

Problem Set # 2

This problem set is due Thursday, March 30th by 11:30 a.m. (please give your problem set to my secretary in the economics department and ask her to write on it the time when you gave it to her). All text answers must be typed. Unstapled problem sets will not be accepted. Late problem sets are unacceptable also.

1. In 2006 China faces a large international trade surplus (or positive net exports).
 - a) Draw a diagram representing the Chinese economy during 2006 (Hint: In this diagram, equilibrium output must occur at a level in which net exports are positive; and this should be shown in your diagram).
 - b) Assume that the government wants to reduce the trade surplus without changing the level of national output. Describe the changes in fiscal policy and in the exchange rate that would be necessary to achieve these objectives. Use a diagram to show the effects of your proposed policy changes.
2. You are given the following information about Amaral's economy:
 - Each year consumers spend \$2,500 million (or \$2.5 billion) regardless of the level of their disposable income. In addition to those \$2,500 million, they always spend 75% of their yearly disposable income.
 - Investment is fixed at \$1,200 million.
 - Government expenditures are \$900 million.
 - Net taxes equal \$700 million.
 - Exports are \$1,500 million.
 - Imports are always equal to 15% of the level of disposable income.
 - a) How much would Amaral's equilibrium level of output be?
 - b) How much would net exports be when this economy is at equilibrium output?
 - c) Amaral's main exports are MP3 players. Due to recent research that proved that frequent use of MP3 players has a negative effect on cognitive ability, Amaral's exports decreased by \$200 million to a new level of \$1,300 million. How much would Amaral's new equilibrium level of output be?
 - d) How much would net exports be when this economy is at its new equilibrium output?
 - e) Dr. Eva Aguirre, Amaral's President, decides that she wants equilibrium output to go back to its original level. How much would she have to cut taxes to achieve her objective?
 - f) How much would net exports be when the policies of President Aguirre bring equilibrium output back to its original level?

3. You are given the following information about the U.S. economy: When unemployment is at its natural rate, which is 5 percent, government outlays are 13 percent of GDP, while taxes and other government revenues are equal to 10 percent of GDP. For each 1 percentage point increase in the unemployment rate, government outlays increase by 1 percentage point of GDP and taxes fall by 2 percentage points of GDP. There is no inflation.

a) In 2006, the unemployment rate is 6%. Calculate the actual, structural, and cyclical deficits (as percentages of GDP) of the U.S. government.

b) In 2007, the unemployment rate is 8%. Calculate the actual, structural, and cyclical deficits (as percentages of GDP) of the U.S. government.

c) In 2008, the unemployment rate is 9%. Calculate the actual, structural, and cyclical deficits (as percentages of GDP) of the U.S. government.

d) In 2009, the U.S. Congress and the President decide to cut taxes and increase government expenditures to reactivate the economy. Now you are told that when unemployment is 5 percent, government outlays are 14 percent of GDP, while taxes and other government revenues are equal to 8 percent of GDP. Furthermore, as happened before, for each 1 percentage point increase in the unemployment rate, government outlays increase by 1 percentage point of GDP and taxes fall by 2 percentage points of GDP. Assuming that the unemployment rate remains at 9% after these policies are implemented; calculate the actual, structural, and cyclical deficits (as percentages of GDP) of the U.S. government.

e) In 2010, the unemployment rate is 6%. Calculate the actual, structural, and cyclical deficits as percentages of GDP) of the U.S. government (Assume that the changes that took place in 2009 are permanent).

4. You are given the following information about Matisyahu's economy:

- Each year consumers spend \$700 million regardless of the level of their disposable income. In addition to that \$700 million, they always spend 70% of their yearly disposable income.
- Investment is fixed at \$200 million.
- Government expenditures are \$600 million.
- Taxes equal 25% of income.
- Exports are \$400 million.
- Imports are always equal to \$100 million plus 20% of the level of disposable income.

a) How much would Matisyahu's equilibrium level of output be?

b) How much would net exports be when this economy is at equilibrium output?

c) How much would the net government surplus (or deficit) be when this economy is at equilibrium output?

d) Due to uncertainty about an upcoming election, Matisyahu's investors decide to cut their investment level by \$50 million to a new level of \$150 million. How much would Matisyahu's new equilibrium level of output be?

e) How much would the net government surplus (or deficit) be when this economy is at its new equilibrium output? Was this change in the surplus (or deficit) due to structural or cyclical reasons? Explain.

f) Following supply-side ideas, and in order to stimulate the economy Matisyahu's President, Dr. Matthew Miller, cuts taxes from 25% of income to a new level of only 20% of income. How much would Matisyahu's new equilibrium level of output be?

5. Visit the U.S. Office of Management and Budget web site (<http://www.gpoaccess.gov/usbudget/>) and use the FY 2007 Federal Budget Publications to obtain the data necessary to answer the following questions (use the "Browse the FY07 budget" link).

a) How much was the total budget surplus or deficit of the Federal Government **for each year** from 1980 until 2005? (Note: You should look for the Historical Tables section, "Table 1.1- Summary of Receipts, Outlays, and Surpluses or Deficits: 1789-2011" to get these numbers)

b) Was the change in the actual deficit from 1980 to 1983 mainly due to cyclical or structural reasons? Explain.

c) Was the change in the actual deficit from 1984 to 1986 mainly due to cyclical or structural reasons? Explain.

d) Was the change in the actual deficit from 1990 to 1992 mainly due to cyclical or structural reasons? Explain.

e) Was the change in the actual deficit (or surplus) from 1992 to 2000 mainly due to cyclical or structural reasons? Explain.

f) Was the change in the actual deficit (or surplus) from 2001 to 2004 mainly due to cyclical or structural reasons? Explain.

g) Was the change in the actual deficit (or surplus) from 2004 to 2005 mainly due to cyclical or structural reasons? Explain.

h) How much was the estimated total budget surplus or deficit of the Federal Government for each year from 2006 until 2011 according to the Historical Tables (these estimations were prepared at the beginning of 2006)?

i) Why do you think the government is estimating a decline in the future deficit? Is this due to cyclical or structural reasons? Explain.

6. Assume that you are hired as an economic advisor to the Chairperson of the Federal Reserve Bank. Your boss is interested in knowing the different levels of investment that would take place when the interest rate changes. She gives you the following information about the projects that investors are contemplating for this year (Note: Operation costs do not include financial costs):

<u>Project</u>	<u>Total Investment</u>	<u>Revenues</u>	<u>Operation Costs</u>
A	400	45	30
B	750	100	45
C	850	120	40
D	450	60	10
E	600	80	35

- How much would the level of investment be when the interest rate equals 8%? Explain fully.
- How much would the level of investment be when the interest rate equals 6%? Explain fully.
- Use the information from parts a) and b) to draw the investment demand curve for this economy.
- The Chairperson of the Federal Reserve System is contemplating an expansionary monetary policy that would result in a decrease in the interest rates from 8% to 6%. Assuming that you are a mainstream economist, what would you predict the result of this policy would be on the level of real GDP and on the price level? Draw a diagram in support of your answer and explain fully (Note: You do not have sufficient data to provide exact numbers for real GDP nor price level, however, you can discuss the direction of their changes).

7. Visit the Bureau of Economic Analysis web site (<http://www.bea.gov/>). Click on “Gross Domestic Product.” Then click on “Interactive NIPA tables” and then on “Frequently Requested NIPA Tables.” Look for “Table 1.1.5 Gross Domestic Product (A) (Q)” and search for the annual data from 2001 until 2004.

- Write down the Gross Domestic Product, Personal Consumption Expenditures, and Imports for every year from 2001 until 2005 (use yearly data). Use this dataset to calculate the implied values for the marginal propensity to consume and the marginal propensity to import, assuming that taxes do not vary with income.
- Calculate the open economy multiplier for 2002, 2003, 2004, and 2005 (assume that taxes do not vary with income).
- What happened to the open economy multiplier from 2002 to 2005? Why did it increase (or decrease)? What does this imply for the effect of a change in taxes on GDP?