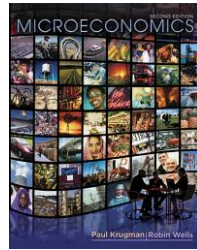


Economics 202 Principles Of Macroeconomics

Professor Yamin Ahmad

Lecture 5: National Income Accounting

- GDP
- The Expenditure Approach
- The Income Approach



Big Concepts

- Gross Domestic Product
- Equivalence between Aggregate Expenditures and Aggregate Income
- Stock vs. Flow

Note: These lecture notes are incomplete without having attended lectures

An Economic Barometer

- What exactly is GDP?
- How do we use it to tell us whether our economy is in a recession or how rapidly our economy is expanding?
- How do we take the effects of inflation out of GDP to compare economic well-being over time?
- And how do we compare economic well-being across countries?

Note: These lecture notes are incomplete without having attended lectures

Gross Domestic Product

- GDP Defined
 - **GDP** or **gross domestic product** is the market value of all final goods and services produced in a country in a given time period.
- This definition has four parts:
 - Market value
 - Final goods and services
 - Produced within a country
 - In a given time period

Note: These lecture notes are incomplete without having attended lectures

Gross Domestic Product

Market value

- GDP is a market value—goods and services are valued at their market prices.
- To add apples and oranges, computers and popcorn, we add the market values so we have a total value of output in dollars.

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Gross Domestic Product

Final goods and services

- GDP is the value of the *final goods and services* produced.
- A **final good** (or service) is an item bought by its final user during a specified time period.
- A final good contrasts with an **intermediate good**, which is an item that is produced by one firm, bought by another firm, and used as a component of a final good or service.
- Excluding intermediate goods and services avoids double counting.

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Gross Domestic Product

Produced within a country

- GDP measures production within a country—domestic production.

In a given time period

- GDP measures production during a specific time period, normally a year or a quarter of a year.

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Gross Domestic Product

GDP and the Circular Flow of Expenditure and Income

- GDP measures the value of production, which also equals total expenditure on final goods and total income.
- The equality of income and output shows the link between productivity and living standards.
- The circular flow diagram (following next) illustrates the equality of income, expenditure, and the value of production.

Note: These lecture notes are incomplete without having attended lectures



The Agents in the System...

- There are four agents that we will focus on when constructing a model of the economy:
 - Households
 - Firms
 - Government
 - “The Rest of the World”

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Markets

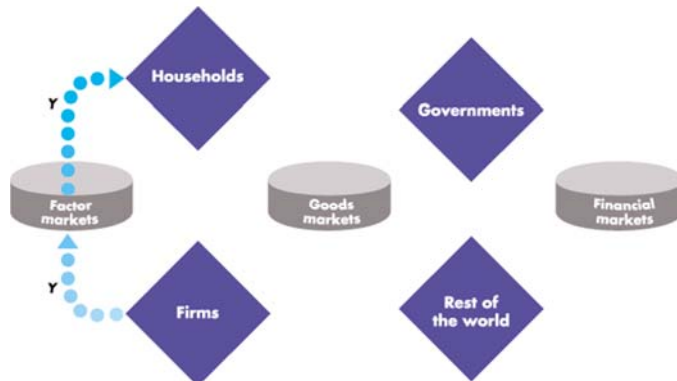
- There are three markets that we focus on:
 - The Factor Market
 - The Goods Market
 - The Financial Market

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Gross Domestic Product

Firms hire factors of production from households. The blue flow, Y , shows total income paid by firms to households.

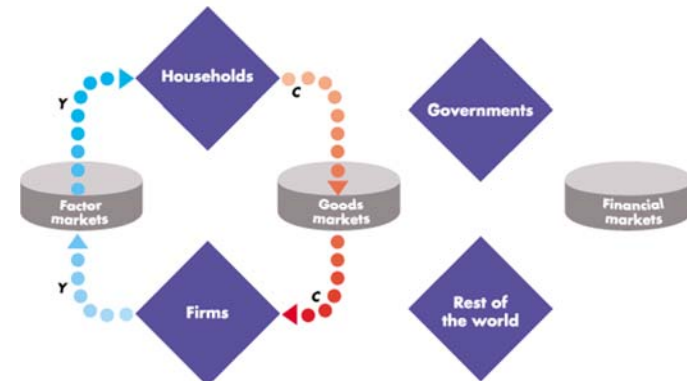


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Gross Domestic Product

Households buy consumer goods and services. The red flow, C , shows consumption expenditures.

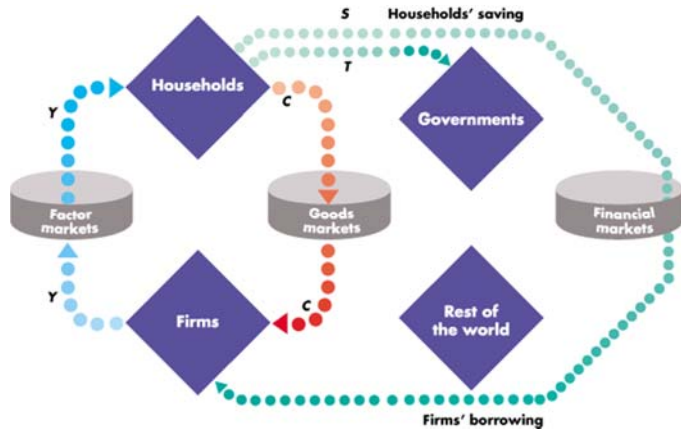


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Gross Domestic Product

Households save, S , and pay taxes, T . Firms borrow some of what households save to finance their investment.

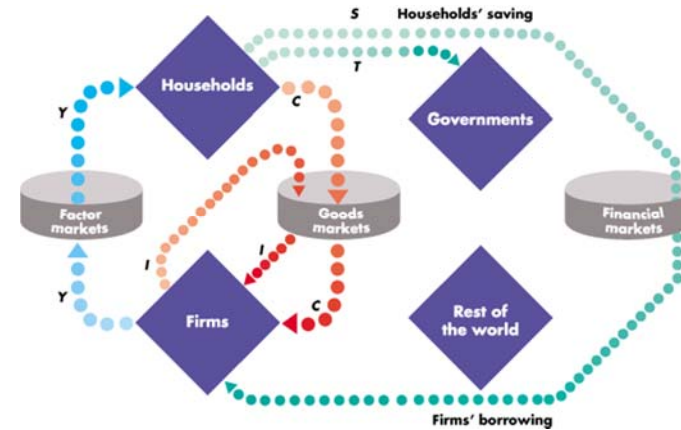


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Gross Domestic Product

Firms buy capital goods from other firms. The red flow represents this investment expenditure by firms.

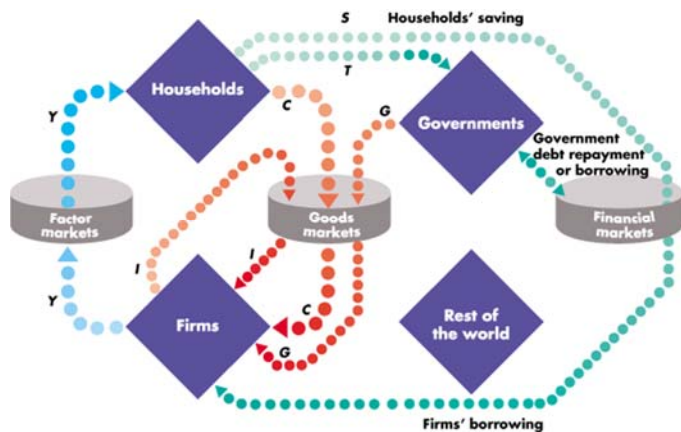


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Gross Domestic Product

Governments buy goods and services, G , and borrow or repay debt if spending exceeds or is less than taxes.

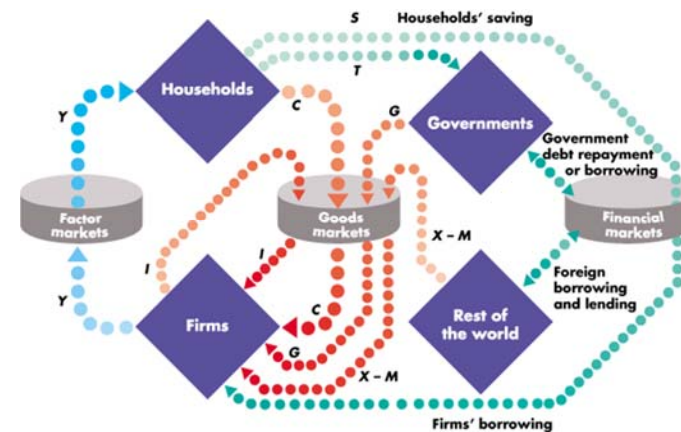


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Gross Domestic Product

The rest of the world buys goods and services from us, X , and sells us goods and services, M —net exports are $X - M$

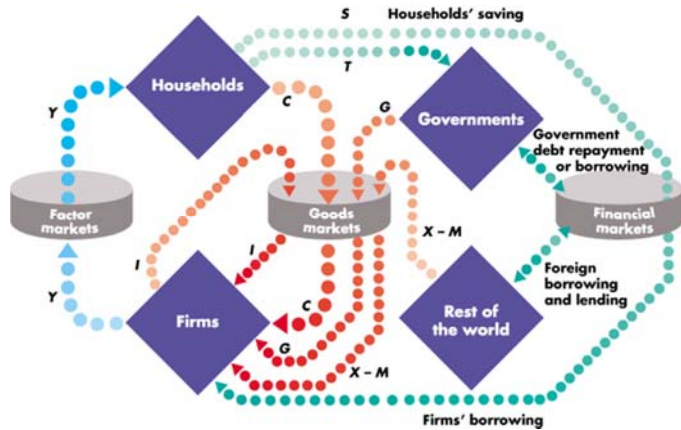


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Gross Domestic Product

And the rest of the world borrows from us or lends to us depending on whether net exports are positive or negative.

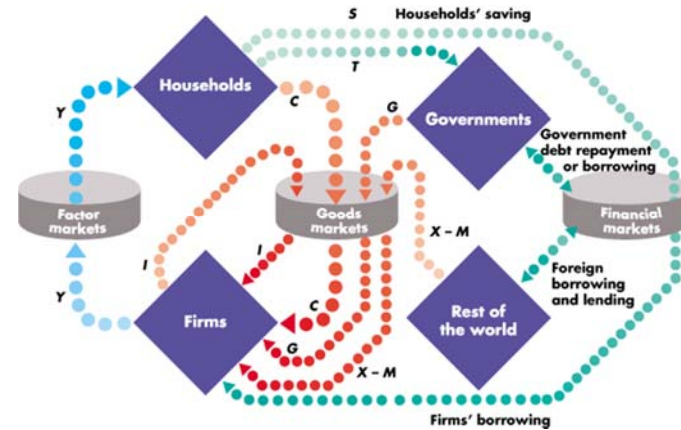


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Gross Domestic Product

The blue and red flows are the circular flow of expenditure and income. The green flows are borrowing and lending.

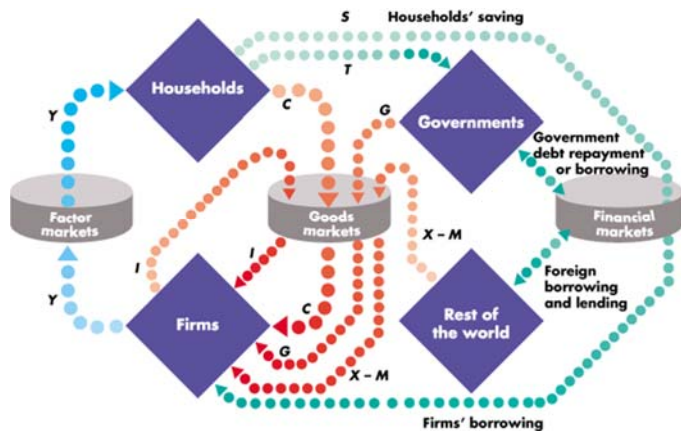


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Gross Domestic Product

The sum of the red flows equals the blue flow.

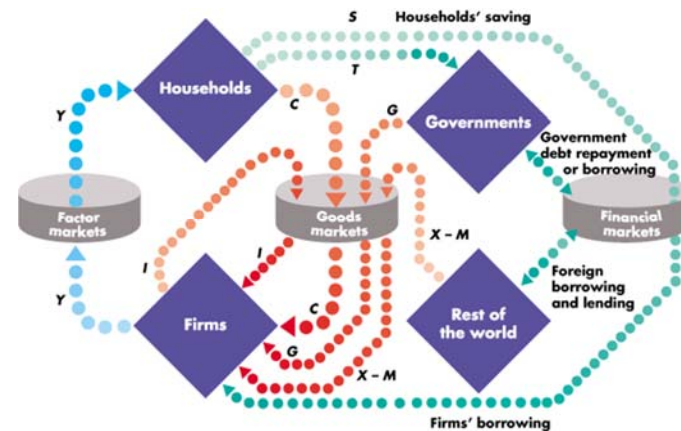


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Gross Domestic Product

That is: $Y = C + I + G + X - M$



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Gross Domestic Product

- The circular flow demonstrates how GDP can be measured in two ways:
 - Aggregate Expenditure
 - Aggregate Income

Note: These lecture notes are incomplete without having attended lectures

Aggregate expenditure

- Total expenditure on final goods and services equals the value of output of final goods and services, which is GDP.
 - Total expenditure = $C + I + G + (X - M)$.

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Aggregate income

- Aggregate income earned from production of final goods, Y , equals the total paid out for the use of resources, wages, interest, rent, and profit.
- Firms pay out all their receipts from the sale of final goods, so income equals expenditure
 - $Y = C + I + G + (X - M)$.

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Financial Flows

- Financial markets finance deficits and investment.
- Household saving, S , is income minus net taxes and consumption expenditure, and flows to the financial markets;
 - $Y = C + S_p + T$
- Income equals the uses of income.

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Borrowing...

- If government purchases exceed net taxes, the deficit ($G - T$) is borrowed from the financial markets (if T exceeds G , the government surplus flows to the markets).
- If imports exceed exports, the deficit with the rest of the world ($M - X$) is borrowing from the rest of the world.

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How Investment Is Financed

- Investment is financed from three sources:
 - Private saving, S_p
 - Government budget surplus, $(T - G)$
 - Borrowing from the rest of the world ($M - X$)

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Gross Domestic Product

- We can see these three sources of investment finance by using the fact that aggregate expenditure equals aggregate income.
- Start with
 - $Y = C + S_p + T = C + I + G + (X - M)$
- Then rearrange to obtain
 - $I = S_p + (T - G) + (M - X)$
- Private saving S_p plus government saving $(T - G)$ is called **national saving**.

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Gross and Net Domestic Product

- “Gross” means before accounting for the depreciation of capital. The opposite of gross is net.
- To understand this distinction, we need to distinguish between flows and stocks in macroeconomics.
- A **flow** is a quantity per unit of time; a **stock** is the quantity that exists at a point in time.

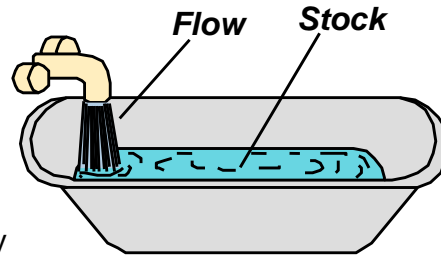
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Stocks vs. Flows

A **stock** is a quantity measured at a point in time.

E.g.,
 “The U.S. capital stock was \$26 trillion on January 1, 2006.”



A **flow** is a quantity measured per unit of time.
 E.g., “U.S. investment was \$2.5 trillion during 2006.”



Stocks vs. Flows - examples

<i>stock</i>	<i>flow</i>
a person's wealth	a person's annual saving
# of people with college degrees	# of new college graduates this year
the Government Debt	the Government Budget Deficit
Capital	Investment



Gross Domestic Product

- **Wealth**, the value of all the things that people own, is a stock. *Saving* is the *flow* that changes the *stock of wealth*.
- **Capital**, the plant, equipment, and inventories of raw and semi-finished materials that are used to produce other goods and services, is a stock.
- **Investment** is the *flow* that changes the *stock of capital*.
- **Depreciation** is the decrease in the capital stock that results from wear and tear and obsolescence.
- **Capital consumption** is another name for depreciation.



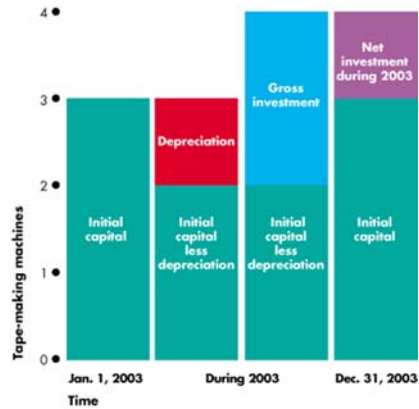
Gross Domestic Product

- **Gross investment** is the total amount spent on purchases of new capital and on replacing depreciated capital.
- **Net investment** is the change in the stock of capital and equals gross investment minus depreciation.



Gross Domestic Product

- This figure illustrates the relationships among capital, gross investment, depreciation, and net investment.



Note: These lecture notes are incomplete without having attended lectures



Gross Domestic Product

- Gross profits, and GDP, include depreciation.
- Similarly, gross investment includes that amount of purchases of new capital goods that replace depreciation.
- Net profits, net domestic product, and net investment subtract depreciation from the gross concepts.
- Investment plays a central role in the economy. Increases in capital are one source of growth in potential real GDP; fluctuations in investment are one source of fluctuations in real GDP.

Note: These lecture notes are incomplete without having attended lectures