

Economics 101b; Fall 2000; Problem Set 4

Due in class October 5

1. What, in the full-employment model, determines the level of real GDP?

In the full employment model, the level of real GDP is equal to potential output: the production function and the supply of labor together determine the level of real GDP.

2. What makes labor demand equal to the labor force in the economy as a whole?

The real wage adjusts to balance supply and demand in the labor market. Thus total employment—labor demand—is equal to the labor force—labor supply.

3. Suppose that in the full-employment model of this chapter the government increases taxes and government purchases by equal amounts. The tax increase reduces consumption. What happens--qualitatively: tell the direction of change only--to investment, net exports, the exchange rate, the real interest rate, and potential output?

Consumption falls but by less than the increase in government purchases, so the net supply of savings in the flow-of-funds through financial markets falls as well. Thus the new equilibrium interest rate is higher: this means that investment is lower, the exchange rate is lower, and net exports are lower.

In the short run this policy change has no effect on potential output. In the long run reduced investment means slower growth of potential output.

4. Explain--qualitatively--the direction in which consumption, investment, government purchases, net exports, the exchange rate, the real interest rate, and potential output move in the full-employment model of this chapter if the government raises taxes.

An increase in taxes reduces consumption, and increases the flow-of-funds through financial markets, thus lowering the real interest rate. Thus investment rises; the exchange rate rises, and net exports rise.

Government purchases are unaffected. Potential output is unaffected in the short run. In the long run the higher rate of investment leads to faster productivity growth.

5. Why does the investment demand curve slope down and to the right on the flow-of-funds diagram? Why does the total savings curve slope up and to the right on the flow-of-funds diagram?

Because the lower the interest rate, the greater the chance that a firm will conclude that an investment project is worth undertaking, and so the higher the demand for money from the financial markets to finance investment. Because the lower the interest rate, the higher are net exports. And a dollar devoted to financing net exports is committed to investments abroad, and cannot be part of the supply of finance to the domestic economy.

6. Suppose that the relevant parameters of the economy are:

- $t = 0.33$ Tax rate of $1/3$.
 $I_r = 90$ A 1 percentage point fall in the interest rate raises investment spending by \$90 billion a year.
 $C_y = 0.75$ A marginal propensity to consume of three-quarters.
 $r = 10$ With an initial value for the real exchange rate set at the traditional indexed value of 100, a 1 percentage point change in the interest rate difference vis-à-vis abroad generates a 10% shift in the exchange rate.
 $X = 6$ A 10% change in the exchange rate leads to a \$60 billion a year change in exports.

And suppose that an irrational exuberance causes a stock market boom which leads consumers to increase their spending by \$200 billion at a constant level of disposable income. What would be the increase in interest rates in response to such an exuberance-driven consumption boom?

The increase in consumption spending of \$200 billion a year is a \$200 billion a year withdrawal of savings from the flow-of-funds. A 1%-point increase in the interest rate reduces net exports by $6 \times 10 = \$60$ billion, and reduces investment by \$90 billion. So in equilibrium the interest rate must rise by $1 \frac{1}{3}\%$ in order to make supply equal to demand in the flow of funds market.

7. In the same economy as in question 1, suppose that total GDP were \$10 trillion, and suppose the government did not want real interest rates to rise and investment to fall in response to the stock market-generated consumption boom. What kinds of policies could the government undertake? How successful would they be?

The obvious policy would be to try to offset the fall in private savings by an increase in government savings. So a cut in government purchases of \$200 billion would do the job very successfully. An increase in taxes would also do the job, but the increase in taxes would have to be higher: a \$1 increase in taxes increases government savings by \$1, but because it leads only to a 75 cent fall in consumption it leads to a fall in private savings of 25 cents. Thus a tax increase of \$267 billion—in increase in the tax rate from 33% to 35.67%—would be needed to keep the real interest rate from rising.

8. Since the fall of 1998, the Federal Reserve has raised interest rates more-or-less steadily, and the U.S. economy has remained near full employment. What factors do you think--based on your reading about the economy--produced this rise in equilibrium real interest rates?

The most likely candidate is an outward shift in investment demand produced by increased confidence about the future.

9. When President Bill Clinton took office, he spent essentially all of his political capital on his first-year effort to raise taxes and cut spending. What, qualitatively, does the full-employment model say should have been the consequences of these policies?

It should have lowered real interest rates, raised investment spending, raised the exchange rate, and increased net exports. The first three of these have happened. The fourth has not.

10. Consider two economies. In one, the relevant parameters are:

$Y^* = \$10,000$	(In billions: potential output equals \$10 trillion)
$t = 0.33$	Tax rate of 1/3.
$I_r = 90$	A 1 percentage point fall in the interest rate raises investment spending by \$90 billion a year.
$C_y = 0.75$	A marginal propensity to consume of three-quarters.
$r = 10$	With an initial value for the real exchange rate set at the traditional indexed value of 100, a 1 percentage point change in the interest rate difference vis-à-vis abroad generates a 10% shift in the exchange rate.
$X = 6$	A 10% change in the exchange rate leads to a \$60 billion a year change in exports.

In the second, the relevant parameters are:

$Y^* = \$10,000$	(In billions: potential output equals \$10 trillion)
$t = 0.33$	Tax rate of 1/3.
$I_r = 90$	A 1 percentage point fall in the interest rate raises investment spending by \$90 billion a year.
$C_y = 0.5$	A marginal propensity to consume of one-half.
$r = 10$	With an initial value for the real exchange rate set at the traditional

indexed value of 100, a 1 percentage point change in the interest rate difference vis-à-vis abroad generates a 10% shift in the exchange rate.

X =6 A 10% change in the exchange rate leads to a \$60 billion a year change in exports.

Compare the effects of a \$100 billion increase in government purchases on these two economies. In which economy do interest rates go up by more? In which economy does investment go down by more?

In the full employment model the effects are the same in both economies.

11. Consider two economies. In one, the relevant parameters are:

$Y^* = \$10,000$ (In billions: potential output equals \$10 trillion)
 $t = 0.33$ Tax rate of 1/3.
 $I_r = 90$ A 1 percentage point fall in the interest rate raises investment spending by \$90 billion a year.
 $C_y = 0.75$ A marginal propensity to consume of three-quarters.
 $r = 10$ With an initial value for the real exchange rate set at the traditional indexed value of 100, a 1 percentage point change in the interest rate difference vis-à-vis abroad generates a 10% shift in the exchange rate.
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In the second, the relevant parameters are:

$Y^* = \$10,000$ (In billions: potential output equals \$10 trillion)
 $t = 0.33$ Tax rate of 1/3.
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X =6 A 10% change in the exchange rate leads to a \$60 billion a year change in exports.

Compare the effects of a \$300 billion reduction in taxes--a lowering of the tax rate t from 33% to 30%--on these two economies. In which economy do interest rates go up by more? In which economy does investment go down by more? Can you explain the differences in your answers to 11 and 12?

In the model with the higher marginal propensity to consume the tax cut has a larger effect reducing total savings in the flow-of-funds into financial markets. Thus interest rates rise and investment falls by more in the first than in the second economy.

The source of the difference between this and the last problem is that the effects of tax cuts on the economy hinge on how households respond to the tax cut—what do they use the increase in their disposable income for? The effects of spending increases, by contrast, do not depend on household behavior because disposable income does not change.

12. During the 2000 presidential campaign, candidate George W. Bush favored using the federal budget surplus to fund tax cuts while candidate Albert Gore favored using the federal budget surplus to retire parts of the national debt. Which candidate's economic policies seem likely to lead to lower interest rates? Which candidate's economic policies seem likely to lead to higher investment? Which candidate's economic policies seem likely to lead to a lower value of the dollar?

Gore's policies seem more likely to lead to lower interest rates, higher investment, and a reduced value of the dollar (increased exchange rate).