Dr. Barry Haworth
University of Louisville
Department of Economics
Economics 202-03
Spring 2021

Homework #3 (due by 9:00pm on Thursday, March 11)

Please submit your answers to this homework through the Assignment link at Blackboard. **No credit will be given for answers submitted in class or emailed to the professor**, *regardless of the excuse.* This includes unique excuses like the police confiscated my computer right before I was going to submit it, excuses like "I lost my Internet", etc. Please note that all submissions are final, again – regardless of the excuse (which includes "I accidentally hit the submit button"). Note that Blackboard allows you to save your answers, but you must hit the "Save and Submit" button to submit your answers. If you are unfamiliar with Blackboard, then it would be a good idea to visit the class page at Blackboard and check out the homework assignments as they are posted.

Please note that when Blackboard grades homework answers, more specifically – answers to the fill-in-the-blank questions – your answer must match exactly with the answer that Blackboard is looking for. Below, you'll find some instructions on how to properly format these answers. Reading this section is strongly recommended.

Homework Questions 1-3 and 6-8
Formatting matters with your answer to these questions. For this reason, **understand that your answer can be technically correct but graded as wrong because you didn't follow the directions provided below.** Given that formatting is considered part of your answer, a wrongly formatted answer is still a wrong answer.

In that regard, please note the following comments below.
   (a) **On questions #1a, #2, #3 and #6**, please express your answer in terms of dollars, **not** dollars and cents, or a whole number. E.g., an answer of 15.2 should be rounded to the nearest whole number, which would give you an answer of 15 or $15 and <u>not</u> $15.20 or 15.2.
   (b) **On question #1b, #1c and #8,** please express your answer as a whole number (or round to the nearest whole number, e.g. 5 instead of 5.1).
   (c) **On question #7a and 7b**, please express your answer as a decimal and round to the nearest tenth. E.g., an answer like 0.75 or 3/4 should be expressed as 0.8 (<u>not</u> 0.75 or 3/4).

If you have any questions about the comments above, then please ask them before submitting your homework for grading. Once homework is submitted, however, it's too late to make any changes.

1. Assume that the equations below describe the expenditures within a particular macroeconomy and that these equations conform to the assumptions we've made in lecture regarding the fixed price level Aggregate Expenditure model. All values for expenditure and income are dollar amounts, but for simplicity, we've dropped the $ below.

Round your answers in question 1a to the nearest whole number (e.g. 10000 or 10,000 instead of 10,000.1), and answers in 1b and 1c to the nearest whole number (e.g. 5 instead of 5.1).

$C = 0.8(DI) + 4000$	(C = consumption expenditures, DI = disposable income)
$I = 4000$	(I = investment expenditure)
$G = 8000$	(G = government expenditure)
$X = 2600$	(X = spending on exports)
$M = 3600$	(M = spending on imports)
$DI = Y - T$	(Y = real GDP, T = tax revenues)
$T = 5000$	

1a. Find equilibrium GDP
1b. What is the value of this economy's government expenditure multipler?
1c. What is the value of this economy's tax multiplier?

2. Refer to the equations above in Question #1 and answer the following question.

Assume that $Y^* =$ equilibrium GDP and $Yp =$ Potential GDP.
If $Yp - Y^* = 8000$, then government can close this output gap if they change government expenditure (G) by _____

(note: it's strongly recommended that you use the government expenditure multiplier to answer this question. Be sure to round your answer to the nearest whole number and you do not need to include a $ with your answer, but if there's a decrease in expenditure here, be sure to include a negative sign with your answer. E.g., a decrease of $5000 should be written as -5000.

3. Refer to the equations above in Question #1 and answer the following question.

Once again, assume that $Y^* =$ equilibrium GDP and $Yp =$ Potential GDP.
If we continue to assume that $Yp - Y^* = 8000$, then government can close this output gap if they change taxes (T) by _____

(note: it's strongly recommended that you use the tax multiplier to answer this question. Be sure to round your answer to the nearest whole number and you do not need to include a $ with your answer, but if there's a decrease in expenditure here, be sure to include a negative sign with your answer. E.g., a decrease in T of $3000 should be written as -3000.

4. Assume that the equations below describe the expenditures within a particular macroeconomy and that these equations conform to the assumptions we've made in lecture regarding the fixed price level Aggregate Expenditure model. All values for expenditure and income are dollar amounts, but for simplicity, we've dropped the $ below.

$C = 0.8(DI) + 1000$	(C = consumption expenditures, DI = disposable income)
$I = 2000$	(I = investment expenditure)
$G = 1000$	(G = government expenditure)
$X = 1600$	(X = spending on exports)
$M = 1800$	(M = spending on imports)
$DI = Y - T$	(Y = real GDP, T = tax revenues)
$T = 1000$	
$Yp = 12000$	(Yp = Potential GDP)

Given the equations above, we can describe the GDP, government budget and net exports in this economy. Select **three characteristics** from the list below which accurately describe this economy. Note that there is no partial credit on this question. I.e., your answer will either be all correct, or all wrong.

(a) inflationary gap (g) trade deficit
(b) recessionary gap (h) trade surplus
(c) no output gap (i) net exports of zero
(d) government budget surplus
(e) government budget deficit
(f) balanced government budget

5. This question reuses the equations and assumptions of the fixed price level Aggregate Expenditure model from the previous question. Again, note that all values for expenditure and income are dollar amounts, but for simplicity, we've dropped the $ below.

$C = 0.75(DI) + 1000$	(C = consumption expenditures, DI = disposable income)
$I = 5000$	(I = investment expenditure)
$G = 3000$	(G = government expenditure)
$X = 2000$	(X = spending on exports)
$M = 1800$	(M = spending on imports)
$DI = Y - T$	(Y = real GDP, T = tax revenues)
$T = 3000$	

Which of the following increases equilibrium real GDP by $2000:
Note: it's strongly recommended that you use the expenditure multipliers from class (the government expenditure multiplier and tax multiplier) to answer this question.
a. increase in government expenditure (G) by $2000 and pay for it by raising taxes (T) by $2000
b. increase government expenditure (G) by $2000 and pay for it by borrowing money
c. increase taxes (T) by $2000
d. decrease taxes (T) by $2000
e. all of the above
f. none of the above

6. Assume that the equations below describe the expenditures within Country X and that these equations conform to the assumptions we've made in lecture regarding the fixed price level Aggregate Expenditure model. All values for expenditure and income are dollar amounts, but for simplicity, we've dropped the $ below.

C = 0.8(DI) + 4000   (C = consumption expenditures, DI = disposable income)
I = 4000   (I = investment expenditure)
G = 8000   (G = government expenditure)
X = 2600   (X = spending on exports)
M = 3600   (M = spending on imports)
DI = Y − T   (Y = real GDP, T = tax revenues)
T = 5000

a. If government expenditure (G) increase by 1000, then equilibrium GDP

changes by _____

Note: round your answer to the nearest whole number (e.g. 5000 instead of 5000.1).

b. If taxes (T) decrease by 1000, then equilibrium GDP changes by _____

Note: round your answer to the nearest whole number (e.g. 5000 instead of 5000.1).

7. Consider the following consumption function below, where C = Consumption Expenditure and DI = Disposable Income.

C = 0.75(DI) + 1200   DI = Y - T (where Y = real GDP and T = Taxes)

a. If we assume that Y = 10,000 and T = 2000, then the value of the average propensity to

consume (APC) is _____

(note: express your answer as a decimal, rounded to the nearest tenth)

b. If we assume that Y = 10,000 and T = 2000, then the value of the average propensity to

save (APS) is _____

(note: express your answer as a decimal, rounded to the nearest tenth)

8. Consider the table below, where each row illustrates a macroeconomic relationship between consumption, savings and disposable income

Assume that within this macroeconomy, the marginal propensity to consume (MPC) is constant at a value of 0.8 (i.e. **MPC = 0.8**). This allows you to predict how changes in consumption and disposable income should relate between the rows.

Row	C	S	DI
A	200	200	
B		240	600
C	840		
D			1700

Note that C = Consumption, S = Savings, DI = Disposable Income

Given the information in the table above and the understanding that MPC = 0.8, please answer the following questions below.

- What is the amount of Disposable Income in Row A?
- What is the amount of Consumption in Row B?
- What is the amount of Savings in Row C?
- What is the amount of Disposable Income in Row C?
- What is the amount of Consumption in Row D?
- What is the amount of Savings in Row D?

Note: round answers to the nearest whole number (e.g. as already displayed in the table)

9. In the folder Homework #3 material within "Course Documents" at Blackboard, you'll find an article entitled *"When the US paid off the entire National Debt"*. Read this article and answer the question below.

When President Andrew Jackson led the US to pay off the National Debt, what happened after that:

a. the country headed into a massive depression that would last 6 years
b. government surplus money was used to purchase large amounts of government land
c. distributing government surplus money to states allowed state banks to discontinue their printing of money
d. all of the above
e. none of the above

10. The website www.usgovernmentspending.com reports the Federal Debt to GDP ratio from 1792 through the current year (with estimates for the next several years to come).

This historical series of Debt-GDP ratios is included in a file entitled *DebtGDPratios.pdf* and posted within the folder Homework #3 material in "Course Documents" at Blackboard. The Debt-GDP ratio is located in the far right column (not including the column that reports whether the ratio is actual "a" or estimated "e"). Match the value you find in the table to the closest value on the list of Debt-GDP ratios below. Note that you'll use the same list for each question.

Debt-GDP ratio

a. What is the smallest value for the Debt-GDP ratio
between 1792 and 2019?

b. What is the largest value for the Debt-GDP ratio
between 1792 and 2019?

A.   0.00%
B.   0.02%
C.   0.69%
D.   32.27%
E.   59.92%
F.   90.41%
G.   95.14%
H. 106.85%
I. 119.12%
J. 124.56%
K. none of the above

Questions 11-12 (multiple choice)
This remaining questions in this homework utilize data from the Bureau of Economic Analysis website (http://www.bea.gov), retrieved from a table for nominal Gross Domestic Product. You'll need to access that data file, entitled *NIPAtables-HW3.pdf*. The file is posted within the folder Homework #3 material in "Course Documents" at Blackboard. In order to answer Questions 11-12, you will need to (first) calculate various percentages from the data file associated with this question and record your answers in the table provided below.

Instructions for calculating values within Table 1 (next page)

The data file reports the amount of GDP and various expenditure categories of GDP from 1960, 2019, and 2020. You will be working with the data in the 1960 and 2020 columns. The middle column for 2019 is only there as a reference so that you can see how dramatically spending changed between 2019 (pre-Covid) and 2020 (Covid).

To answer these two questions, you will need to calculate the different percentages requested. The column called "Measure" tells you what to calculate, and the column called "How to calculate" tells you how to construct your calculation, with the final 2 columns on the table below being where you place your answers or calculation results.

Calculations in rows 1-3 (Table 1)
Note that consumption expenditures are made up of three different types of spending: durable goods, nondurable goods and services. Row 1 on the table asks you to calculate the percentage of durable goods in consumption. To perform that calculation for 1960, you divide durable goods expenditure in 1960 by consumption expenditure in 1960. The data file contains this information in line 4 (durable goods expenditure) and line 2 (consumption expenditure), so you divide the amount in line 4 for 1960 by the amount in line 2 for 1960, and record your answer in the 1960 box for row 1 of Table 1. You would do the same for 2020, using the 2020 values (final column on the table from page 1 of this handout) from line 4 and line 2. You repeat this process for the other two types of consumption spending.

Calculations in rows 4-6 (Table 1)
GDP is the sum of expenditure on consumption, investment, government spending and net exports. The calculations in rows 4-6 are designed to see how significant each type of expenditure is with determining GDP. Row 4 on the table asks you to calculate the percentage of overall consumption expenditure in GDP. To perform that calculation for 1960, you divide consumption expenditure in 1960 by GDP in 1960. The data file contains this information in line 2 (consumption expenditure) and line 1 (GDP), so you divide the amount in line 2 for 1960 by the amount in line 1 for 1960, and record your answer in the 1960 box for row 4 of Table 1. You would do the same for 2020, using the 2020 values (final column on the table from page 1 of this handout) from line 2 and line 1. You repeat this process for rows 5-6, using the appropriate lines from the data file.

Use your calculations in the table to answer the Questions 11-12 below.

Table 1

Row	Measure	How to calculate	1960 (%)	2020 (%)
1	% Durable Goods in Consumption	$\left(\dfrac{line\ 4}{line\ 2}\right) \times 100$		
2	% Nondurable Goods in Consumption	$\left(\dfrac{line\ 5}{line\ 2}\right) \times 100$		
3	% Services in Consumption	$\left(\dfrac{line\ 6}{line\ 2}\right) \times 100$		
4	% Overall Consumption Expenditure in GDP	$\left(\dfrac{line\ 2}{line\ 1}\right) \times 100$		
5	% Overall Investment Expenditure in GDP	$\left(\dfrac{line\ 7}{line\ 1}\right) \times 100$		
6	% Overall Government Expenditure in GDP	$\left(\dfrac{line\ 22}{line\ 1}\right) \times 100$		

Multiple Choice Questions 11-12

11. In both 1960 and 2020, which component of consumption is the largest?
a. Durable Goods (Row 1)
b. Nondurable Goods (Row 2)
c. Services (Row 3)
d. all components of consumption are about the same (i.e. within 1% of one another)

12. In both 1960 and 2020, which component of GDP is the largest?
a. Consumption (Row 4)
b. Investment (Row 5)
c. Government Spending (Row 6)
d. all components of GDP are about the same (i.e. within 1% of one another)