MEASURING NATIONAL INCOME

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Microeconomics vs Macroeconomics

- Microeconomics is concerned with the study of individual households, firms and markets.

- Macroeconomics, on the other hand, studies the entire economy as a whole.

- Its goal is to explain the economic changes that affects many households, firms and markets simultaneously.

Microeconomics vs Macroeconomics (2)

- Macroeconomics seeks to answer questions such as:

- Why is average income high in some countries and low in others?

- Why do prices sometimes rise rapidly while at other times they are more stable?

- Why do production and employment expand in some years and contract in others?

- What, if anything, can the Government do to promote rapid growth in incomes, low inflation, and stable employment?

Microeconomics vs macroeconomics (3)

Topic	Microeconomics	Macroeconomics
Income	The income of a person or the revenue of a firm	The income of an entire nation or a national economy
Output	The production of a single worker, firm or industry	The production of an entire economy
Employment	The job status and decisions of an individual or firm	The job status of a national population, particularly the number of people who are unemployed
Prices	The price of a single good	The combined prices of all goods in an economy

Gross Domestic Product (GDP)

- In an attempt to gauge how an economy is performing, economists use different measures.

- These measures often capture specific aspects of the economy and allow for interpretations regarding these aspects only.

- The most global economic measure of how an economy performs is the gross domestic product (GDP).

- GDP includes all aspects and sectors of the economy.

Gross Domestic Product (GDP) (2)

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

- This definition says much more than it looks.

- Let's analyze it in details for a better understanding:

Gross Domestic Product (GDP) (3)

- "GDP is the market value…"

- You probably heard the adage: *"You can't compare apples and oranges."*, which means that we can't compare products of different nature.

- However, this is exactly what GDP does. It includes *all goods and services produced within an economy*.

- Apples and oranges may not be similar in nature, but they have a common attribute: *a price in the market (i.e. a market value)*.

- This is what the measurement of GDP takes into account.

Gross Domestic Product (GDP) (4)

- "… of all…"

- GDP tries to be comprehensive.

- It does not only includes goods (e.g. books, rice, tomatoes, …) but also services (e.g. teaching, movies, healthcare, …)

- GDP takes into account anything (tangible and intangible) that can legally be traded in a market.

- GDP, however, excludes illicitly traded items and also goods and services that are not traded in markets (for example produced and consumed at home).

Gross Domestic Product (GDP) (5)

- "… final goods and services…"
- A good is said to be final when it is ready for consumption.
- When paper is sold to schools for their use (e.g. printing, making notes), it is considered a final good.
- However, when paper is sold to a publishing house to be used to make books, it is not considered a final good – it is an intermediate good.
- Intermediate goods are goods that are further processed into other goods.
- The measurement of GDP includes final goods exclusively.

Gross Domestic Product (GDP) (6)

- "… produced…"

- GDP accounts for goods and services that are currently produced.

- It does not involve transactions involving items that were produced in the past.

- For example, GDP measurement does not include the sale of preowned items.

- Only newly produced items are considered.

Gross Domestic Product (GDP) (7)

- "… within a country…"

- All eligible goods and services produced within the borders of the country are included in the measurement of GDP.

- This means that even the goods and services produced by foreign producers are also included.

- If the goods and services produced by foreigners are excluded from the measurement, what we obtain is the *gross national product (GNP).*

Gross Domestic Product (GDP) (8)

- "… in a given period of time."

- GDP is a flow concept (as opposed to a stock concept).

- When GDP is reported, it represents the value of economic activities carried out throughout a period of time, not at a specific point.

- The time periods used for the computation of GDP are usually quarters and years.

- The GDP of the USA in 2012 was almost $16.3 trillion. This is the market value of all final goods and services produced within the USA throughout 2012.

Nominal GDP vs Real GDP

- We know GDP as:

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

- This definition of GDP is, in fact, the definition of "nominal GDP".

- Nominal GDP is computed using the "market value" of all final goods and services.

- This, however, has an inherent flaw.

- The problem with nominal GDP is that it does not take into account the changes in the price level over time.

Nominal GDP vs Real GDP (2)

- Assuming the US economy produces 10 cars in a given year (say 2011). If the market value of each car is $1000, the contribution of the auto industry to the GDP will be $10000.

- Let's assume that in the following year, the US economy still produces 10 cars. Let's now assume that the market value of cars has increased to $1100. In 2012, the contribution of the auto industry would be $11000.

- By comparing the market values, one would think that the auto industry contributed more to GDP in 2012 than in 2011

Nominal GDP vs Real GDP (3)

- This confusion comes from the fact that the computation of nominal GDP does not take into account the changes in market values.

- The solution to this problem is "real GDP".

- Real GDP is not affected by varying market prices and is a more accurate measure of economic performance.

- To compute real GDP, we use the market values of a base year or GDP deflator.

Real GDP = (Nominal GDP / GDP deflator) * 100

Uses of GDP data

- *Measuring living standards*

- Living standards vary from country to country.

- In more developed countries, wages are higher, unemployment is lower, there is easier access to education and prospects are generally more favorable.

- In less developed countries, poverty is more severe, access to the basic necessities of life is more difficult, …

- GDP is used to measure how well an economy does.

- Countries with higher GDPs are usually considered more developed.

Uses of GDP data (2)

- GDP is a good measure for how well an economy performs. However, it can be improved.

- Following are the top 5 countries ranked by GDP in 2010:

Rank	Country	2010 GDP (billions of dollars)	Per capita GDP (dollars)
1	United States	14,582	47,184
2	China	5,878	4,393
3	Japan	5,497	43,137
4	Germany	3,309	40,509
5	France	2,560	39,460

Uses of GDP data (3)

- The table shows that in 2010, China had a higher GDP than Japan.

- However, Japan had a much higher *GDP per capita* than China.

- GDP per capita is a better measure to evaluate the economic performance of countries.

- It is the GDP of a nation divided by the population.

- In that sense, it provides a more accurate picture of how the average citizens does in the economy.

GDP per capita = GDP / population

Uses of GDP data (4)

- Measuring economic growth

- Economies are not static – they are dynamic.

- The amount of goods and services the USA could produce 100 years ago is far from what the American economy can produce now.

- Population size, technology, international trade, … and many other factors cause the economy to expand.

- *Economic growth is the increase of GDP over time. It can also be seen as the change in living standards over time.*

GDP growth = (GDP$_2$ – GDP$_1$) / GDP$_1$

Uses of GDP data (5)

- Measuring business cycles

- You may have heard the term *"economic recession"* in the news.

- This term depicts a situation where the economy is contracting in the short-run.

- It is a period marked by high unemployment, high inflation (prices increase rapidly), low output and low income.

- The opposite of an economic recession is an *"economic expansion"*.

Uses of GDP data (6)

- Economies generally keep expanding in the long-run; however, it is normal for them to experience some downturns from time to time.

- *The short-run fluctuations in economic activity are known as the business cycle.*

- The level of real GDP is the primary measure used to determine where economies are in the business cycle.
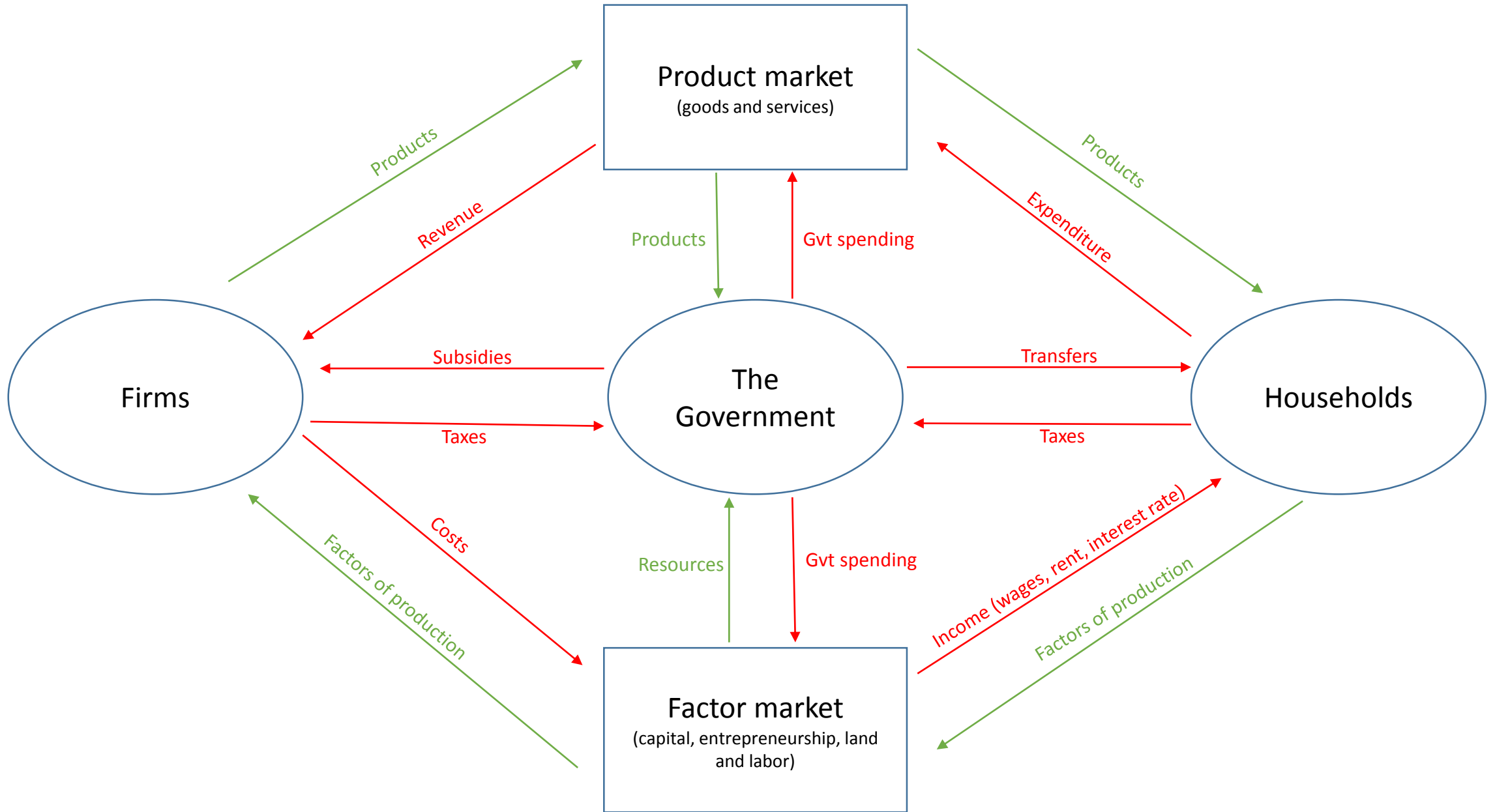
Uses of GDP data (7)

The Economic Cycle
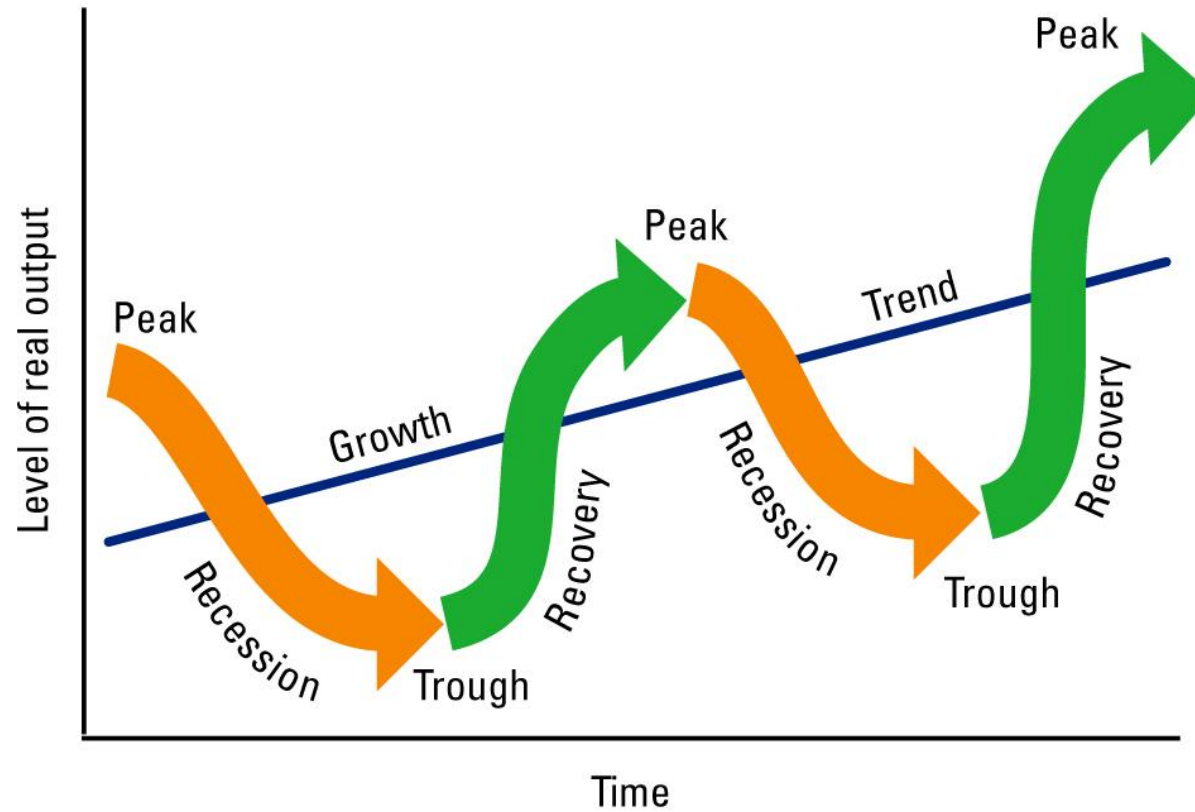
GDP and the circular flow of money

- The circular flow of money is an economic model, which attempts to describe the interactions between the major economic agents of the economy: households, firms and the Government (the model can be extended to include the financial sector and exchanges with foreign trading partners)

- This model is very instrumental to understand the components of GDP and how it is computed.

Product market
(goods and services)

Firms

The Government

Households

Factor market
(capital, entrepreneurship, land and labor)

Products

Revenue

Products

Gvt spending

Products

Expenditure

Subsidies

Transfers

Taxes

Taxes

Factors of production

Costs

Resources

Gvt spending

Income (wages, rent, interest rate)

Factors of production

GDP and the circular flow of money (2)

- In the circular flow diagram:
- Firms produce goods and services and sell them in markets
- Households buy them for their personal consumption
- However, before firms can produce goods and services, they need factors of production, which they obtain from households
- In exchange, they provide an income which goes to the households

GDP and the circular flow of money (3)

- 2 things are important to realize in the model:

- The market value of goods and services produced by firms is equal to the amount of consumption expenditure by households.

- The amount of consumption expenditure by households is equal to the income they obtained for supplying their factors of production to firms.

- In other words:

Total Production (GDP) = Aggregate Expenditure = Aggregate Income

GDP and the circular flow of money (4)

- The circular flow diagram shows that there are 3 different approaches by which GDP can be measured:

- the product approach

- the income approach

- The expenditure approach

- Each approach to GDP measurement has pros and cons, but the most suitable approach is the aggregate expenditure approach.

- Let's look at this approach in more details

The Aggregate Expenditure Approach

- The aggregate expenditure approach to the measurement of GDP breaks up GDP in 4 major components:

- Consumption (C)

- Investment (I)

- Government expenditure (G)

- Net Export (NX) = Export (X) – Import (M)

$$GDP = C + I + G + (X - M)$$

The Aggregate Expenditure Approach (2)

- Consumption (C)

- This includes the purchase of final goods and services by households, with the exception of new housing.

- Final goods include both durable and non-durable goods.

- Durable goods are used for longer periods of time (e.g. computers, cars, fridges, …)

- Non-durable goods are goods that are consumed over a short period of time (e.g. groceries, air fresheners, …)

The Aggregate Expenditure Approach (3)

- Investment (I)

- Investment refers to private spending on tools, plant and equipment used to produce future output.

- It includes items as simple as a shovel, a personal computer, ... used in small businesses, but also the expenditure on large factories, new buildings, ...

- Investment also includes all purchases by businesses that add to their inventories. For example, if a store buys more turkeys in expectation for the huge demand before Thanksgiving, the increase in their inventories is captured as an investment.

The Aggregate Expenditure Approach (4)

- Government Expenditure (G)

- National, state, and local governments purchase many goods and services, which are included in GDP as government spending.

- It includes spending by all levels of government on final goods and services.

- For example, governments spend money purchasing buildings, equipment and supplies from private-sector firms.

- Transfer payments and subsidies, on the other hand, are not taken as government spending.

The Aggregate Expenditure Approach (5)

- Net Export (NX)

- The domestic economy produces goods and services that are exported to other countries and generate revenue (exports).

- In the same way, the economy also needs goods and services from other countries and has to make payments in order to obtain them (imports).

- Net export is the difference between exports and imports.

$$NX = X - M$$

Composition of U.S. GDP, 2012

Category	Individual expenditures (billions of dollars)	Total expenditures per category (billions of dollars)	Percentage of GDP
Consumption (C)		**11,119.6**	70.9%
Durable goods	1,218.9		
Non-durable goods	2,564.2		
Services	7,336.5		
Investment (I)		**2,062.3**	13.1%
Fixed investment	2,004.2		
Change in business inventories	58.1		
Government Expenditure (G)		**3,062.8**	19.5%
Federal	1,214.3		
State and local	1,848.5		
Net Exports (NX)		**-559.9**	-3.6%
Exports	2,184		
Imports	-2,744		
Total GDP		**15,684.8**	100%

Source: U.S. Bureau of Economic Analysis.

You should now be able to…

- Define gross domestic product (GDP) and explain what every component of the definition means

- Differentiate between nominal GDP and real GDP

- Explain the uses of GDP data

- Use the circular flow of diagram to derive the 3 approaches to GDP measurement

- Explain the aggregate expenditure approach to GDP measurement.