ECON 010 - Principles of Macroeconomics
Drake University, Spring 2022
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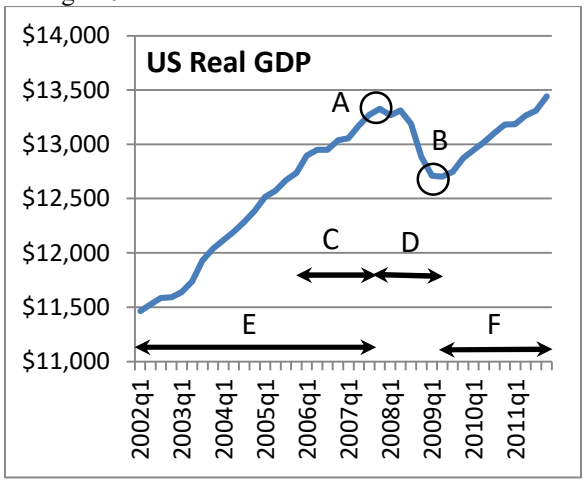
EXAMINATION 2 VERSION B
"National Income and Product Accounts"
March 8, 2022

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 100.

I. Multiple choice: Circle the one best answer to each question. Please use the margins for scratch work. [1 pt each, 15 pts total]

(1) Over time, a graph of real GDP shows
a. short-run fluctuations.
b. long-run growth.
c. neither (a) nor (b).
d. both (a) and (b).

The next two questions refer to the following graph, which shows a U.S. business cycle from 2002 through 2012.



(2) A *recession* is marked in the graph above by the letter
a. A.
b. B.
c. C.
d. D.
e. E.
f. F.

(3) A *recovery* is marked in the graph above by the letter
a. A.
b. B.
c. C.
d. D.
e. E.
f. F.

(4) Potential GDP does not depend on
a. total hours of all workers
b. total economic capital available.
c. consumer confidence.
d. technology or know-how available.

(5) In the early 1930s, the price level in the United States dropped by about 20%. This is an example of
a. reflation.
b. hyperinflation.
c. disinflation.
d. deflation.

(6) Suppose the interest rate on loans is 2 percent and the inflation rate is expected to be 5 percent. Then the real rate of interest is
a. negative 7 percent.
b. negative 5 percent.
c. negative 3 percent.
d. negative 2 percent.
e. 2 percent.
f. 3 percent.
g. 5 percent.
h. 7 percent.

(7) Taxes and government spending are components of
a. monetary policy.
b. international trade policy.
c. fiscal policy.
d. foreign policy.

(8) Consumption spending in the national accounts does *not* include
a. spending on internet access.
b. spending on visits to doctors and dentists.
c. purchases of major appliances like dishwashers.
d. purchases of necessities like food and clothing.
e. purchases of new houses.

(9) Investment spending in the national accounts does *not* include purchases of
a. shares of stock in corporations.
b. new apartment buildings.
c. business software.
d. trucks and heavy equipment.
e. new factories.

(10) Government purchases in the national accounts do *not* include
a. spending on highway construction.
b. welfare payments to low-income families.
c. salaries of senators and representatives.
d. spending on military aircraft.
e. spending for environmental preservation.

(11) The largest share of national income is
a. dividends.
b. rental income.
c. labor income.
d. interest income.

(12) BMW is a German company with operations all over the world. According to the income approach to computing GDP, BMW's profits from its factory in South Carolina should
a. be included in U.S. GDP but not in Germany's GDP.
b. be included in Germany's GDP but not in U.S. GDP.
c. be included in both U.S. GDP and Germany's GDP.
d. not be included in U.S. GDP or Germany's GDP.

(13) When the economy is growing but there is inflation, which grows fastest?
a. Nominal GDP.
b. Real GDP.
c. The price level.
d. All three grow at the same rate.

(14) Who needs to *sell* U.S. dollars in markets for foreign exchange?
a. Companies in the U.S. who export goods to Japan.
b. Companies in the U.S. who import goods from Japan.
c. Both of the above.
d. None of the above.

(15) The ratio of the cost of a typical market basket of goods in Israel to the cost of the same market basket in the United States is called the
a. market exchange rate.
b. purchasing-power parity exchange rate.
c. real interest rate.
d. trade balance.

II. Problems: Insert your answer to each question in the box provided. Please use the margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Spending approach to GDP: 16 pts] Consider each of the following items sold in 2022. Should the item be counted as part of U.S. GDP for 2022—*YES* or *NO*? If *YES*, in which spending component of GDP—consumption (C), investment (I), government purchases (G), or net exports (X)—does it belong? If *NO*, explain why not.

	Part of U.S. GDP for 2022? (YES or NO)	*If YES, then which spending component (C, I, G, or X)? If NO, why not?*
a. A Boeing passenger jet, sold to Japan Air Lines.		
b. A share of Microsoft stock, sold to a person saving for retirement.		
c. A new computer system, sold to a doctor's office.		
d. A 1955 Ford Thunderbird, sold to Bill Gates.		

(2) [Components of GDP: 16 pts] The imaginary country of Concrete Land has just four industries: the Raw Concrete Industry, the Building Construction Industry, the Road Construction Industry, and the Birdbath Industry. There are no other goods and no foreign trade. In a recent year:

- The Birdbath Industry produced and sold $100 billion of birdbaths to consumers.
- The Road Construction Industry produced $20 billion of roads for the government.
- The Building Industry produced and sold $5 billion of buildings (a capital good) to each industry (including itself) for a total of $20 billion in sales.
- The Raw Concrete Industry produced and sold $20 billion to the Birdbath Industry, $5 billion to the Road Construction Industry, and $5 billion of raw concrete to the Building Industry, for a total of $30 billion in sales.

a. Compute the spending components of Concrete Land's GDP.

Consumption (C)	$ billion
Investment (I)	$ billion
Government purchases (G)	$ billion
Total GDP (Y)	$ billion

b. Compute value added by each industry in Concrete Land.

Raw Concrete Industry	$ billion
Building Industry	$ billion
Road Construction Industry	$ billion
Birdbath Industry	$ billion

(3) [Spending approach to GDP: 12 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis in trillions for a recent year. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2020
Personal dividend income	$1.3
Imports	$2.8
National defense purchases	$0.9
State and local purchases	$2.4
Compensation of employees	$11.6
Transfer payments	$4.2
Consumption of durable goods	$1.6
Corporate profits	$2.2
Consumption of nondurable goods	$3.0
Personal interest income	$1.6
Change in inventories	-$0.1
Exports	$2.1
Federal nondefense purchases	$0.6
Depreciation (capital consumption of domestic business)	$2.3
Consumption of services	$9.4
Business fixed investment	$3.7
Residential investment	$0.9

a. Compute consumption (C).	$ trillion
b. Compute gross investment (I).	$ trillion
c. Compute net investment.	$ trillion
d. Compute government purchases (G).	$ trillion
e. Does the U.S. have a trade surplus or a trade deficit ?	
f. Compute net exports (X).	$ trillion

(4) [GDP, saving, GDP per capita: 6 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis in *trillions*. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2016
Population in millions	325
Investment	$3.2
Personal taxes	$2.0
Net exports	-$0.5
Transfers	$2.8
Government purchases	$3.3
Consumption	$12.7

a. Compute GDP.	$ trillion
b. Compute national saving (S).	$ trillion
c. Compute GDP per capita to the nearest dollar.	$

(5) [Stocks v. flows: 8 pts] Are the following quantities stocks or flows? Write "STOCK" or "FLOW" in each box.

a. The number of houses built in Des Moines from January 1, 2010 to June 30, 2010.

b. The amount of investment spending in the U.S. in 2009.

c. The number of houses in Des Moines as of July 1, 2010.

d. The amount of economic capital in the U.S. on January 1, 2010.

(6) [Value added: 2 pts] Suppose a pizza restaurant makes and sells $250,000 of pizzas in a year. Over the same year, it pays its employees $130,000, it leases the restaurant for $20,000, and it purchases $50,000 in ingredients. Compute the value added by the pizza restaurant.

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(7) [GDP and real GDP: 8 pts] In an imaginary country, only two final goods are produced, as shown in the following table. (You can use the boxes at right for scratch work.)

	Food		Clothing			
Year	Price	Quantity	Price	Quantity	2019 prices	2020 prices
2019	$2	25	$5	10		
2020	$2	31	$7	10		

a. Compute the growth rate of *nominal GDP* (also called "current-dollar GDP") from 2019 to 2020. %

b. Compute the growth rate of GDP from 2019 to 2020 *in constant 2019 prices*. %

c. Compute the growth rate of GDP from 2019 to 2020 *in constant 2020 prices*. %

d. Compute the growth rate of *real GDP* from 2019 to 2020, as it would be computed by the U.S. Bureau of Economic Analysis. %

(8) [Nominal GDP, real GDP, and inflation: 7 pts] The following table shows data for Mexico, in trillions of *pesos* the Mexican currency.

Year	Nominal GDP	Real GDP	GDP price index or price deflator (to the nearest tenth)	Rate of inflation (to the nearest tenth of a percentage point)
2011	14.7	15.5		
2012	15.8	16.1		%
2013	16.3	16.3		%

a. [2 pts] Which is the base year for real GDP?

b. [3 pts] Compute the GDP price index for each year, to the nearest tenth, and insert it in the table above. [Hint: The price index should equal 100.0 in the base year.]

c. [2 pts] Compute the rate of inflation for the last two years, to the nearest tenth of a percentage point, and insert in in the table above.

(9) [Using the CPI: 2 pts] Ford Motor Company introduced the Mustang car in 1964 at a price of $2,368. In that year, the CPI was about 31. The CPI is now about 285. Compute the price of 1964 Mustang in today's dollars, to the nearest whole dollar.

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(10) [Using market exchange rate: 2 pts] The exchange rate for Swiss francs is about 0.92 Swiss francs per U.S. dollar. Then a clock that costs 50 Swiss Francs will cost how much in U.S. dollars, to the nearest whole dollar?

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(11) [PPP exchange rate: 2 pts] Suppose a basket of goods bought by a typical consumer that costs 1000 kroner in Sweden would cost 110 US dollars in the United States. What is the purchasing-power-parity exchange rate to the nearest hundredth?

Swedish kroner per US dollar

III. Critical thinking: Write a one-paragraph essay answering **ONE** question below (your choice). [4 pts]

(1) Consider the following data series.
- nominal GDP
- real GDP
- real GDP per capita

Which series usually grows fastest in the long run? Which series usually grows slowest? Why?

(2) Are fluctuations in real GDP *positively* or *negatively* correlated with the unemployment rate? Why?

Circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]