□ Macroeconomics

- ✓ *Macroeconomics* is the study of the economy as a whole.
- ✓ Its goal is to explain the economic changes that affect many households firms, and markets at once.

Why measure nations' income?

When judging whether the economy is doing well or poorly, it is natural to look at the total income that everyone in the economy is earning.

THE Nations' INCOME AND EXPENDITURE

- ❑ For an economy as a whole, income must equal expenditure.
 - ✓ Every transaction has a buyer and a seller.
 - ✓ Every dollar of spending by some buyer is a dollar of income for some seller.

Gross Domestic Product (GDP)

GDP is the market value of all final goods and services produced within a country in a given period of time.

- Why the market value?
- Why of all?
- Why final ?
- Why goods and services?
- Why produced?
- Why within a country?
- Why in a given period of time?

Gross Domestic Product (GDP)

GDP is the market value of all final goods and services produced within a country in a given period of time.

- **market value** - market prices measure the amount people are willing to pay for different goods.
- **of all** - all items produced in the economy and sold in markets.
- **final** - goods and services produced for final use.
- **goods and services** - tangible goods and intangible services.
- **produced** - goods and services currently produced, not transactions involving goods produced in the past.
- **within a country** - the value of production within the geographic confines of a country.
- **in a given period of time** - production that takes place within a specific interval of time (year or a quarter)

Questions

- Which countries of the world you think are in the top 10 by GDP?

Questions

- Which countries of the world you think are in the top 10 by GDP.

Nominal GDP vs GDP at PPP

	Country/Territory	UN region	IMF ^{[1][13]}	
			Forecast	Year
	World	—	104,476,432	2023
1	United States	Americas	26,949,643	2023
2	China	Asia	17,700,899	^[n 1] 2023
3	Germany	Europe	4,429,838	2023
4	Japan	Asia	4,230,862	2023
5	India	Asia	3,732,224	2023
6	United Kingdom	Europe	3,332,059	2023
7	France	Europe	3,049,016	2023
8	Italy	Europe	2,186,082	2023
9	Brazil	Americas	2,126,809	2023
10	Canada	Americas	2,117,805	2023
11	Russia	Europe	1,862,470	2023

Nominal GDP

	Country (or territory)	UN region	IMF ^{[1][5]}	
			Forecast	Year
	World	—	183,950,000	2024
1	China	Asia	35,042,689	^[n 1] 2024
2	United States	Americas	27,966,553	2024
3	India	Asia	14,261,176	2024
4	Japan	Asia	6,710,984	2024
5	Germany	Europe	5,715,263	2024
6	Russia	Europe	5,225,542	2024
7	Indonesia	Asia	4,715,436	2024
8	Brazil	Americas	4,257,121	2024
9	France	Europe	4,009,501	2024
10	United Kingdom	Europe	3,984,686	2024
11	Turkey	Asia	3,805,673	2024

GDP at PPP

GDP at purchasing power parity (PPP)

Nominal GDP does not take into account **differences in the** cost of living in different countries.

GDP at purchasing power parity (PPP) GDP PPP is gross domestic product converted to international dollars using **purchasing power parity** rates.

Purchasing power parities (PPPs) are the rates of currency conversion that eliminate the differences in price levels between countries.

Purchasing power parity (PPP) allows for economists to compare economic productivity and standards of living between countries.

Questions

- How about top 10 countries by GDP per capita?

Questions

- How about top 10 countries by GDP per capita?

	Country/Territory	UN Region	IMF ^{[4][5]}	
			Estimate	Year
	Monaco	Europe	—	
	Liechtenstein	Europe	—	
1	Luxembourg	Europe	135,605	2023
	Bermuda	Americas	—	
2	Ireland	Europe	112,248	2023
3	Switzerland	Europe	102,865	2023
4	Norway	Europe	99,266	2023
	Cayman Islands	Americas	—	
5	Singapore	Asia	87,884	2023
6	Qatar	Asia	81,968	2023
7	United States	Americas	80,412	2023
	Isle of Man	Europe	—	
8	Iceland	Europe	78,837	2023
9	Denmark	Europe	71,402	2023
	Faroe Islands	Europe	—	
	Channel Islands	Europe	—	

Nominal GDP per capita

	Country/Territory	UN Region	IMF ^[5]
			Estimate
1	Luxembourg *	Europe	143,304
2	Ireland *	Europe	137,638
3	Singapore *	Asia	133,108
	Liechtenstein *	Europe	—
4	Qatar *	Asia	114,210
	Monaco *	Europe	—
	Macau *	Asia	98,157
5	Switzerland *	Europe	89,537
6	United Arab Emirates *	Asia	88,962
	Bermuda *	Americas	—
	Isle of Man *	Europe	—
7	San Marino *	Europe	84,135
8	Norway *	Europe	82,236
9	United States *	Americas	80,412
10	Denmark *	Europe	74,958

GDP per capita at PPP

Gross Domestic Product (GDP)

- Total income of everyone in the economy
- Total expenditure on the economy's output of goods and services

Calculating GDP

Three Ways to Measure GDP:

- 1. The Production approach (output approach)*
- 2. The expenditure approach*
- 3. The income approach*

Calculating GDP

1. The Production approach (output approach): is the difference between value of **output** less the value of goods and services used in **producing** these outputs during an accounting period.

➤ *Formula: value added = value of output – intermediate consumption*

1. Measuring the gross value of domestic output.
2. Determining the intermediate consumption, i.e., the cost of material, supplies, and services used to produce final goods or services
3. Deducting intermediate consumption from gross value to obtain the net value of domestic output.

Question 1

In meat production, the value of the good from the farm may be \$10, then \$30 from the butchers, and then \$60 from the supermarket.

What is the value of final national output?

Question 1

In meat production, the value of the good from the farm may be \$10, then \$30 from the butchers, and then \$60 from the supermarket.

What is the value of final national output?

The value that should be included in final national output should be **\$60**, not the sum of all those numbers, \$100.

Why was the VAT having a great party?

Because it was always adding value!

Question II

Which of the following statements about GDP is correct?

- ❖ GDP measures two things at once: the total income of everyone in the economy and the total expenditure on the economy's output of goods and services.
- ❖ Money continuously flows from households to firms and then back to households, and GDP measures this flow of money.
- ❖ GDP is generally regarded as the best single measure of a society's economic well-being.
- ❖ All of the above are correct.

Question II

Which of the following statements about GDP is correct?

- ❖ GDP measures two things at once: the total income of everyone in the economy and the total expenditure on the economy's output of goods and services.
- ❖ Money continuously flows from households to firms and then back to households, and GDP measures this flow of money.
- ❖ GDP is generally regarded as the best single measure of a society's economic well-being.
- ❖ **All of the above are correct.**

Question III

James owns two houses. He rents one house to the Johnson family for \$10,000 per year. He lives in the other house. If he were to rent the house in which he lives, he could earn \$12,000 per year in rent. How much do the housing services provided by the two houses contribute to GDP?

- a. \$0
- b. \$10,000
- c. \$12,000
- d. \$22,000

Question III

James owns two houses. He rents one house to the Johnson family for \$10,000 per year. He lives in the other house. If he were to rent the house in which he lives, he could earn \$12,000 per year in rent. How much do the housing services provided by the two houses contribute to GDP?

- a. \$0
- b. \$10,000
- c. \$12,000
- d. \$22,000**

Question IV

Which of the following items is included in GDP?

- a. The sale of stocks and bonds
- b. The sale of used goods
- c. The sale of services such as those performed by a doctor
- d. All of the above are included in GDP.

Question IV

Which of the following items is included in GDP?

- a. The sale of stocks and bonds
- b. The sale of used goods \$12,000
- c. The sale of services such as those performed by a doctor**
- d. All of the above are included in GDP.

Calculating GDP

2. The expenditure approach: A method of computing GDP that measures the total amount spent on all final goods during a given period.

$$Y = C + I + G + NX$$

- Y= Gross Domestic Product (GDP)
- C = Consumption: spending by households on goods and services, with the exception of purchase of new housing
- I = Investment: spending on capital equipment, inventories and structures, including household purchases of new housing
- G = Government purchases: spending on goods and services by (local, state and federal) government, does not include transfers (retirement, benefits) as they do not reflect market activity
- NX = Net exports: spending on domestically produced goods by foreigners (exports) minus spending on foreign goods by domestic residents (imports)

Why are imports deducted? They are already included in C, I or G.

Question 1

Suppose a country has government expenditures of \$3 500, taxes of \$2 200, consumption of \$9 000, exports of \$2 500, imports of \$2 700, transfer payments of \$50, capital depreciation of \$800, and investment of \$3 000. GDP equals:

- a. \$24 450
- b. \$11 550.
- c. \$15 300.
- d. \$20 700.

Question 1

Suppose a country has government expenditures of \$3 500, **taxes of \$2 200**, consumption of \$9 000, exports of \$2 500, imports of \$2 700, **transfer payments of \$50**, **capital depreciation of \$800**, and investment of \$3 000. GDP equals:

- a. \$24 450
- b. \$11 550.
- c. \$15 300.**
- d. \$20 700.

Taxes, transfer payments and capital depreciation have no impact on the calculation of GDP by expenditure method:

$$GDP = \$9\,000 + \$3\,500 + \$3\,000 + \$2\,500 - \$2\,700 = \$15\,300$$

Calculating GDP

3. The income approach: A method of computing GDP that measures the received by all factors of production in producing final goods.

- Labor income (wages)
- Capital income (rent, interest, dividends, profits)
- Government income (taxes)

Real GDP vs. Nominal GDP

Nominal GDP is GDP measured in **current dollars**, or the current prices we pay for things. Nominal GDP includes all the components of GDP valued at their current prices.

- A variable is measured in current dollars, it is described in *nominal terms*.

Real GDP is GDP measured at the prices of a specific year i.e. **at constant prices**

- For the base year nominal GDP equals to real GDP
- Real GDP better reflects the economy's ability to satisfy peoples needs and desires.

GDP Deflator

$$\mathbf{GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} * 100}$$

- The GDP deflator is a measure of the price level calculated as the ratio of nominal GDP to real GDP times 100.
- GDP deflator captures the rise in nominal GDP due to rise in prices.
- The GDP deflator is one measure of the overall price level in the economy

Exercise

A country produces only chocolates and watches, as indicated in the table below. The base year is 2017. Calculate the nominal GDP, real GDP and GDP deflator for each year.

Year	Box of chocolates		Watch	
	Price	Quantity	Price	Quantity
2017	\$4	100	\$50	10
2018	\$5	90	\$50	15
2019	\$5	100	\$60	15

Exercise

Nominal GDP:

- 2021: $4 \times 100 + 50 \times 10 = 900$
- 2022: $5 \times 90 + 50 \times 15 = 1200$
- 2023: $5 \times 100 + 60 \times 15 = 1400$

Real GDP:

- 2021: $4 \times 100 + 50 \times 10 = 900$
- 2022: $4 \times 90 + 50 \times 15 = 1110$
- 2023: $4 \times 100 + 50 \times 15 = 1150$

GDP Deflator:

- 2021: $\frac{900}{900} * 100 = 100$
- 2022: $\frac{1200}{1110} * 100 = 108$
- 2023: $\frac{1400}{1150} * 100 = 122$

GDP and Happiness

Is GDP a good measure of well-being?

GDP can tell us absolute income of the country as well as income per average person.

GDP measure production based on market value and therefore does not include:

- ✓ Leisure
- ✓ Childcare from a parent
- ✓ Volunteer work
- ✓ Environment quality

Generally, higher GDP results in better life of residents, but not always.

What are Drawbacks of GDP?

- Gross Domestic Product does not reflect the black market, which may be a large part of the economy in certain countries.
- The black market, or the underground economy, includes illegal economic activities, such as the sale of drugs, prostitution, and some lawful transactions that don't comply with tax obligations.

Thank you!