

Principles of Economics
Macroeconomics

Problem Set 4: Answers

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Spring 2014

Due at start of lecture, April 2, 2014

A. Macroeconomics Around Euphoric State: Recession

- Suppose that in the area around Euphoric State University in the state of Euphoria there are 1500 workers: 500 potters, 500 baristas, and 500 yoga instructors. On January 1, every worker has \$4,000 in cash on hand. produces \$4,000 worth of their goods each month, which they then send off to the consignment store which sells their goods for them and pays them (in cash) at the very end of the month. Every worker gradually spends their cash on hand down steadily during the month so that they run out of cash just as the month ends--at which point in time the consignment shop pays each of them \$4000.
- Bearing in mind that everyone's income is someone else's expenditure, suppose that all 1500 workers decide on February 1 that they need to be safer in their financial transactions--that they need to start the month of March not with \$4000 in cash but with \$4500 in cash...

A. Macroeconomics Around Euphoric State: Recession II

- How much do each of the 1500 workers plan to spend in February?
 - **\$3500**
- How much cash on hand do each of the 1500 workers have on February 28?
 - **\$500**
- How large are the payments that each worker receives on March 1, and how much cash does each of the workers have on hand at the end of March 1?
 - **\$3500, and \$4000, respectively**

A. Macroeconomics Around Euphoric State: Recession III

- How much do you think each of the 1500 workers will plan to spend in March?
 - **My guess is \$3000**
- How large do you think the payments that each worker receives on April 1 will be?
 - **My guess is \$3000**

B. Macroeconomics Around Euphoric State: Expansion

- Suppose that in the area around Euphoric State University in the state of Euphoria there are 1500 workers: 500 potters, 500 baristas, and 500 yoga instructors. On January 1, every worker has \$4,000 in cash on hand. produces \$4,000 worth of their goods each month, which they then send off to the consignment store which sells their goods for them and pays them (in cash) at the very end of the month. Every worker gradually spends their cash on hand down steadily during the month so that they run out of cash just as the month ends--at which point in time the consignment shop pays each of them \$4000.
- Bearing in mind that everyone's income is someone else's expenditure, suppose that the consignment shop announces on February 1 that it won't require cash for purchases in the last quarter of the month--that people can settle up by having their last quarter of the month's purchases deducted from their start-of-the-month payment

B. Macroeconomics Around Euphoric State: Expansion II

- How much do you think each of the 1500 workers will plan to spend in February?
 - **My guess: \$5,333**
- How large do you think will be the payments that each worker receives on March 1, and how much cash does each of the workers have on hand at the end of March 1?
 - **My guesses: \$5,333, and \$4,000, respectively**
- How much do you think each of the 1500 workers will plan to spend in March?
 - **My guess: \$5,333**

C. Macroeconomics in the U.S. Economy: Expansion

- Consider an economy like the U.S., only with all planned spending categories in round numbers: C--consumption spending on domestically-produced goods--\$9 trillion/year; I--business investment spending--\$2 trillion/year; G--government purchases--\$2 trillion/year ;X—exports of goods and services--\$2 trillion/year

C. Macroeconomics in the U.S. Economy: Expansion II

- What is total planned spending E in this economy this year?
 - **\$15T this year**
- If the economy is in equilibrium--if people are actually able to buy all the currently-produced goods and services they plan to--what will total income Y be in the economy this year?
 - **\$15T this year**
- Suppose that less is produced than was planned to spend. What will happen to inventories?
 - **Inventories will fall**
- How are employers likely to change the amount that they will produce next year in response to what happened to inventories this year?
 - **They are likely to hire people and ramp up production**

D. Macroeconomics in the U.S. Economy: Expansion and Recession

- Consider an economy like the U.S., only with all planned spending categories in round numbers: C--consumption spending on domestically-produced goods--\$9 trillion/year; I--business investment spending--\$2 trillion/year; G--government purchases--\$2 trillion/year ;X—exports of goods and services--\$2 trillion/year

D. Macroeconomics in the U.S. Economy: Expansion and Recession II

- What is total planned spending E in this economy this year?
 - **\$15T**
- Suppose irrational exuberance pushes business investment spending up to \$3 trillion/year this year as businesses decide they can spend down their cash reserves. What do you expect to happen?
 - **Spending will go up to \$16T/year, inventories will fall, firms will hire, and output and production will grow within a couple of quarters**
- Suppose irrational pessimism pushes business investment spending down to \$1 trillion/year this year as businesses decide they need to cut back and build up their cash reserves. What do you expect to happen?
 - **Spending will go down to \$14T/year, inventories will rise, firms will lay workers off, and output and production will go down within a couple of quarters**

E. Macroeconomics in the U.S. Economy: Consumption Function

- Consider an economy like the U.S., only with all planned spending categories in round numbers: I—business investment spending—determined by business executives' "animal spirits"—\$3 trillion/year ;G—government purchases—determined by politics—\$3 trillion/year ;T—net taxes and transfers—determined by politics—\$3 trillion a year ;X—exports of goods and services—determined by foreigners—\$3 trillion/year ;C—consumption spending on domestically-produced commodities—determined by households according to the equation: $C = c_0 + c_y(Y - T)$

E. Macroeconomics in the U.S. Economy: Consumption Function II

- Suppose $c_0 = 0$ and $c_y = 0.6$. What is total planned expenditure $E = C + I + G + X$? Is it equal to planned income? What are people planning to do with respect to their holdings of cash?
 - **It depends on what Y is:**
 - **If you want to assume that $Y = E$, and the economy is in equilibrium, the multiplier is 2.5 and $E = \$18T/\text{year}$.**
 - **If not, then if $Y < \$18T$, then $E > Y$ and people are trying to spend down their cash; if $Y > \$18T$, then $E < Y$ and people are trying to build up their cash holdings**
 - **The point: because Y is on both sides of the reduced form $Y = E = C + I + G + X$, you have a positive-feedback loop going...**

E. Macroeconomics in the U.S.

Economy: Consumption Function III

- Suppose $c_0 = \$3$ trillion and $c_y = 0.4$. What is total planned expenditure $E = C + I + G + X$? Is it equal to planned income? What are people planning to do with respect to their holdings of cash?
 - **It depends on what Y is:**
 - **If you want to assume that the economy is in equilibrium and that $Y = E$, the multiplier is 1.667 and $E = \$18T/\text{year}$.**
 - **If $Y < \$18T$, $E > Y$ and people are planning to draw down their cash holdings.**
 - **If $Y > \$18T$, $E < Y$ and people are planning to increase their cash holdings**
 - **The point, once again: because Y is on both sides of the reduced form $Y = E = C + I + G + X$, you have a positive-feedback loop going...**

E. Macroeconomics in the U.S. Economy: Consumption Function IV

- Suppose $c_0 = \$3$ trillion and $c_y = 0.6$. What is total planned expenditure $E = C + I + G + X$? Is it equal to planned income? What are people planning to do with respect to their holdings of cash?
 - **Once again, it depends on what Y is: if the economy is in equilibrium so $Y = E$, the multiplier is 2.5 and $E = \$25.5T/\text{year}$.**
 - **If not... If $Y < \$25.5T$, $E > Y$ and people are planning to spend down their cash holdings; if $Y > \$25.5T$, $E < Y$ and people are planning to build up their cash holdings**
- Suppose $c_0 = \$0$ trillion and $c_y = 0.4$. What is total planned expenditure $E = C + I + G + X$? Is it equal to planned income? What are people planning to do with respect to their holdings of cash?
 - **Once again, it depends on what Y is: if the economy is in equilibrium so $Y = E$, the multiplier is 1.667 and $E = \$13T/\text{year}$.**
 - **If not... If $Y < \$13T$, $E > Y$ and people are planning to draw down their cash holdings; if $Y > \$13T$, $E < Y$ and people are planning to increase their cash holdings**

F. Macroeconomics in the U.S. Economy: Equilibrium

- Consider an economy like the U.S., only with all planned spending categories in round numbers: I—business investment spending—determined by business executives' "animal spirits"—\$3 trillion/year ;G—government purchases—determined by politics—\$3 trillion/year ;T—net taxes and transfers—determined by politics—\$3 trillion a year ;X—exports of goods and services—determined by foreigners—\$3 trillion/year ;C—consumption spending on domestically-produced commodities—determined by households according to the equation: $C = c_0 + c_y(Y - T)$

F. Macroeconomics in the U.S. Economy: Equilibrium II

- Suppose $c_0 = 0$ and $c_y = 0.6$ and suppose that the economy is in equilibrium with $E = Y$. What is total planned expenditure $E = C + I + G + X$?
 - **\$18T**
- Suppose $c_0 = \$3$ trillion and $c_y = 0.4$ and suppose that the economy is in equilibrium with $E = Y$. What is total planned expenditure $E = C + I + G + X$?
 - **\$18T**
- Suppose $c_0 = \$3$ trillion and $c_y = 0.6$ and suppose that the economy is in equilibrium with $E = Y$. What is total planned expenditure $E = C + I + G + X$?
 - **\$25.5T**
- Suppose $c_0 = 0$ and $c_y = 0.4$ and suppose that the economy is in equilibrium with $E = Y$. What is total planned expenditure $E = C + I + G + X$?
 - **\$13T**

G. Macroeconomics in the U.S. Economy: Comparative Statics

- Consider an economy like the U.S., only with all planned spending categories in round numbers: I—business investment spending—determined by business executives' "animal spirits"—\$3 trillion/year; G—government purchases—determined by politics—\$3 trillion/year; T—net taxes and transfers—determined by politics—\$3 trillion a year; X—exports of goods and services—determined by foreigners—\$3 trillion/year; C—consumption spending on domestically-produced commodities—determined by households according to the equation: $C = c_0 + c_y(Y - T)$. And suppose that the economy starts out in equilibrium with $E = Y$, with $c_0 = 0$ and $c_y = 0.6$.

G. Macroeconomics in the U.S. Economy: Comparative Statics II

- What is the initial level of total planned expenditure E equals income and production Y ?
 - **\$18T**
- Suppose $c_0 = 0$ rises to \$3 trillion. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **\$25.5T**
- Suppose $c_y = 0.6$ falls to 0.4. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **We are back at \$18T**

G. Macroeconomics in the U.S. Economy: Comparative Statics III

- Return to $c_0 = 0$ and $c_y = 0.6$. Suppose that I rises from \$3 trillion to \$4 trillion. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **\$20.5T**
- Return to $c_0 = 0$ and $c_y = 0.6$. Suppose that G rises from \$3 trillion to \$3.5 trillion. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **\$19.25T**
- Return to $c_0 = 0$ and $c_y = 0.6$. Suppose that taxes T rise from \$3 trillion to \$4 trillion. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **\$16.5T**
- Return to $c_0 = 0$ and $c_y = 0.6$. Suppose that exports X fall from \$3 trillion to \$2.5 trillion. After the economy attains its new equilibrium with $E = Y$, what is $E = Y$?
 - **\$16.75T**