

EC1B5 | Macroeconomics

Chapter 5

The Wealth of Nations: Defining and Measuring Macroeconomic Aggregates

Additional Practice Questions:

Book Question 1

Which of the following would be considered a final good in the calculation of Armenian GDP? Explain your answers.

- a. All the actors and members of staff employed for a popular TV show, produced by Armenia TV, are citizens of the country.
- b. The Armenian government approved a stimulus package in March 2020 for those who were negatively impacted by the COVID-19 pandemic.
- c. Lavash bread, which in 2014 was placed on UNESCO's list of Intangible Cultural Heritage, is produced in Armenia but is sold globally.

Book Question 2

By how much would GDP change as a result of each of the following changes? Briefly explain your answers.

- a. A couple decides that their child should visit a private language tutor as opposed to attending a language school. The cost of the private language teacher is €10 per session, whereas the language school costs €8 per session. If the private language tutor does not report the income to the tax authorities, what would be the impact on the calculation of GDP?
- b. A couple moves to the countryside from Rome, Italy, for health reasons. They have a small garden, where they grow vegetables for home use. While they were living in Rome, they spent €2,000 annually on vegetables, but now they spend only €500.
- c. Part of a bridge built by the South Korean government collapsed in the same year it was constructed. The total cost of building the bridge was ₩4,458,400,000 (approximately \$4 million), and then it costs ₩ 2,229,200,000 (approximately \$2 million) to repair it.
- d. India produced 8 million tons of rice in a particular year. Of this, 0.5 million tons had to be discarded due to a pest infestation.

Book Question 4

Suppose there are two neighboring countries in a multi-country world: Plastakia and Recyclopa. Both countries have the same currency, Bogs. Plastakia's GDP per capita is 5,380 Bogs, its GDP is 400 million Bogs, and its GNP is 432 million Bogs. Recyclopa has a population of 40,000 people and its GNP is 350 million Bogs. Use this information to calculate Recyclopa's GDP. What is the Plastakia's population and what is Recyclopa GNP per capita?

Book Question 5

The following table gives data for a small country, Barboras.

Component	Expenditure (in thousands)
Interest paid on government debt	£180
Depreciation	£25
Households purchase of stocks and bonds	£280
Net private investment	£525
Gross private investment	£550
Exports	£230
Households' consumption of domestic produce	£100
Imports	£290
Salaries earned by foreigners working in Barboras	£185
Household consumption	£1,000
Purchases of raw materials	£205
Government purchases	£800
Capital income	£310
Salaries earned by Barborasians working abroad	£420

- Use the data to calculate GDP for this economy using the expenditure method.
- Calculate the value of Barboras' GNP. Does Barboras' GDP differ from its GNP? Why or why not?

Book Question 8

With the rise of globalization, supply chains are spread across the world. Suppose the following are the stages of producing pencils in Germany:

- A German-based pencil company develops the designs for the pencil. It's a ground-breaking design that is ergonomic, easy to carry, and doesn't roll when left on a table.
 - Graphite, which is the writing core of the pencil, is a mineral mined in Brazil and €10 billion worth of graphite is sold to China.
 - Softwood, which encases the graphite, is imported from South Africa to China where a Chinese plant manufactures the body of the pencils along with the graphite inside. These are then exported to Kazakhstan for €16 billion.
 - Kazakhstan produces a non-toxic paint. A factory in Kazakhstan paints the pencils and sells them to Germany for €18 billion.
 - The rubber that is used to produce the eraser on top of the pencil is derived from tropical plants grown in Malaysia.
 - The aluminum that goes into the production of the ferrule that encases the eraser is produced in Mozambique.
 - The German company imports rubber and graphite for a total of €7 billion and manufactures the eraser tips, which it then adds to the rest of the pencil.
 - The company sells the finished pencils to German retailers for €33 billion.
 - The retailers sell the pencils within Germany, for a total of €39 billion in revenue.
- a. Calculate how much this process contributes to German GDP. Explain your calculation.
- b. What sources of value might not be captured in your calculation in part (a)?

Book Question 9

The country of Francania produces and consumes only three goods: lemonade, croissants, and blouses. The quantity produced and price of each good in 2020 and 2021 are given in the following table:

	2020		2021	
	Quantity	Price	Quantity	Price
<i>Blouses</i>	90	€30	120	€35
<i>Lemonade (bottles)</i>	650	€1.5	500	€2.50
<i>Croissant</i>	1,200	€1.5	800	€3

- a. Calculate nominal GDP for 2020 and 2021.
- b. Using 2018 as the base year, calculate real GDP for 2020 and 2021.
- c. Based on your answer from part (b), by what percentage did real GDP grow between 2020 and 2021?
- d. Now calculate real GDP for 2020 and 2021 using 2021 as the base year.
- e. Based on your answer from part (d), by what percentage did real GDP grow between 2020 and 2021?
- f. Using 2020 as the base year, what was the GDP deflator in 2020 and 2021?
- g. Based on your answer from part (f), by what percentage did prices change between 2020 and 2021?

Book Question 12

As of September 25, 2020, Jeff Bezos (the CEO of Amazon) had an estimated net worth of \$182 billion (<https://www.forbes.com/billionaires/>). But does this make Bezos the richest person who ever lived? John D. Rockefeller, the founder of Standard Oil, is often credited with this distinction. At the time of his death in 1937, Rockefeller had an estimated net worth of \$1.4 billion.

- a. Go to the U.S. Bureau of Labor Statistics CPI site at <http://data.bls.gov/cgi-bin/surveymost?cu>. Under “Consumer Price Index—All Urban Consumers,” select “US All Items, 1982 - 84 = 100,” and click the “Retrieve data” button at the bottom of the page. Adjust the years to retrieve data from 1937 through 2020. Use the data under the “Annual” column to calculate Bezos’s net worth measured in 1937 dollars. You should find that Bezos’s wealth does have more buying power than Rockefeller’s wealth did.
- b. Some analysts say that Rockefeller’s net worth was economically equivalent to over \$250 billion today. However, this figure is arrived at in a particular way. First, his net worth in 1937 is calculated as a percentage of total U.S. GDP in 1937. That percentage is then multiplied by the current level of GDP to arrive at the equivalent figure in current dollars. See if you can approximate the \$250 billion figure. You can find the relevant GDP figures at <http://research.stlouisfed.org/fred2/data/GDPA.txt>.
- c. What are the pros and cons of the two different methods of adjusting Rockefeller’s net worth to make it comparable to the wealth of business leaders today?