Measuring National Income
Lecture Notes

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- The measurement of National Income is central to the our understanding of the level of economic activity
- We can measure National Income indirectly by measuring how much is produced in the economy
- However, it is not as simple as just measuring the value of the output of all firms
  - this would lead to the problem of *double counting*

Consider the contribution of a loaf of bread to our measure of production

- This includes the sale of wheat to the mill, the sale of flour to the baker, and finally the sale of bread to the consumer
- If we add up the value of the output for all three transactions then we will *overestimate* the level of production
- Instead, we should focus, not on the sale price of the good, but rather on the **value added** at each stage of production

Definitions

- Intermediate Goods: All outputs that are used as inputs by other producers in a further stage of production
- Final Goods: Goods that are not used as inputs by other firms but are produced to be sold for consumption, investment, government purchases, or exports during the period under consideration
- Value Added: The value of a firm's output minus the value of the inputs that it purchases from other firms

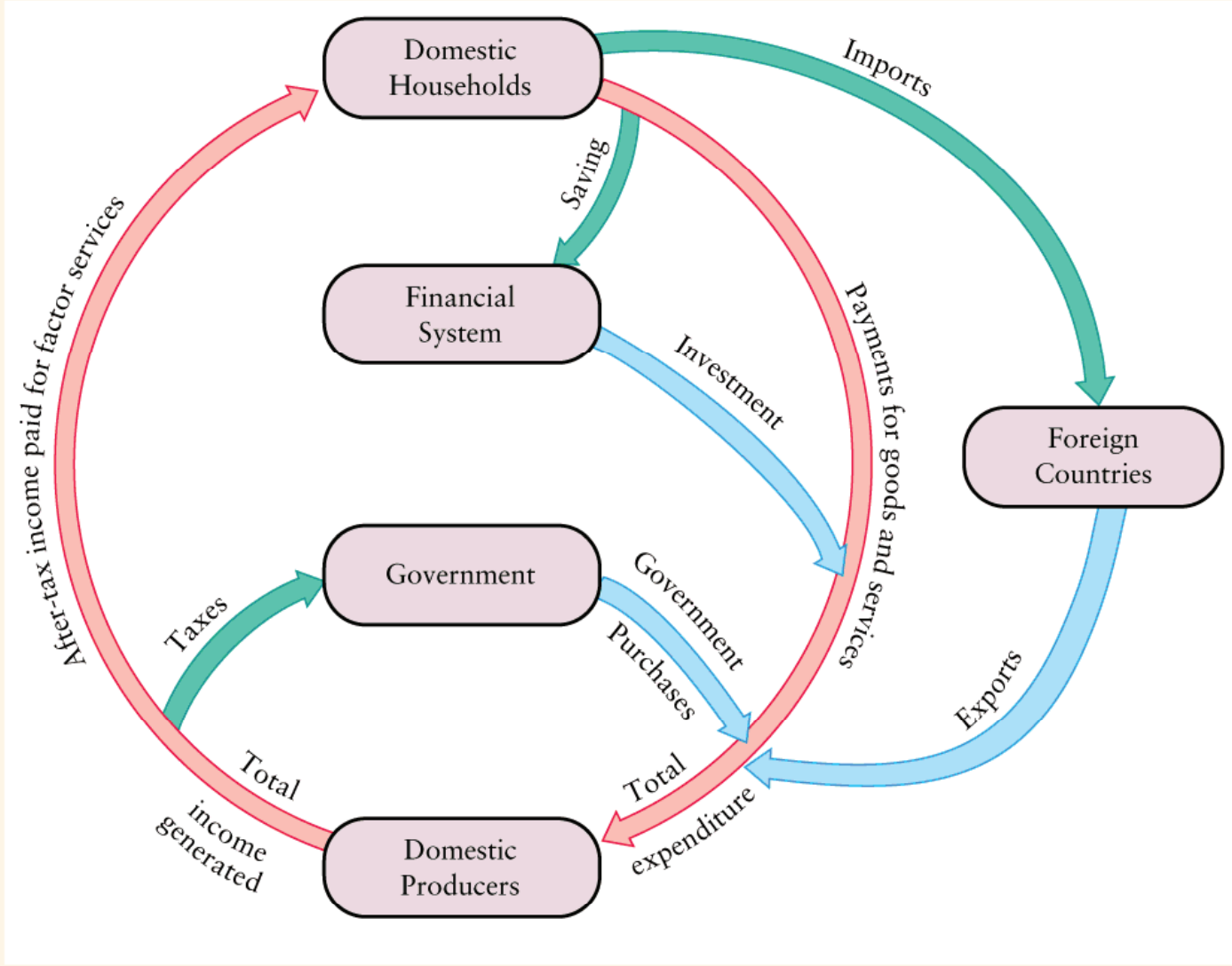
Value Added = Revenue - Cost of Intermediate Goods

* Value added can also be though of as the *payment to factors of production*

Example

- Suppose the baker sells \$1800 worth of bread and pays \$1500 for flour to make it
- The miller receives \$1500 for the flour from the baker, but pays the farmer \$1000 for the wheat
- And the farmer receives \$1000 from the miller for the flour and buys nothing from other firms
- What is the value added at each stage of production? What is the total value added? How does this differ from the total value of all sales?

FIGURE 20-1 The Circular Flow of Expenditure and Income



The are two equivalent ways to measure national income, i.e. GDP:

- Expenditure Approach
- Income Approach - read for yourself

*Roughly speaking, all expenditures represent income for someone else in the economy

In this course we pursue a theoretical model of the expenditure side of the economy

There are four main components included in the calculation of GDP

- Consumption Expenditure
- Investment Expenditure
- Government Purchases
- Net Exports

We discuss each in turn

Consumption

Consumption Expenditure includes household expenditure on all goods and services sold to their final users during the year

- E.g. haircuts, televisions, restaurant meals, etc.

Investment

Investment Expenditure includes expenditure on the production of goods and services not for present consumption.
Three Components

- Changes in Inventories
- New Plant and Equipment
- New Residential Housing

GDP records Gross Investment as opposed to Net Investment (= Gross Investment - depreciation)

Government Purchases

Government Purchases includes all government expenditures on currently produced goods and services. Does NOT include transfer payments, i.e. income assistance, employment insurance, etc.

- public health and education, infrastructure, etc.

Net Exports

- Exports and Imports represent inflows and outflows of expenditure respectively.
- The net effect must be considered in the calculation of National Income and likewise expenditure
- Largely an accounting issue since net exports (Exports - Imports) is a very small component of the overall calculation

Total Expenditures

This when we add all of these components together we get our measure of National Income:

$$GDP = C + I + G + NX$$

This equation will form the basis of our theoretical model of the economy to follow in Chapters 21 - 24

Other Issues

Accounting issues aside there remain many importnat issues to discuss reagrding the measurement of National Income and Welfare

- GDP versus GNP
- Real versus Nominal Income
- Omissions from GDP
- GDP and Living Standards

All are important issues to consider, but the latter is by far the most.

Gross National Product

Gross National Product (GNP): The value of total incomes earned by domestic residents
Gross Domestic Product (GDP): The total value of all goods and services produced domestically
How do these differ?

- Income produced (GDP) versus income received (GNP)
- May differ according to foreign ownership of factors of production
- Measure different aspects of economic well-being - depends what interests you

How can we use the difference between GDP and GNP to assess the effect of foreign direct investment on the living standards of third-world countries?

Real versus Nominal

We already discussed the need to measure National Income using constant prices (Real GDP) rather than current prices (Nominal GDP)

Consider an example

- Suppose that the prices of all goods and services doubled overnight. How has people material well-being changed? Is there more stuff?
- We can remove the influence of price with the following

$$GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

- The GDP Deflator measures the Price Level, an alternative to the CPI
- GDP Deflator measures domestic production where as CPI measures domestic consumption

Omissions from GDP

Productive activities that are omitted from the GDP calculation affect the accuracy of GDP as a measure of production

- Illegal Activities
- Underground Economy
- Home Production
- Leisure
- Economic "Bads" - e.g. environmental damage

So what do we do? Focus on *changes* in GDP not *levels*

GDP and Living Standards

- Is GDP an appropriate measure of living standards?
- Depends on what we mean by living standards. Is it the same as material well-being?
- GDP omits any consideration of
  - Distribution of Income
  - Health and Educational Access or Outcomes
  - Environmental Sustainability
  - Justice System
  - Religious and Political Freedom
  - Stock of Assets, e.g. natural resources, technology, etc.
  - And on and on and on ....

So why do we still use it? Easy to measure.

Alternative Measures

- Human Development Index (HDI)
  - Includes health and educational outcomes as well as economic
- Measurable Economic Welfare (MEW)
  - Adds value of non-market activities, liesure, etc.
  - Subtracts "regretables", i.e. pollution, crime, defense, etc.
  - Very difficult to measure
- Gross National Happiness (Bhutan)
  - Includes social and psychological factors in calculation
  - No strictly quantitative measure exists

Problem: All measures, GDP included, are largely arbitrary. Evaluating welfare often involves making value judgments which will be reflected in the choice of measure.

For the Interested Student ...

In 2008, President Sarkozy of France commissioned Nobel Laureates Joseph Stiglitz and Amartya Sen to evaluate the validity of GDP as a measure of living standards as well as propose an alternative.This document is readily available on the internet. A good place to start is with the executive summary on pages 7 - 18.