

ProblemSet#3Solutions

14.02

1. a. True. In the standard IS equation, the portion of the IS relationship that depends on the interest rate is investment. Neither consumption nor government spending is impacted by changes in the interest rate. In a setting where investment is not dependent on the interest rate, aggregate demand will also be immune to changes in the interest rate; at any interest rate, output will be left unchanged. The IS curve will be vertical.

b. True. If money demand does not depend on the interest rate, the money demand curve will be vertical. The LM curve will therefore be vertical. Any change in fiscal policy which shifts the IS curve, but the final equilibrium will leave GDP unchanged.

c. True. The money demand curve will still be downward sloped, but movements in Y will not impact the shifting of the MD curve. Thus, at every level of Y , there will be a constant interest rate, i . The LM curve will be horizontal.

2. a. One could view this card as safer to carry than cash. Since it requires a password, a thief cannot use it. Thus, it might be more attractive to use this card versus cash. One can take electronic money out of one's checking account and put it onto the card. No cash used. Money demand will decline.

b. An increase in the interest rate will decrease money demand. It will be more attractive not to hold wealth in cash or checking deposits.

c. Money demand will decline. If checking accounts earn interest, decreasing this rate will make it more unattractive to hold money in checking accounts. People wanting to gain interest will put their money in interest bearing assets such as CDs, savings accounts, money market funds, etc.

3. a. According to the formula: $i = (99-88)/88$. The interest rate is $1/8$ or 12.5% (or 0.125).

b. Money demand will rise if checking deposits earn more interest. If money demand increases (the MD curve shifts out and up), the interest rate increases in order to keep money demand equal to money supply. The final equilibrium after the checking deposit policy will be at the same level of money, but with a higher interest rate. The higher interest rate will decrease the price of the bond.

4. a. The LM curve shifts down and to the right. The IS curve remains unchanged. The interest rate declines, income increases. Since Y goes up, consumption will rise. Investment will unambiguously rise because interest rates decline and output rises - both factors which contribute to the rise in investment.

b. Defense spending rises (G rises). This shifts the IS curve up and to the right. The LM curve remains the same. The new equilibrium will have a higher interest rate and higher output. Consumption will rise due to the rise in output.

The change in investment will be ambiguous because the rise in interest rates and output have opposite effects on investment.

c. Transfers rise. The IS curve shifts out. The LM curve stays constant. Consumption rises due to the rise in output. The change in investment will be ambiguous because the rise in interest rates and output have opposite effects on investment.

d. G and T increase by the same amount. According to the demand equation, demand will rise by the amount that taxes (or government expenditures) rise. Thus, output rises. For each rate of interest, output will be higher. This shifts the IS curve out. Equilibrium interest rates rise and output rises. The change in investment will be ambiguous because the rise in interest rates and output have opposite effects on investment. Consumption will decline. This

explanation is a bit lengthy. If interest rates do not change, consumption stays constant since Y and T would increase by the same amount. But, interest rates do change (they go up) since the equilibrium point is the intersection of the new IS curve and the old LM curve. This rise in rates decreases investment, therefore decreasing output and consumption.

5. a. The IS curve will be a downward sloping line with i on the y-axis and Y on the x-axis. The demand curve will simplify to $Z = 425 + 0.75Y - 2500i$. Thus, the IS curve is $Y = 1700 - 10000i$ or $i = (Y - 1700)/10000$.

b. The LM curve is $Y = 500 + 10000i$ or $i = (Y-500)/10000$.

c. The LM curve is upward sloping and the IS curve is downward sloping. To find the equilibrium interest rate, set the two equations equal to one another and solve for i . The equilibrium interest rate is 0.06 or 6%. Output is 1,100.

d. The new equilibrium rises by more than 50. The new IS is $Y=1900-10000i$. LM stays the same. The new i is 0.07 or 7%. The new output is 1200.

e. For all levels of interest rate, output will be higher. The LM curve will be $Y=600+10000i$. The new interest rate is 0.055 or 5.5%. The new output is 1150.

f. The LM curve will be $Y= 250 + 10000i$. The new interest rate is 0.0725 or 7.25%. The new output level is 975.

6. a. Investment can rise in response to higher output and/or lower interest rates. The Fed can expand the money supply, shifting LM out. The decline in interest rates and rise in output will cause an increase in investment. To keep output constant, the government can simultaneously cut spending, thereby shifting the IS curve in. The resulting equilibrium will be unchanged output and lower interest rates. We know that investment increased because, although output stays constant, interest rates decrease.

b. The expansionary fiscal policy (IS shift out) and concurrent contractionary monetary policy (LM shift in) will unambiguously cause a rise in interest rates. The effect on output is not so clear. The direction in which output will move depends on the extent to which each curve shifts. If the LM curve

shifts in much more than the IS curve shifts out, output will go down. You can infer from this the opposite scenario.

7. a. A rise in consumer confidence shifts the IS curve to the right, causing interest rates to rise. In bringing the interest rate back to its initial level, the Fed must expand the money supply, shifting LM out until the interest rate is equal to the initial rate. This can be accomplished by buying bonds. The end result will be an unchanged interest rate and higher output level.

b. A rise in consumer confidence shifts the IS curve to the right, causing interest rates and output to rise. To bring output back to its original level, the Fed must contract the money supply, shifting the LM curve in until the output level is at its original level. The Fed will sell bonds. The equilibrium will exhibit a higher interest rate and unchanged output. The change in the composition is unclear. If consumption is, in the end, unchanged because output is unchanged, investment must be unchanged as well. If consumption rises because of the increase in confidence, the decrease must be brought about by a decline in investment (cause by a rise in the interest rate).