Homework 1

What counts in GDP?

For each transaction, state (i) whether it is included in this year's US GDP and (ii) if so, which component it enters (C, I, G, X, IM, or inventory investment). Give a one-sentence reason.

(a) A household buys a newly built condominium.

(b) A household buys a 25-year-old house.

(c) A firm buys \$5 million of newly issued corporate bonds.

(d) A firm buys three new delivery trucks.

(e) The federal government sends out Social Security payments.

(f) The federal government pays the salaries of air traffic controllers.

(g) A US consumer buys a Korean television.

(h) A firm produces 800 units this year and sells 740 of them.

Value added

An iron-ore mine uses no purchased inputs and sells \$40 of ore to a steel mill. The steel mill sells \$110 of steel to a bicycle manufacturer. The bicycle manufacturer sells \$250 of bicycles to consumers.

(a) Compute value added at each of the three stages.

(b) What is this economy's GDP?

(c) In one or two sentences, why is GDP not \$400?

Nominal and real GDP

An economy produces only coffee and laptops.

	Year 1 quantity	Year 1 price	Year 2 quantity	Year 2 price
Coffee (kg)	500	\$4	550	\$5
Laptops	30	\$800	35	\$850

(a) Compute nominal GDP in Year 1 and in Year 2.

(b) Compute the growth rate of nominal GDP.

(c) Using Year 1 as the base year, compute real GDP in Year 2, and the growth rate of real GDP.

(d) Compute the GDP deflator in Year 1 and Year 2, and the inflation rate.

(e) **Proposition 7** in the math appendix says the growth rate of nominal GDP is approximately the inflation rate plus the growth rate of real GDP. Check this with your numbers. How close is it, and why is it not exact?

(f) Now recompute the growth rate of real GDP using **Year 2** as the base year. Is it noticeably different from your answer in (c)?

(g) In class we did an example where switching the base year changed the answer a great deal. Here it barely changes it. In two or three sentences, what is different about this economy?

Two measures of inflation

(a) State one difference between the GDP deflator and the CPI in terms of *which goods* each covers.

(b) The world price of oil doubles. The US imports most of its oil. State what happens to the

CPI and to the GDP deflator, and explain the difference in one or two sentences.

(c) Social Security payments are indexed to the CPI. If the CPI overstates the true rise in the cost of living, who gains and who loses? One or two sentences.

6. The expenditure identity

For a given economy: $C = 1400$, $I = 320$, $G = 380$, $X = 260$, $IM = 310$.

(a) Compute net exports.

(b) Compute GDP.

(c) Government spending rises by 60 and imports rise by 25, with everything else unchanged. Compute the new level of GDP.

(d) A politician argues: "Imports are subtracted in the formula, so cutting imports would raise GDP." Identify the error in two or three sentences.

Unemployment

An economy has a population aged 16 and over of 260 million. Of these, 155 million are employed and 9 million are unemployed.

(a) Compute the labor force.

(b) Compute the unemployment rate.

(c) Compute the labor force participation rate.

(d) Two million of the unemployed now stop searching for work because they believe no jobs are available. Recompute the unemployment rate and the participation rate.

(e) Did the labor market get better or worse? Did the headline unemployment rate get better or worse? Two sentences on what this implies about reading unemployment data.

Short answer

Answer each in two or three sentences.

(a) Simon Kuznets helped build the national income accounts and then warned that "the welfare of a nation can scarcely be inferred from a measure of national income." Is GDP a badly designed statistic? Explain.

(b) Blanchard's Appendix 1 notes that a newly built house counts as investment, while a newly built car counts as consumption, even though both are durable. Is this an inconsistency? Explain.