The GDP Expenditures Equation: What Is GDP and How Do We Measure It?

Author: Scott Wolla, Ph. D., Federal Reserve Bank of St. Louis

Standards and Benchmarks (see page 26)

Lesson Description

In this lesson, students learn the definition of gross domestic product (GDP) and the composition of the expenditure categories of GDP. They participate in an active learning demonstration of the GDP expenditure equation [GDP = C + I + G + (X – M)] to understand the relationships among the variables and the effect of changes in aggregate spending on GDP. Special attention is given to the effect that imports have on GDP.

Concepts

Business cycle
Exports
Gross domestic product (GDP)
Gross private investment
Government spending
Imports
Intermediate goods
Personal consumption expenditures

Objectives

Students will be able to

- define GDP,
- identify the GDP expenditure components,
- explain how spending in each of the expenditure components affects overall GDP, and
- explain how changes in the level of spending are related

Compelling Question

How do economists measure and assess the economy?

Time Required

60 minutes

Materials

- *"The GDP Expenditures Equation: What is GDP and How Do We Measure It?" Power Point slide deck, Slides 1-21*
- *Handouts 1, 3, and 5, one copy for each student*
- *Handout 2, printed on individual pages (not front and back)*
- *Handout 4, cut into strips, keep strips from page one separate from strips from page 2.*
- *Handouts 1,3, and 5 Answer Keys, one copy of each for the teacher*

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

- *2 containers or bags*

Preparation

Prior to class, place strips cut from page 1 of Handout 4 (Scenarios #1-#10) into a container and strips cut from page 2 of Handout 4 (Scenarios #11-#20) into a second container or bag.

Procedure

1. Begin the lesson by discussing the following:
   - Why do you think it's important for the economy to grow? *(A growing economy provides benefits for people such as more jobs and income.)*
   - How do economists measure the economy to determine if it's growing? (*Answers will vary. Suggest that economists can either measure all the spending on goods and services in the economy or all the income earned by people—but they are essentially the same because one person's spending is another person's income.)*

2. Distribute a copy of *Handout 1: GDP Vocabulary* to each student. Tell the students to fill in the blanks as you discuss each PowerPoint slide. Refer to the *Handout 1: GDP Vocabulary— Answer Key* found in The GDP Expenditures Equation: What Is GDP and How Do We Measure It? Handout and Assessment Answer Key.

3. Display Slide 2. Explain that economists use **gross domestic produc**t, or **GDP**, to measure the size and health of the economy. Tell the students that they will be participating in an activity that will help them better understand the relationship between spending and the size of the economy.

4. Define GDP as the total market value, expressed in dollars, of all final goods and services produced in an economy in a given year. Explain that there are three important phrases in the definition. Discuss the three phrases as follows:
   - Display Slide 3. "Total market value, expressed in dollars" means the following:
     - The value of goods and service is determined by the prices paid by the end users.
     - The total of these prices is the total value of GDP.
     - U.S. GDP is measured in U.S. dollars.
   - Display Slide 4. "Final goods and services" means the following:
     - "Final" refers to goods and services sold to end users.
     - These goods and services have been purchased for final use and not for resale or further processing.
     - GDP does not include **intermediate goods**, which are man-made goods used to produce other goods or services, becoming part of those goods or services.
     - Excluding intermediate goods helps avoid double counting. The following is an example:
       - Tires sold to a company that produces automobiles are intermediate goods.
       - Because those tires will be installed on a new car, they are not counted in GDP, because the value of the tires will be reflected in the total price of the car when it's sold to the end user.
       - However, when new tires are purchased by an end user to replace the worn-out tires on his or her car, they are final goods and are counted in GDP.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

- How could flour be an intermediate good in one situation and a final good in another? *(If the flour a baker buys is used to produce pies, cakes, bread, and cookies, it is an intermediate good. If the flour you and your grandmother buy is used to make cookies for the family, it is a final good.)*

- Display Slide 5: "Produced in an economy" means the following:
  - A good or service must be produced within the borders of the United States to be counted in U.S. GDP.
    - For example, if Toyota produces cars in the United States, those cars are counted as part of U.S. GDP. If Ford produces cars in Germany, those cars are not part of U.S. GDP.
  - Getting the count correct to include only U.S. goods and services requires a little accounting, which will be covered later.

5. Display Slide 6 and explain that GDP data are released quarterly; that is four times per year or every three months.

6. Display Slide 7 and explain that to examine changes in the output of goods and services, that is, to see if the economy is producing more, less, or the same amount, economists use real GDP. Define real GDP as GDP adjusted for inflation to hold prices constant over time. Adjusted for inflation means that increases in GDP are the result of actual increases in production and not the result of increasing prices. By comparing changes in **real GDP**, economists can tell how the economy is changing. They can assess the health of the economy.

7. Display Slide 8, show one bullet at a time and explain the following:
   - Changes in real GDP indicate changes in the **business cycle**.
   - The **business cycle** is the fluctuating levels of economic activity in an economy over a period of time measured from the beginning of one recession to the beginning of the next.
   - An economic **expansion** is a period when real GDP increases—a period of economic growth. That is, increases in real GDP from quarter to quarter (positive GDP growth) indicate that the economy is growing, or expanding.
   - An economic **contraction** is when real GDP decreases. It is a period of economic decline and might mean the economy is in recession.
   - A recession is a period of declining real income and rising unemployment. It is a significant decline in general economic activity extending over a period of time.

8. Tell the students that you will need 9 volunteers to participate in an activity where they will learn about an equation economists use to calculate GDP. Tell the students that you will select the volunteers as the lesson continues and give them part of the equation to hold (from Handout 1). When a student is called, he or she is to come forward to line up in the front of the classroom and face the other students. As each volunteer comes forward, the rest of the students are to cheer.

   Note: If you have a small class, have student volunteers hold the C, G, I, X, M, and GDP signs. Have students stand along a wall and tape the plus signs, minus sign, and equal sign to the wall as required between the students.

9. Hold up the "GDP" card. Select a student volunteer and lead the students in a cheer, "give me GDP!" Hand the "GDP" card to the student volunteer.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

10. Distribute a copy of *Handout 3: GDP Expenditures* to each student. Tell students to fill in the blanks in each box to complete information about the expenditure components of GDP.

11. Explain that to start we will work with an economy that doesn't engage in trade (a closed economy).

12. Display Slide 9. Explain that when economists use spending to measure GDP, it is called the expenditure method of calculating GDP. This method measures the total money spent in several major categories. The next three variables in the equation represent the three major domestic categories of spending.

13. Hold up the "C" card. Select a student volunteer and lead the students in a cheer, "Give me a C!" Hand the C card to the student volunteer.

14. Display Slide 10. Explain the following:
    - The "C" represents **personal consumption expenditures** or, simply, consumption spending, which is spending by households on new—not used—goods and services.
    - For example, goods include new cars and hamburgers and services include haircuts and visits to the dentist.
    - C includes only new goods, to avoid double counting. For example, a car might be bought new and then resold three to five years later as a used car. It only counts once—when it is sold as a new car.
    - Personal consumption expenditures usually make up over two-thirds of GDP spending.

15. Hold up the "I" card. Select a student volunteer and lead the students in a cheer, "Give me an I!" Hand the I card to the student volunteer.

16. Display Slide 11. Explain the following:
    - I is for **gross private investment**, or simply business investment, which is spending by businesses on machinery, factories, equipment, tools, and construction of new buildings.
    - In this case, investment does not refer to buying financial investments, such as stocks and bonds. Rather, in economics, investment often refers to businesses spending on physical capital, which includes factories, tools, and equipment.
    - Investment also includes new housing and goods that businesses place in inventory.

17. Hold up the "G" card. Select a student volunteer and lead the students in a cheer, "Give me a G!" Hand the G card to the student volunteer.

18. Display Slide 12. Explain the following:
    - G is for **government spending**, which is spending by all levels of government—federal, state, and local—on goods and services, including, for example, spending on the military, schools, and highways.
    - G does not include government spending on transfer payments, such as Social Security payments. However, when people spend their Social Security income on goods and services, that spending is counted as part of consumption spending along with all other spending.

19. Hold up the "=" (equal sign) card. Select a student volunteer and lead the students in a cheer, "Give me an equal sign!" Direct him or her to stand between GDP and C.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

20. Hold up the "+" (addition sign) cards. Select two student volunteers and lead the students in a cheer, "Give me an addition (or plus) sign!" Direct students to stand between the C and I, and the * I and G cards.

21. Display Slide 13. Discuss and explain the following:
    - What does the equal sign communicate about an equation? *(The value on one side of the equal sign is the same as—that is, equal to—the value on the other side.)*
    - If C—personal consumption expenditures—were to increase, how would the rest of the equation and the economy be affected? *(If C were to increase, GDP would increase as well. That is, for the equation to remain equal, GDP would have to increase by an equal amount. For the economy, an increase in C results in an increase in GDP—growth for the economy.)*
        - The economy is very complex. For our discussion, we will change one variable and hold all other variables constant—known to economists as the ceteris paribus ("all else equal") condition. This will allow us to see how a change in any of the expenditure variables impacts GDP

22. Check to make sure the students holding the cards reflect the equation as displayed on Slide 13. Then proceed with the activity.

23. Assign students who have not been holding the cards as part of the equation into pairs or groups of three. Depending on your class, it is a good idea to group students heterogeneously. Have each group select one or two of the prompts from the first container or bag (Scenarios #1 through #10).

24. Refer students to Slide 12 again. Tell each group to discuss their scenarios to decide which letter of the GDP expenditure formula is affected by their scenarios and in what direction the equation (C + I + G = GDP) should move.

25. Explain that for each prompt, members of the group will come forward. One student in the group will read the prompt loudly, then students in the group will explain the letter they chose, shift the letter and the GDP card up or down accordingly.

26. Call out each prompt number in turn. Allow appropriate group to come forward. Ask if others in the class agree. Correct and reteach as needed.

    Prompt 1: Consumers spend $521 billion on new automobiles and parts.

    - Which variables are affected? (*Personal consumption expenditures—C—increase by $521 billion, so GDP increases by $521 billion.)* (C card raised; GDP card raised)

    Prompt 2: Businesses spend $380 billion on new software.

    - Which variables are affected? *(Gross private investment—I—increases by $380 billion, so GDP increases by $380 billion.)* (I card raised; GDP card raised)

    Prompt 3: The U.S. Federal Government spends $650 billion on national defense.

    - Which variables are affected? *(Government expenditures—G—increase by $650 billion, so GDP increases by $650 billion.)* (G card raised and GDP card raised)

    Prompt 4: To reduce unemployment during a recession, the government hires unemployed people to clean and care for city parks and monuments.

    - Which variables are affected? *(Government expenditure—G—increase, so GDP increases by the same amount.)* (G card raised; GDP card raised)

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Prompt 5: The local school district cuts spending to balance its budget.

- Which variables are affected? *(Government expenditures—G—decrease, so GDP decreases by the same amount.)* (G card lowered; GDP card lowered)

Prompt 6: Businesses see a bright economic future and increase spending on new factories and equipment.

- Which variables are affected? *(Gross private investment—I—increases, so GDP increases by the same amount.)* (I card raised; GDP card raised)

27. Explain that GDP measures actual spending, but news often focuses on changes in the level of spending from one time period to another. For example, rather than reporting the spending on new cars, the news might report that spending on automobiles decreased by 5 percent compared with last month. Discuss the following:
    - How would a 5 percent decrease in personal consumption expenditures be reflected in the equation? *(Personal consumption expenditures—C—would decrease, and so would GDP.)* (C card lowered; GDP card lowered)
    - What does a decrease in GDP say about the economy? *(A decrease in GDP indicates economic contraction and perhaps a recession).*

28. Continue as before with prompts 7 through10.

    Prompt 7: Consumers boost spending in May as incomes rise and inflation stays low.

    - Which variables are affected? *(Personal consumption expenditures—C—increase, so GDP increases by the same amount.)* (C card raised; GDP card raised)

    Prompt 8: To improve infrastructure, the state of Missouri spends additional money on highways and bridges.

    - Which variables are affected? (*Government expenditures—G—increase, so GDP increases by the same amount.)* (G card raised; GDP card raised)

    Prompt 9: Due to an optimistic economic outlook, businesses increase their investment spending on new technology.

    - Which variables are affected? *(Gross private investment—I—increases, so GDP increases by the same amount.)* (I card raised; GDP card raised)

    Prompt 10: Susan buys a new car for $30,000; the car was produced in the United States.

    - Which variables are affected? (*Consumer expenditures—C—increases; so, GDP increases by the same amount.)* (I card raised; GDP card raised)

29. Display Slide 12 again and explain that the equation works well for a country that doesn't trade, but trade plays a significant role in the U.S. economy and in many other economies. Trade is reflected in GDP by adding two variables to the equation.

30. Explain that you will need 3 additional volunteers. Hold up the "X" card and lead the students in a cheer, "Give me an X!" Hand the "X" card to a student volunteer.

31. Have students refer to the graphic organizer on their copies of Handout 3. Display Slide 14. Explain and discuss the following:

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

- X is for **exports**, which are resources, goods, or services that are produced domestically but sold abroad.
- X includes both **final goods and services** and **intermediate goods**.
    - What are some examples of intermediate goods? *(Answer will vary but may include tires on a new car, thread in clothing, or flour in a loaf of bread.)*

32. Hold up the "+" (addition sign) cards. Select a student volunteer and lead the students in a cheer, "Give me an addition (or plus) sign!" Direct students to stand between the G and the X cards.

33. Display Slide 15. Explain the following:
    - When the data are collected for C, I, and G, they are recorded as spending without consideration for where the goods or services were produced. That is, these data include spending on *both* **domestic** and foreign goods and services.
    - For example, the C component includes personal consumption expenditures on both cars produced domestically and cars produced by foreign producers.
    - Remember that GDP is intended to measure only the value of *domestic* production, that is, production that occurs within a particular country.
    - For this reason, the equation includes a variable for **imports**.

34. Hold up the "– M" (minus M) card and lead the students in a cheer, "Give me a M!" Hand the –M card to a student volunteer at the front of the room.

35. Display Slide 16. Explain the following:
    - M is for **imports**. Imports are resources, goods, or services that are produced abroad but sold domestically. M is an accounting variable subtracted with the intent of correcting for the value of spending already counted as C, I, or G but actually spent on imported goods.
    - When consumers in the United States buy cars produced in Germany, the purchase is counted as consumer expenditure. However, it is an import—not produced within the United States, so it shouldn't be counted as part of U. S. GDP.
    - Again, this is to ensure that only the value of domestic production is included in GDP. Like the X variable, the M variable includes intermediate goods. The following is an example:
        - If smart phone parts are produced in the United States and shipped to a foreign country for assembly, the value of those parts are counted with exports.
        - If car parts are produced by a foreign country and imported to produce a car in the United States, the value of those parts are counted with imports.

36. Display Slide 17. Explain that for the GDP expenditure equation, economists group exports (X) and imports (M) together within parentheses, which indicates the balance of trade. That is, the value of imports is subtracted from the value of exports. A negative trade balance (or trade deficit) occurs when imports exceed exports (M > X). A positive trade balance (or trade surplus) occurs when exports exceed imports (X > M).

37. Display Slide 18. Review the components of GDP.

38. Have each student group select one or two scenarios from the second bag or container (scenarios #11—#20).

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

39. Allow time for student groups to review their scenarios and decide on answers.

40. Continue with Prompts 11-20 as before.

Prompt 11: Juan buys a new car for $30,000; the car was produced in Japan.

- Which variables are affected? *(Personal consumption expenditures—C—increase by $30,000, but the value of the car, an import—M—is subtracted, so the net effect is that GDP is unchanged. That is, the increase in C is offset by a decrease in M of the same amount.)* (C card raised; M card lowered; GDP card not moved)

Prompt 12: Jasmine buys a new car for $30,000; the car was assembled in the United States, but the manufacturer used $10,000 in imported parts in the production process.

- Which variables are affected? *(Personal consumption expenditures—C—increase by $30,000, but the value of the imported parts—M—is subtracted, so the net effect is that GDP increases by $20,000.)* (C card raised; M card lowered; GDP card raised—but not as high as the C card)

Prompt 13: ACME Inc. produces $30,000 of car parts and exports them to Germany.

- Which variables are affected? (*Exports—X—increase by $30,000, so GDP increases by $30,000.)* (X card raised; GDP card raised)

Prompt 14: Due to a strong European economy, German consumers and businesses increase their spending on U.S. goods and services.

- Which variables are affected? (*Exports—X—increase; so, GDP increases)* (X card raised; GDP card raised)

Prompt 15: People observe a higher rate of unemployment and decide to save more by cutting back their spending on goods and services.

- Which variables are affected? *(Personal consumption expenditures—C—decrease, so GDP decreases by the same amount.)* (C card lowered; GDP card lowered)

Prompt 16: A foreign government imposes trade barriers on U.S. goods and services by establishing quotas and adding tariffs. Consumers in that country respond by buying fewer U.S. goods and services.

- Which variables are affected? *(Exports—X—decrease, so GDP decreases by the same amount.)* (X card lowered; GDP card lowered)

Prompt 17: Automobile companies invest billions in self-driving car technology amid an uncertain future.

- Which variables are affected? *(Gross private investment—I—increases, so GDP increases by the same amount.)* (I card raised; GDP card raised)

Prompt 18: Spending on new housing decreases from a year ago.

- Which variables are affected? *(Gross private investment—I—decreases, so GDP decreases by the same amount.)* (I card lowered; GDP card lowered)

Prompt 19: A local government purchases $25,000 of new office furniture for its office; the office furniture was produced in the United States.

- Which variables are affected? *(Government expenditures—G—increase, so GDP increases by the same amount.)* (G card raised; GDP card raised)

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Prompt 20: ACME Inc. buys a new delivery truck for $40,000; it was produced in the United States, but the manufacturer used $20,000 in imported parts in the production process.

- Which variables are affected? *(I—investment—increases by $40,000, M—imports—decreases by $20,000, and the net effect results in an increase in GDP of $20,000.)* (I card raised; M card lowered; GDP card raised—but not as high as the I card)

Closure

41. Display Slides 19-20, reveal questions one at a time to review the important content in the lesson.
    - What is GDP? *(The total market value, expressed in dollars, of all final goods and services produced in an economy in a given year.)*
    - What does GDP measure? *(The health of the economy. How well the economy is doing.)*
    - What are the expenditure categories used to calculate GDP? *(C—personal consumption expenditures, I—gross private investment, G—government purchases, X—exports, and M— imports.)*
    - What happens when the amount of spending in one of the expenditure categories changes? *(A change to any of the expenditures categories will shift GDP by the same amount.)*
    - What is an intermediate good? *(A man-made good that is used to produce another good or service, becoming part of that good or service.)*
    - Which expenditure categories include intermediate goods in their measurement? *(Exports and imports)*
    - What are final goods and services? *(Final goods and services are goods and services sold to end users. Final goods and services have been purchased for final use and not for resale or further processing.)*
    - How is the M variable in the expenditure equation different from the others? *(The M variable is intended to account for spending on imports already counted in one of the other spending categories. As such, it's important to emphasize that the imports variable is an accounting variable rather than an expenditure variable.)*
    - Does buying an imported good or service reduce GDP; that is, subtract from GDP? Why? *(No, imported goods have no direct impact on GDP, because GDP is intended to measure domestic production.)*
    - What is the business cycle? *(The business cycle is the fluctuating levels of economic activity in an economy over a period of time measured from the beginning of one **recession** to the beginning of the next.)*
    - How do changes in real GDP relate to the business cycle? *(An increase in real GDP is economic expansion, whereas a decrease in real GDP is economic contraction. If the contraction is significant, it might also be a recession.)*

Assessment

42. Distribute a copy of *Handout 5: Assessment* to each student. Review answers using the *Handout 5 Assessment —Answer Key* found in The GDP Expenditures Equation: What is GDP and How Do We Measure It? Handout and Assessment Answer Key.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 1: GDP Vocabulary

Name: _____

Directions: Use information from the slides to fill in the blanks below.

GDP: The total market value, expressed in dollars of all final goods and services produced in an economy in a given year.

- The value of goods and service is determined by the _____.
- The total of these prices is the total value of GDP.
- U.S. GDP is measured in U.S. dollars.

GDP: The total market value, expressed in dollars, of all final goods and services produced in an economy in a given year.

- "Final" refers to _____.
- These goods and services have been purchased for *final use* and not for resale or further processing.
- GDP does not include intermediate goods, which are man-made goods used to produce other goods or services, becoming part of those goods or services.
- Excluding intermediate goods helps avoid _____.

To be counted as part of U.S. GDP, a good or service must be produced within _____.

Real GDP is GDP adjusted for _____to hold prices constant over time.

Business cycle: The fluctuating levels of economic activity in an economy over a period of time measured from the _____.

Economic expansion: A period when real GDP _____; a period of economic growth.

Economic contraction: A period when real GDP _____; a period of economic decline.

Recession: A period of _____. It is a significant decline in general economic activity extending over a period of time.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 1 of 11)

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 2 of 11)

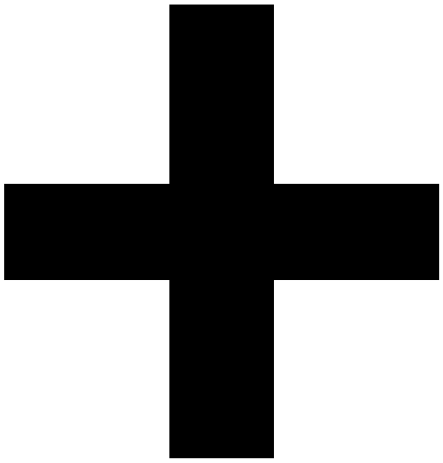
©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 3 of 11)

C

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 4 of 11)

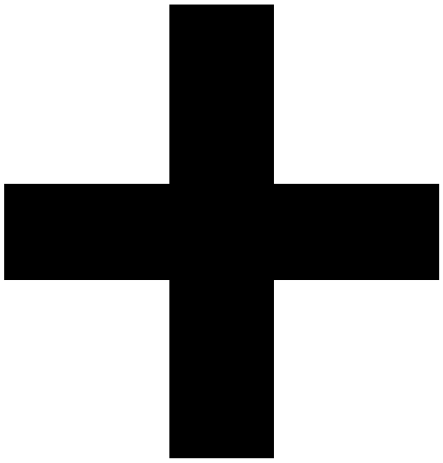


©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 5 of 11)

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 6 of 11)

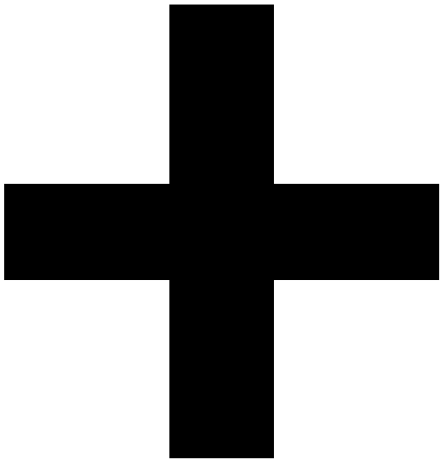


©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 7 of 11)

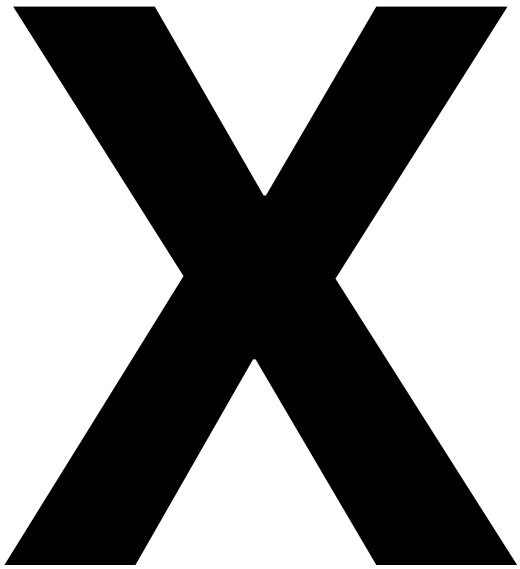
©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 8 of 11)



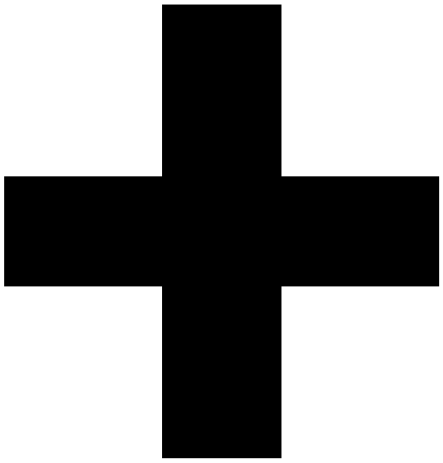
©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 9 of 11)



©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 10 of 11)



©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 2: GDP Expenditure Variables (page 11 of 11)

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 3: GDP Expenditure Graphic Organizer

Name: _____

Directions: Fill in the blanks below to complete information about each of the components of GDP.

Personal consumption expenditures (C): Spending by _____ on _____ —not used—goods and services.

Government purchases (G): Spending by _____ on goods and services, including spending on the military, schools, and highways. Does not include spending on _____ such as Social Security payments

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

Gross private investment (I): Spending by _____ on machinery, factories, equipment, tools, and construction of new buildings.

Exports (X): Resources, goods, or services that are produced _____ but sold _____. Includes final goods and services and intermediate goods.

The balance of trade _____.

Imports (M): Goods or services produced _____ but sold _____. An accounting variable subtracted with the intent of correcting for the value of spending already counted as _____ but actually spent on imported goods. Includes _____ goods.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 4: GDP Expenditure Prompts (page 1 of 2)

Prompt 1: Consumers spend $521 billion on new automobiles and parts.

Prompt 2: Businesses spend $380 billion on new software

Prompt 3: The U.S. federal government spends $650 billion on national defense.

Prompt 4: To reduce unemployment during a recession, the government hires unemployed people to clean and care for city parks and monuments.

Prompt 5: The local school district cuts spending to balance its budget.

Prompt 6: Businesses see a bright economic future and increase spending on new factories and equipment.

Prompt 7: Consumers boost spending in May as incomes rise and inflation stays low.

Prompt 8: To improve infrastructure, the state of Missouri spends additional money on highways and bridges.

Prompt 9: Due to an optimistic economic outlook, businesses increase their investment on new technology.

Prompt 10: Susan buys a new car for $30,000; the car was produced in the United States.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 4: GDP Expenditure Prompts (page 2 of 2)

Prompt 11: Juan buys a new car for $30,000; the car was produced in Japan.

Prompt 12: Jasmine buys a new car for $30,000; the car was assembled in the United States, but the manufacturer used $10,000 in imported parts in the production process.

Prompt 13: ACME Inc. produces $30,000 of car parts and exports them to Germany.

Prompt 14: Due to a strong European economy, German Consumers and businesses increase their spending on U.S. goods and services.

Prompt 15: People observe a higher rate of unemployment and decide to save more by cutting back their spending on goods and services..

Prompt 16: A foreign government imposes trade barriers on U.S. goods and services by establishing quotas and adding tariffs. Consumers in that country respond by buying fewer U.S. goods and services.

Prompt 17: Automobile companies invest billions in self-driving car technology amid an uncertain future.

Prompt 18: Spending on new housing decreases from a year ago.

Prompt 19: A local government purchases $25,000 of new office furniture for its office; the office furniture was produced in the United States.

Prompt 20: ACME Inc. buys a new delivery truck for $40,000; it was produced in the United States, but the manufacturer used $20,000 in imported parts in the production process.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Handout 5: Assessment

Name: _____

Directions:

1. What is GDP?

2. How do changes in real GDP relate to the business cycle?

3. Explain what each of the following variables in the GDP expenditure equation measures:

   C:

   I:

   G:

   X:

   M:

4. For each of the scenarios below, identify the affected variable and then explain whether spending in that category goes up or down (which direction the card moved in the activity), and explain how the change affects GDP.

Scenario	Variable affected	Variable up or down	GDP up or down
Local government increases funding for public schools			
Businesses worry about the future and decrease spending on new factories and equipment.			
Fred hires a carpenter to build a new deck on his house.			
A foreign government lifts trade barriers on U.S. goods and services by eliminating quotas and tariffs. Consumers in that country respond by buying more U.S. goods and services.			
Francine buys a refrigerator; it was produced in Germany.			

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis

Standards and Benchmarks

Voluntary National Content Standards in Economics

Standard 18 Economic Fluctuations

Fluctuations in a nation's overall levels of income, employment, and prices are determined by the interaction of spending and production decisions made by all households, firms, government agencies, and others in the economy. Recessions occur when overall levels of income and employment decline.

- **Benchmarks: Grade 8**
  1. GDP is a basic measure of a nation's economic output and income. It is the total market value, measured in dollars, of all final goods and services produced in the economy in one year.
  2. GDP can be computed by summing household consumption spending; investment expenditures; purchases by federal, state, and local governments; and net exports.
  3. Net exports equal the value of exports (goods and services sold to other countries) minus the value of imports (goods and services bought from other countries). Net exports can be either positive (trade surplus) or negative (trade deficit).
  7. A recession occurs when overall levels of income and employment decline.
- **Benchmarks: Grade 12**
  4. Fluctuations of real GDP around its potential level occur when overall spending declines, as in a recession, or when overall spending increases rapidly, as in recovery from a recession or in an expansion.

©2024, Federal Reserve Banks of Atlanta, Philadelphia, and St. Louis