

Chapter 2: Macroeconomic Data (ANSWER KEY)

Three Central Measures

Gross Domestic Product (GDP)

“GDP is the total market value of all final goods and services produced within a country in a given period of time” (usually quarterly or yearly)

How to Calculate GDP

Definition	$\sum_{\text{goods}} p_i q_i$ (i^{th} good)
Product Approach	$\sum(\text{Market Value of Final Goods/Services})$
Expenditure Approach	$\sum(\text{Expenditure on Final Goods/Services})$
Income Approach	$\sum(\text{Factor Payments by Firms}) = \sum(\text{Factor Income})$
Value Added Approach	$\sum(\text{Value Added by Firms})$

Included: final goods, change in inventories, imputed rent on owned real estate

Excluded: used goods, sales out of inventories, intermediate goods, underground econ.

NGDP = weight current-year quantities by current-year prices

RGDP = weight current-year quantities by base-year prices

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

$$Y = C + I + G + NX = C + I + G + (X - M) \quad (\text{national income accounting identity})$$

Inflation Rate (π)

$$\text{CPI} = \frac{\text{Current Market Basket Expenditure}}{\text{Base Year Market Basket Expenditure}}$$

$$\pi \approx \% \Delta \text{CPI} \quad \text{or} \quad \pi \approx \% \Delta \text{GDP Deflator}$$

Sources of bias: substitution, introduction of new goods, unobserved changes in quality

Unemployment Rate (UR)

$$\text{LF} = E + U$$

$$\text{UR} = \frac{U}{\text{LF}}(100)$$

$$\text{LFPR} = \frac{\text{LF}}{\text{Adult Population}}(100)$$

Not in LF: student, household producer, retiree, discouraged worker, prisoner, self-employed

Circular Flow Diagram

Economic agents: firms and households

Two markets: goods market, factor market

National Income Accounting

$$\text{GNP} = \text{GDP} + \text{NFP}$$

$$\text{NNP} = \text{GNP} - \text{Depreciation}$$

$$\begin{aligned} \text{NI} = & \text{Employee Compensation} + \text{Proprietors' Income} + \text{Rental Income} + \text{Corporate Profits} \\ & + \text{Net Interest} + \text{Indirect Business Taxes} \end{aligned}$$

$$\begin{aligned} \text{PI} = & \text{NI} - \text{IBT} - \text{Corp. Profits} - \text{Social Insurance Contributions} - \text{Net Interest} + \text{Dividends} \\ & + \text{TR} + \text{Personal Interest Income} \end{aligned}$$

$$\text{DPI} = \text{PI} - \text{Personal Tax/Nontax Payments}$$

Questions

1) Does the base year matter when computing RGDP? Can you pick the wrong base year?

RGDP is sensitive to the specification of the base year because base year prices determine the relative weights across all goods in the economy; it is possible to choose a misleading base year. For example, let's use the peak of the housing bubble as the base year when calculating RGDP. A bubble is defined as a prolonged period when the price of an asset, in this case housing, is above its "fundamental" or actual value. In other words, housing prices were bid up above their fair value relative to how much it costs to rent an apartment. Using 2006 as the base year, residential housing construction and imputed rent on owned houses are heavily weighted in the RGDP measure. Consequently, RGDP is biased towards the construction of new houses, which will have an undue impact on both NGDP and RGDP.

2) Where did the "GDP Deflator" get its name?

The GDP Deflator translates from NGDP to RGDP, effectively "deflating" the nominal measure by removing the inflationary impact of price increases relative to the base year of RGDP.

3) Define the terms "Laspeyres index" and "Paasche index". Provide examples.

Laspeyres index: the market basket (quantities) are fixed when computing the price index, as in the CPI.

Paasche index: current year quantities are used, so the market basket is variable, as in the GDP Deflator.

4) Is it possible that %ΔCPI and %ΔGDP Deflator disagree? Why or why not?

Yes; disagreement is possible as the CPI and GDP Deflator are two distinct measures of the price level. The CPI only accounts for consumer goods, and its market basket is fixed over time; therefore, we expect that the CPI overstates inflation due to substitution bias. The GDP Deflator uses current year quantities and accounts for price changes across all final goods/services in the economy; we expect that the GDP Deflator understates inflation since price increases will be associated with lower quantities (for example, the US orange crop fails; price is driven up substantially, but no oranges are produced domestically).

5) How does the US Bureau of Labor Statistics define “unemployed”? Is this a good definition?

An individual is counted as “unemployed” if s/he cannot find work and has searched for employment within the past four weeks. Discouraged workers, who no longer actively look for work but simultaneously cannot find a job, are not counted in the labor force; this implies that the UR is biased downwards. Further arguments can be made on the basis of groups excluded from the labor force that the reported UR underestimates the “true” UR in terms of getting at labor force utilization.

6) What were the main trends in US LFPR over the past fifty years? What factors caused this change?

Male LFPR is approximately flat to slightly downward, while female participation in the labor force has increased substantially. LFPR has been converging across males and females to 60-70% of the adult population. Causes include changing social norms/gender roles, technological improvement, and anti-discrimination legislation. Males spend additional time in the educational system and are more likely to drop out of the labor force to act as primary caretakers, when compared to their cohort fifty years ago.

7) Using the income approach, what is the largest share of US GDP?

Employee compensation, as in wages and fringe benefits that accrue to labor as a factor of production.

8) Japan has an unemployment rate of 10%, with 90 million employed people. When the unemployment rate was calculated, the economy had 5 million discouraged workers. A new jobs program instituted by the government drives all of the discouraged workers into the labor force, and 80% of them find jobs.

What happens to the unemployment rate? In your opinion, was the jobs program successful?

$$UR_{\text{old}} = \frac{10}{100} = 10\%$$

$$UR_{\text{new}} = \frac{11}{105} = 10.5\%$$

The unemployment rate has increased. However, due to increased labor force participation and job creation, I'd say that the jobs program was successful.

9) Complete the following table.

Trillions of \$USD	2007, Q1
Y	13.448
C	9.7
Durable goods	1.1
Nondurable goods	2.8
Services	5.8
I	2.098
Fixed investment	2.1
Nonresidential	1.4
Residential	0.7
Change in private inventories	-0.002
G	2.65
Federal	0.95
State and local	1.7
NX	-1
Exports	1.6
Imports	2.6

10) Which of the following are counted in I: stock trade, issue of stock, purchase of a pre-existing asset. *Stock trading is the exchange of pre-existing financial assets, and does not involve the production of new goods or services. The same argument can be made for the purchase of a pre-existing asset, such as a house (more generally, any used good). Only the corporate issue of stock is accounted for in the investment component of GDP, provided that the stock issue is used for the purchase of physical capital (the construction of a new factory, for example) and not for the purchase of pre-existing assets.*