

Problem Set 4 Answers

14.02 Fall 2001

1 True or false, explain

1. False. An expensive dollar makes American industries less competitive. For tourists however this could be true.
2. False. If the yen becomes weaker and prices of Japanese cars are fixed, cars will be cheaper. If there is sufficient car inflation in Japan, however, it could be a good idea to anticipate buying a Japanese car.
3. Depends. If the Colombian debt is denominated in dollars it is true. If his debt is denominated in pesos it is false because the debt has lost value when converted into dollars.
4. False. We expect the European interest rate to be higher now and the same after the depreciation occurs.
5. False. Both countries have the same currency, interest rate parity equation cannot explain the difference if there is any.
6. True. If people expect a devaluation, when it happens interest rates must fall according to the UIP equation and investment reacts positively to lower interest rates.
7. True. If Chile generates expectations of devaluation of its currency, interest rates must rise and the demand for money will fall.
8. False. Dollar bills are US issued assets, if the exporter gets paid in dollars, the rest of the world is holding less US assets and there is an increase in net foreign holdings of US assets.

9. False. Neither of these transactions change the net foreign holdings of US assets.
10. False, if there are different currencies, the UIP equation tells us that interest rates can be different from country to country.

2 Monetary Questions

1. The reserve ratio requirement is not binding at very low levels of the interest rate. If i increases, banks may be willing to take more risks by lowering the reserves that they hold and using those funds to give credit. At high levels of the interest rate, banks would have a strong incentive to reduce their reserves even further to very low levels, but then the reserve ratio requirement becomes binding.
2. If checking accounts pay an interest rate they will make it less attractive to hold pocket money when interest rates go up. If Y goes up but transaction requirements have a limit or grow at slower rates, then c will depend on Y .
3. When interest rates go up. Households deposit more money in their checking accounts. This gives the banking system resources to create more money. Banks lower the reserve ratio creating even more money. The multiplier increases.
4. Equilibrium in the high powered money market is

$$H = PYL(i) \left\{ 1 - (1 - \underline{\theta} - \bar{\theta} + \phi i)(1 - \bar{c} + \underline{c}i) \right\}$$

equilibrium in the money market is

$$\frac{H}{1 - (1 - \underline{\theta} - \bar{\theta} + \phi i)(1 - \bar{c} + \underline{c}i)} = PYL(i)$$

when $i \leq \frac{\bar{\theta}}{\phi}$.

5. More effective. If the multiplier increases with the interest rate, money supply increases with the interest rate. This means that interest rates will not climb so high when money demand is pushed to expand by higher nominal income. Hence, the LM is more elastic and fiscal policy is more effective.
6. Same as 5.

7. A positive h means that when income pushes money demand up, money supply is in fact contracting. This will make interest rates rise more for a given expansion in income. The LM will be steeper, fiscal policy will be less effective.
8. Following the reasoning in 7, a positive h gives a steeper LM. If there are shocks to the IS, a steeper LM will help to stabilize output.
9. Lending Booms move the LM up and down in parallel. Given that, it is simple to show graphically that a steeper LM stabilizes output for the same lending boom. In the figure we show a monetary contraction, income has to fall less with LM2.

[See Figure 1]

10. Here you were supposed to argue what you thought was a rationale for such a rule. There is no single correct answer.

3 Fiscal Questions

1. The sensitivity of government demand to output makes the multiplier fall since it "automatically" subtracts some of the demand that autonomous spending plugs in. The investment subsidy does the same, since it is lower when output is higher.
2. In general in this model the slope of the IS is given by.

$$\frac{\delta i}{\delta Y} = -\frac{1 - c_1 + g + s}{k}$$

Both g and s are decreasing the sensitivity of demand to income since they are automatically contracting components of demand when output increases or expanding components of demand when output falls. In short, it is very difficult for income to move demand because it has these automatic stabilization mechanisms, small changes in output will require big movements in the interest rate to keep the goods market in equilibrium. Since s makes the IS steeper it will make output less sensitive to fluctuations in investment. Consider an expansion in investment demand for a perfectly steep IS. At the original income level, both IS curves will expand vertically by the same amount. Since the stabilization mechanisms tend to limit the effect of the multiplier, equilibrium output will expand by less for the steeper IS.

[See Figure 2]

3. Now consider an increase in money supply for the two IS curves. An expansionary monetary policy will lower interest rates and hence increase investment. To equilibrate the goods market, output must increase. Since we have this automatic stabilization mechanism, the multiplier effect will be smaller. Output will increase by less and so will the money demand, therefore, interest rates will fall more.

[See Figure 3]

4. Same as 2.
5. Same as 3.

4 Dynamic Questions

1. A completely elastic money demand.
2. If bonds become close substitutes of money, demand becomes very sensitive to interest rates. For small movements of the interest rate, people move violently to and from money. If demand for money is very flat, changes in money demand triggered by changes in output will not affect the interest rate very much. The LM is very elastic.
3. True. If output is rigid. While output adjusts, interest rates must always equilibrate the money market. Hence, in the short run, the interest rate cannot deviate from the level set by the money demand and output slowly adjusts the economy to its new equilibrium level.

5 Hard Part

1.