Topic 2.1

The Circular Flow and GDP

You Will Learn To:

- Define gross domestic product (GDP).
- Use the circular flow model to represent GDP.
- Calculate nominal GDP using the expenditure approach, income approach, and value-added approach.

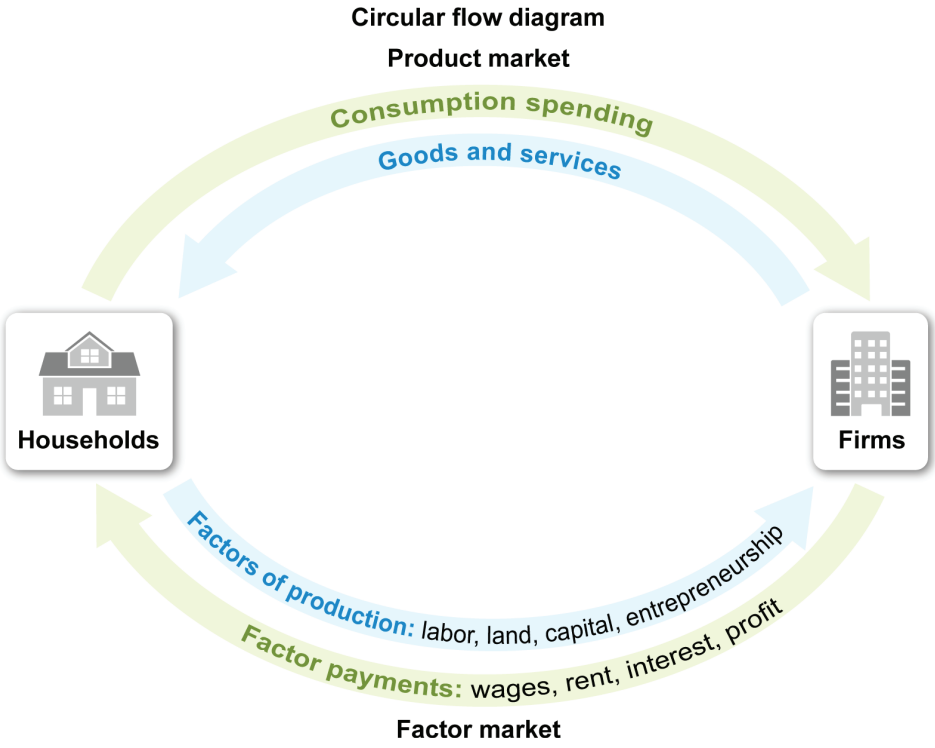
Gross Domestic Product

Gross domestic product (GDP) measures the total value of all final goods and services produced within a country's border in a given period, usually a year. The following are excluded from GDP and are discussed further in Topic 2.2:

- financial transactions such as the purchase of stocks and bonds.
- transfer payments, such as gifting money to a relative or receiving a social security payment.
- purchase of used goods.
- nonmarket transactions, such as babysitting for cash payment or mowing your own lawn.
- purchase of intermediate goods by firms.

Circular Flow Diagram

The circular flow diagram represents the flow of money between households and firms as they purchase products and the factors of production. Households purchase final goods and services from firms in the product market, while firms purchase factors of production from households in the factor market.



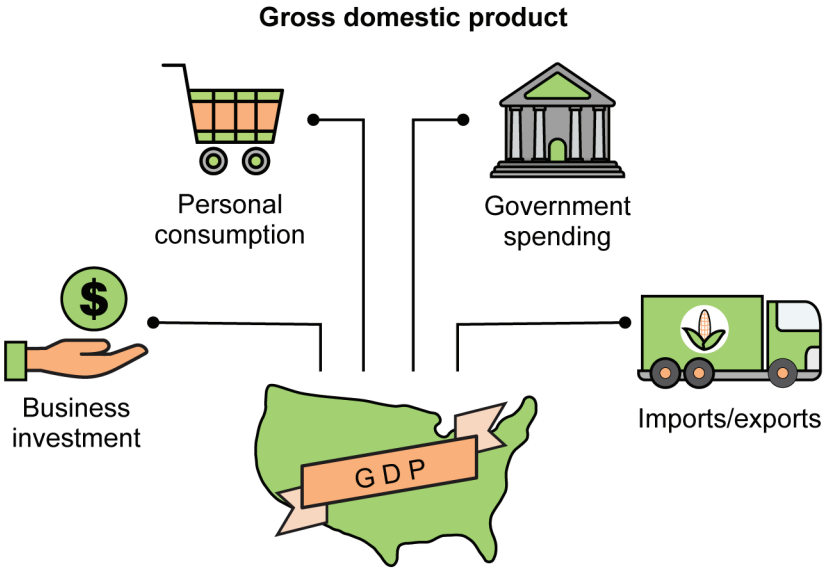
The circular flow diagram shows the flow of money with a green line and the flow of goods and resources with a blue line.

Some transactions result in leakages from the circular flow because money leaves the economy. Examples of this include households saving money instead of spending it, paying taxes rather than buying goods, and spending on imports that results in money leaving the economy in exchange for the good or service produced abroad.

Three Ways to Measure GDP

Nominal GDP is the measure of GDP that is not adjusted for inflation, and it is calculated with current prices and quantities. Nominal GDP measures the amount of spending, income, and output in the economy through the expenditure approach, the income approach, and the value-added approach, respectively. All three calculations should always result in the same dollar amount.

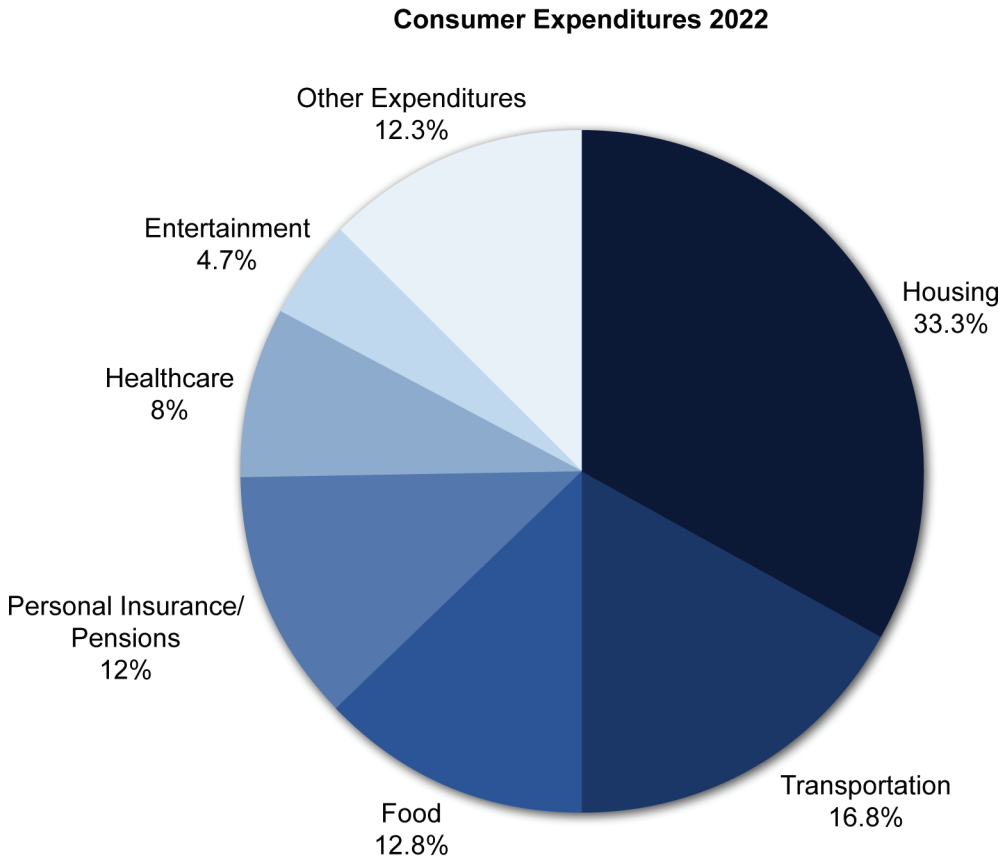
Expenditure Approach



The expenditure approach is a calculation of gross domestic product that adds the values of consumer spending (C), business investment (I), government purchases (G), and foreign spending on exports (X). Domestic spending on foreign-made goods and components must be subtracted as imports (M).

The formula for the expenditure approach: GDP = C + I + G + (X - M).

Consumption



Consumer spending or consumption (C) includes all household spending on durable goods, nondurable goods, and services. Examples of consumer spending include paying for groceries, buying a new television, and paying college tuition.

Investment

Business investment includes all business spending on capital goods, machinery, changes in inventories, and sales of brand-new homes. All these examples are ways businesses spend money to increase their revenue in the future. Brand new homes are included as investment rather than as consumption because they are typically owned by the homebuilder before they are sold to a consumer.

Government Spending

Government spending (G) includes all government spending on final goods and services, such as spending on the military, infrastructure, and education. Government spending does not include transfer payments such as social security or stimulus checks because these payments are not made in exchange for a good or service. Transfer payments from the government are eventually included in GDP, however, once the recipient spends the money on final goods or services.

Net Exports

Net exports (NX) include the value of all goods and services made in the country but sold abroad minus the value of the goods made abroad but sold in the country. An increase in net exports would result if the value of cars made in the US but sold in Canada exceeds that of cars made in Canada but sold in the US.

Expenditure approach to GDP

Consumption (C)	$500
Business Investment (I)	$100
Government Spending (G)	$350
Net Exports	$20
Exports (X)-Imports (M)	($60–$40)
Total GDP:	$970

In the example above, the GDP equals $970 because the values of consumption, business investment, government spending, and net exports (exports minus imports) are added together.

The value of the imports (M) must be subtracted because they are not made domestically and contribute to another country's GDP. They are added in the values for consumption, business investment, and government spending because households, firms, and the government buy products from other countries, and they must therefore be subtracted out as imports because they are not made domestically.

Income Approach

The income approach is a calculation of gross domestic product (GDP) that adds the values of income payments of rent (R) for land, wages (W) for labor, interest (I) for capital, and profit (P) from entrepreneurship.

Income approach to GDP

Wages (W)	$350
Rent (R)	$220
Interest (I)	$150
Profit (P)	$250
Total GDP:	$970

In the example above, the GDP equals $970 from adding the payments for the factors of production of wages, rent, interest, and profit. This calculation is the same number as the expenditure approach because it is the same economy. All money spent in the expenditure approach is money earned in the income approach.

Value-added Approach

The value-added approach is a calculation of gross domestic product that subtracts input costs of production from the output price at each step of production to calculate the total contribution firms make to the economy.

Value-added approach to GDP

Activity	Input Cost	Output Cost	Value Added
Iron ore mining	$0	$100	$100
Steel production	$100	$350	$250
Automobile assembly	$350	$650	$300
Automobile sales	$650	**$970**	$320
		Total GDP:	**$970**

In the example above, the value of each step of production is added together. Iron ore mining added a total of $100 of value to the economy and became the input for steel production. Steel production had an output cost of $350 dollars minus the $100 it cost for inputs, for a total of $250 added to the economy. Each subsequent step is added together for a total of $970 in GDP. This calculation is the same as both the expenditure approach and the income approach because the value of the inputs added together is equal to the value of the final good that is produced and the payments received for those inputs, respectively. No matter which calculation is used to measure GDP, the result is the same dollar amount.

Things to Remember

- The circular flow model illustrates that households sell resources to firms in the factor market and use their income to purchase goods and services from firms in the product market.
- There are three ways to calculate gross domestic product (GDP): the expenditure approach, income approach, and value-added approach. All three calculations should result in the same dollar amount.
- In the expenditure approach to calculating GDP, imports are subtracted from exports to offset the inclusion of the spending in consumption, government spending, or investment spending.

2.1 Vocabulary

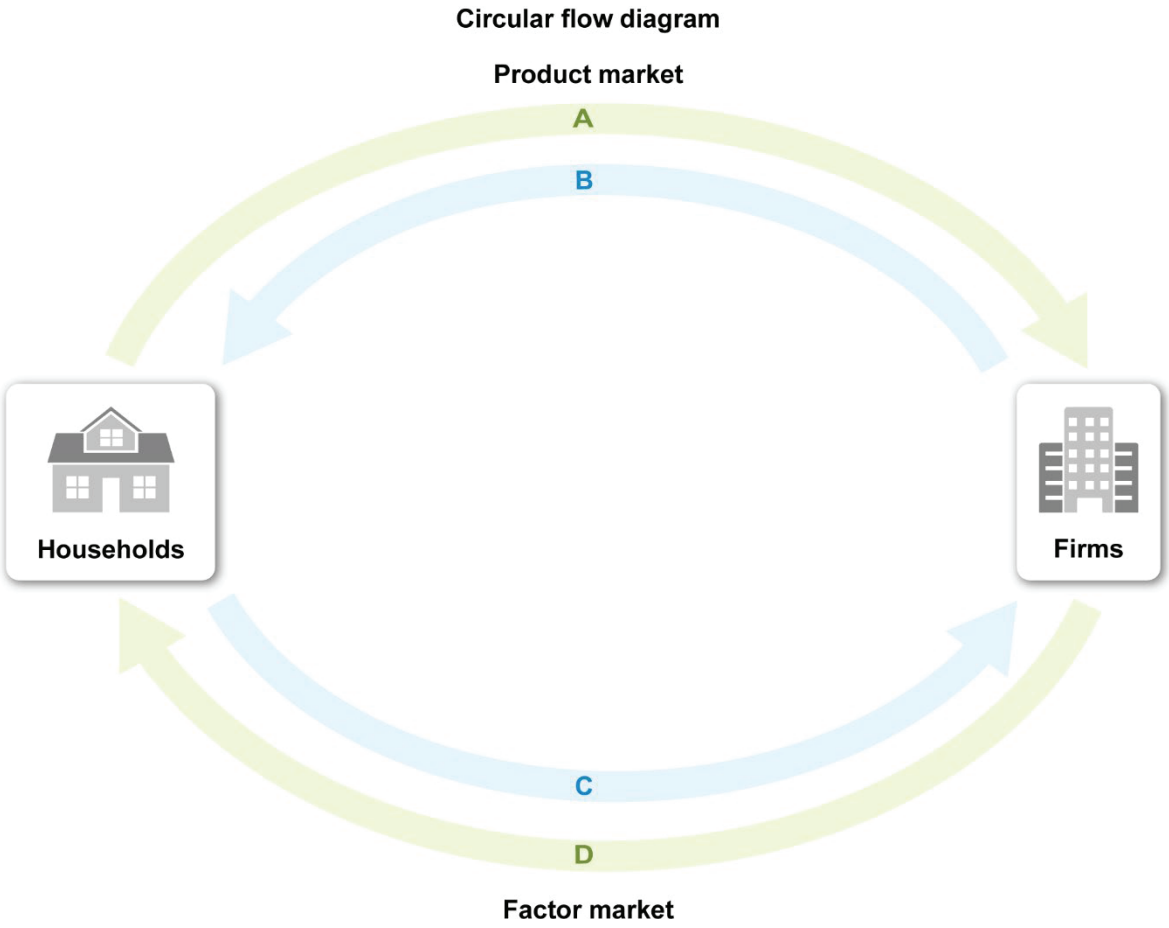
Gross domestic product (GDP)	A measure of a country's economic activity that includes the total value of all final goods and services produced within a country's borders in a given period, usually a year.
Final goods	Goods purchased by the end user.
Transfer payments	Payments that are made by a government to individuals or organizations and not made in exchange for a good or service.
Intermediate goods	Goods purchased by firms and used in making other products.
Circular flow diagram	Representation of the flow of money between households and firms as they purchase products and factors of production, respectively, from each other.
Product market	Circular flow transactions in which household consumers purchase goods and services from firms.
Factor market	Circular flow transactions in which firms purchase factors of production from households.
Expenditure approach	A calculation of gross domestic product (GDP) that adds the values of consumer spending (C), government purchases (G), business investment (I), and foreign spending on exports (X). Spending on foreign-made goods and components must be subtracted as imports (M).
Consumption (C)	A primary component of gross domestic product (GDP) that the expenditure method includes as household spending on durable and nondurable goods and services.
Business investment (I)	A component of gross domestic product (GDP) that the expenditure method includes as spending by businesses for capital goods and inventories.
Government spending (G)	A primary component of gross domestic product (GDP) that the expenditure method includes as government expenditures on goods and services.
Net exports (NX)	A component of gross domestic product (GDP) that the expenditure method includes as the value of exports minus the value of imports.
Income approach	A calculation of gross domestic product (GDP) that adds the values of income payments of rent (R) for land, wages (W) for labor, interest (I) for capital, and profit (P) for entrepreneurship.
Value-added approach	Method of calculating gross domestic product that subtracts the input costs of production from the output price at every stage in a good's production process. It adds the values of each producer's contribution to the economy.

2.1 Check for Understanding

1. **Money flows from households to firms through the product market.**

   A. True

   B. False



2. **Using the circular flow model above, which line represents the flow of payments for the factors of production?**

   A. A

   B. B

   C. C

   D. D

3. **Which of the following would be included as consumption in the expenditure approach for calculating GDP?**

   A. An individual buying a new car

   B. A firm building a new factory

   C. The president buying a new office chair

   D. The sale of a new machine to a foreign company

4. **Which of the following would be included as investment spending in the expenditure approach for calculating GDP?**

   A. An individual buying a new car

   B. A firm building a new factory

   C. The president buying a new office chair

   D. The sale of a new machine to a foreign company

5. **Social security payments and stimulus checks count as government spending in the expenditure approach for calculating GDP.**

   A. True

   B. False

COUNTRY A EXPENDITURES

Consumption (C)	$9,000
Investment (I)	$2,000
Government spending (G)	$1,500
Exports (X)	$500
Imports (M)	$300

6. **Using the table, what is the value of GDP in Country A?**

   A. $11,000

   B. $12,500

   C. $12,700

   D. $13,300

COUNTRY A EXPENDITURES

Rent	$4,000
Wages	$5,000
Interest	$1,200
Profit	$600
Stock value	$1,500

7. Using the table, what is the value of GDP in Country B?

A. $10,200

B. $10,800

C. $11,700

D. $12,300

8. Which of the following are ways to calculate GDP?

I. Expenditure approach

II. Value-added approach

III. Government approach

IV. Income approach

A. I and II

B. I, II, and III

C. I, II, and IV

D. II, III, and IV