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## Chapter 2 Taking an Economic Pulse: Measuring National Output

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### Review Questions

1. **Distinguish between GNP and GDP. What is included, and what is excluded?**
  - Gross domestic product (GDP) and gross national product (GNP) measure a nation's output and income during a period of time (e.g., quarter or year).
  - GDP measures the market value of all final goods and services produced for the market by resources (i.e., land, labor, capital, and entrepreneurs), regardless of whether these resources are domestically or foreign owned, within a nation's geographic borders during a given time period.
    - GDP is equal to GNP minus the net income a nation earns from (or pays to) foreign nations
  - GNP measures the market value of all final goods and services produced for the market by domestically owned resources, regardless of where these resources are in the world, during a given time period.
    - GNP is equal to GDP plus the net income a nation earns from (or pays to) foreign nations.
2. **Klaus Trafobia owns East Street Garage and Car Sales. In 2013, he acquired a rundown 1998 Volvo station wagon for \$1,500, which he intended to fix up and resell. What was the impact on the nation's GDP if Klaus refurbished the Volvo in 2013 and resold it for \$5,000?**
  - In 2013, Klaus added value equal to \$3,500 to the used car. Therefore, the \$3,500 of value added would be counted as part of GDP in 2013.
3. **If Paula Ticks marries her gardener, will the nation's GDP rise, fall, or stay the same? Explain.**
  - GDP will fall because a market-oriented service (i.e., Paula paying her gardener for his services) is now done for free.
4. **Is it accurate to say that, if there are more stages of production (i.e., more steps between the production of raw materials and the production of a final product), then GDP will be higher?**
  - This statement is inaccurate. GDP is the market value of all *final* goods and services produced for the market during a given time period. As long as the intermediate steps do not increase the final price of the product, GDP will not change.

- Another way to answer this question is to say: GDP can be calculated by adding the value added at each stage of production. If there are more stages of production, then each stage adds a smaller amount to the final product price. As long as the sum of all the stages' value-added is the same, GDP remains unchanged.
- 5. Many Turkish citizens work in the EU and send a portion of their paychecks back home each month. Assuming that Turkey is a net exporter of such labor, should Turkey's GNP be less than, equal to, or greater than its GDP?**
- Turkey's GNP should be greater than its GDP because Turkish-owned resources produce more worldwide than Turkish and foreign-owned resources in Turkey.
- 6. Is it true that GDP is equal to GNP plus income from foreign sources minus income paid to foreigners? Explain.**
- This statement is not true.  $GNP = GDP + \text{Net foreign income}$ .
- 7. If GDP is the market value of all final goods and services, then why are wages included in GDP? Isn't it double counting to include both wages and product prices?**
- GDP is the market value of all final goods and services produced per period. Therefore, GDP can be calculated by multiplying quantity of each product produced per period by its price and adding together the resulting values. In short, GDP equals the sum of  $P_i \times Q_i$ , where  $P_i$  is the price of each product, and  $Q_i$  is the amount that good or service produced each period. Another way to calculate GDP is to sum the resource returns earned from producing goods and services each period. In short, GDP equals wages plus interest plus rent plus profits. Therefore, prices must be used when GDP is calculated using the first method, and labor's wages (plus the cost of other resources) must be used when calculating GDP with the second (i.e., income) approach. The key is not to mix the two approaches.
- 8. Is it true that a nation's principal sources of demand/expenditures *must be* closely related to the components of income, or can they diverge substantially? Explain.**
- Demand and income are closely related because GDP equals wages plus interest plus rent plus profits, which are the principal sources of income. It also equals personal consumption plus gross private domestic investment plus government spending plus net exports, which are the principal sources of demand.

9. After each of the following items, indicate whether it is included in U.S. GDP as personal consumption (C), gross private domestic investment (I), government spending (G), net exports (NE), or not included (X). After each entry, give a brief explanation why you chose your answer.

- a. Foreign aid \_\_\_\_\_X\_\_\_\_\_  
(No good or service produced; purely financial transaction)
- b. Government welfare payments \_\_\_\_\_X\_\_\_\_\_  
(No good or service produced; purely financial transaction)
- c. Razors produced this year but unsold \_\_\_\_\_I\_\_\_\_\_  
(Increase in business inventories)
- d. The construction of a new home \_\_\_\_\_I\_\_\_\_\_  
(New homes are part of gross private domestic investment.)
- e. IBM shares issued this year \_\_\_\_\_X\_\_\_\_\_  
(No good or service produced; purely financial transaction)
- f. Colgate shares issued last year and bought this year  
\_\_\_\_\_X\_\_\_\_\_  
(No good or service produced; purely financial transaction)
- g. Stealth bomber research by the government  
\_\_\_\_\_G\_\_\_\_\_  
(Government expenditures for services)
- h. Apples used in Mrs. Smith's Apple Pies  
\_\_\_\_\_X\_\_\_\_\_  
(Intermediate goods; GDP includes final goods and services.)
- i. Vitamins sold this year but produced last year  
\_\_\_\_\_X\_\_\_\_\_  
(GDP includes final goods and services produced this period.)
- j. GM trucks sold to Mexico \_\_\_\_\_NE\_\_\_\_\_  
(Export)

**10. Which of the following economic variables are stock variables, and which are flow variables?**

**a. GDP, GNP, saving, savings, wealth, investment, capital, money supply, exports, imports, government spending, consumption, income, earnings, assets, and liabilities**

- *Stock:* Savings, wealth, capital, money supply, assets, and liabilities
- *Flow:* GDP, GNP, saving, investment, exports, imports, government spending, consumption, income, earnings

**11. Is macroeconomic equilibrium good or bad for a nation, or does it depend?**

- It depends. Macroeconomic equilibrium occurs when the desired aggregate quantity supplied equals desired aggregate quantity demanded. In the short run, this could occur when planned expenditures are high and unemployment is low, or it could occur when planned expenditures are low and unemployment is high. Therefore, from an unemployment perspective, equilibrium may be good *or* bad for a nation. It depends on where the forces of supply and demand meet.

**12. Between 2000 and 2012, foreign direct investments in China were far greater than the direct investments that China made in other countries. Explain whether these flows caused China's GDP to be greater than, less than, or equal to its GNP.**

- All others factors remaining the same, these flows would have caused China's GDP to exceed its GNP because foreign-owned resources in China produced more than Chinese-owned resources abroad.

**13. Explain two ways to define macroeconomic equilibrium.**

- Method 1: Desired/expected/anticipated aggregate quantity supplied = Desired/expected/anticipated aggregate quantity demanded
  - This is the same as saying: Desired/expected/anticipated income (GDP) = Desired/expected/anticipated  $C + I + G + NE$ .
- Method 2: Desired/expected/anticipated leakages = Desired/expected/anticipated injections.
  - This is the same as saying: Desired/expected/anticipated  $(S + T + IM) = \text{Desired/expected/anticipated } (I + G + EX)$ .

**14. Suppose gross private domestic investment equals \$100 billion, government spending equals \$250 billion, *net* exports equal -\$60 billion, saving equals \$70 billion, and government taxes equal \$230 billion. Is it true that there is macroeconomic disequilibrium, and the forces of supply and demand are causing business inventories to fall, inflation to rise, the government's budget deficit to fall, and net exports to rise?**

- In equilibrium, planned  $(S + T + IM)$  equals planned  $(I + G + EX)$ . Therefore, in equilibrium, planned  $(S + T)$  equals planned  $(I + G + NE)$ . From the information given, planned  $(S + T)$  equals \$300 million (i.e., \$70 million + \$230 million), and planned  $(I + G + NE)$  equals \$290 million (i.e., \$100 million + \$250 million - \$60 million). Therefore, there is disequilibrium. Because desired leakages (\$300 million) exceed desired injections (\$290 million), the planned amount supplied exceeds the planned amount demanded, causing inventories to rise, inflation to fall, and net exports to rise (i.e., because imports will fall due to the decrease in income).

**15. Explain whether you agree or disagree with each italicized part of the following statement: If South Africa's gross private domestic investment plus government spending plus *net* exports is less than saving plus government taxes, then *GDP must be rising*, and *planned business inventories must be falling*.**

- In equilibrium, planned  $(S + T + IM)$  equals planned  $(I + G + EX)$ .
- South Africa's planned injections  $(I + G + NE)$  are less than planned leakages  $(S + T)$ , causing GDP to *fall* and *total* inventories to rise. Part or all of the increased inventories will be unplanned. Therefore, in the next period, business will cut production in anticipation of the lower demand and in an effort to clear the unwanted inventories. Planned business inventories should fall.

**16. What are the problems with GNP and GDP as measures of economic health?**

They

- exclude nonmarket transactions,
- exclude black market and underground transactions,
- ignore quality improvements,
- do not account for increased leisure time and other factors that improve the quality of life, and
- count harmful and dangerous goods and services the same as useful output.

## Discussion Questions

**17. When a country has a net export surplus, what is it gaining, and what is it giving up? Explain.**

- A country with an export surplus gives up goods and services to foreign nations and gains net inflows of foreign investments (often financial investments). We will see in later chapters that a net exporting nation (e.g., China) might also be gaining international reserves, such as foreign exchange and gold.

**18. How do improvements in product quality affect GDP? Explain.**

- Quality improvements do not affect GDP unless they lead to higher prices and/or greater quantities sold.

**19. “Macroeconomics tells us that, if the government does not balance its budget, and simultaneously the nation does not balance its exports and imports, then that nation cannot be in short-term macroeconomic equilibrium.” Comment on the validity of this statement.**

- In equilibrium, planned leakages ( $S + T + IM$ ) equal planned injections ( $I + G + EX$ ), which means planned  $[(S - I) + (T - G) + (EX - IM)]$  must equal zero in order to have equilibrium. If the government does not balance the budget (planned  $G \neq T$ ) and net exports are not zero (i.e., planned  $EX \neq IM$ ), there still can be equilibrium if planned net saving (i.e., planned  $S - I$ ) makes up the difference.

**20. What are “net exports”? In macroeconomics, why does a nation’s demand include net exports and not just “exports”?**

- Net exports equal the value of exports minus the value of imports. Imports are subtracted from exports because they reflect the domestic demand for *foreign* products. GDP is the *domestic* production of final goods and services.
- In terms of the circular flow diagram, it is clear that net exports (instead of just exports) should be used because purchases of foreign products do not reduce the mountain of goods and services produced domestically each period. Therefore, imports must be netted from spending to determine how many *domestically produced* final goods and services are purchased.