14.02 Quiz 2 Solutions

Part I. Multiple Choice

1-(e) Expectations about the future are not part of the LM, so when they change there is not shift. A decrease in interest rate implies we move along the LM, not that it shifts.

2-(c) It's an application of uncovered interest parity.

3-(a) Transform the price of Big Macs in Germany from DM to dollars using the exchange rate, to realize that the price is 4 Dollars, which means they are more expensive in Germany than in the US

4-(e) An expansionary fiscal policy will shift the future period IS to the right, so $Y'^e$and r'^ewill increase. Looking at the effect in the present period IS/LM, there are 4 different forces to consider: decreases in T and T'^ewill shift IS to the right. Same for increases in Y'^e, but the change in future interest rate will shift IS to the left, so in the end we do not know the final effect. However, given that LM does not move, we can say that Y and r will either increase (both), or decrease (both), i.e. a movement in the same direction

5- (c) when evaluating the statement have to consider the price of an italian good, which involves not only the exchange rate but the price level. If inflation in Italy was higher than 10%, then even if the lira depreciated the "real" price of the good would have increased.

6-(c) It is possible that exports are higher than imports (trade balance surplus) but current account is in deficit, because you have to consider the other components of the current account (transfers from and to the rest of the world).

7- (e) Need more information (eg: what the interest rate is, how many periods of working time are left, etc.)

8-(a) to prevent arbitrage, the expected return on different assets has to be equal. In this case we are comparing a one year bond with a two year bond which we hold for one year.

9-(e)

10-(b)

Part II: Open Economy

1)

$$\begin{aligned} E^e_{t+1} &= \frac{1+i_t}{1+i^*_t} \cdot E_t \\ &= \frac{1.015}{1.0025} \cdot 1.139 \\ &= 1.153 \end{aligned}$$

The dollar was expected to depreciate against the Yen. This is the only way that Japan could pay a lower interest rate than the U.S.

2)By definition, the real exchange rate on August 1 was

$$\epsilon_t = \frac{E_t \cdot P^*_t}{P_t} = 1.139$$

since $P = 100$ amd $P^* = 100$. Given the three-month inflation rates, the GDP deflators on November 1 can be calculated: $P^*_N = 99.85$ and $P_N = 100.45$ (where N denotes November 1). We are also given that $E_N = 1.0$, so the real exchange rate equals:

$$\epsilon_N = \frac{99.85}{100.45} = 0.994$$

Note that there was a nominal appreciation of the dollar as E fell from 1.139 to 1.0 (so expectations were wrong - investors who held U.S. bonds did better). The real appreciation was greater than the nominal appreciation because inflation in the U.S. is higher than inflation in Japan.

3) The DD and ZZ schedules are both upward sloping, but the ZZ schedule has a flatter slope. The demand for domestic goods goes up by less than domestic demand as income rises because some of the increase in demand falls on imported goods. Note that the ZZ and DD schedules must intersect on the 45-degree line since the economy has zero trade balance at the goods market equilibrium.

The net exports (NX) schedule is downward sloping and equal to zero at the equilibrium level of output.

The decrease in government spending shifts the ZZ and DD schedules down by the same amount. The NX schedule does not shift. The new equilibrium is at a lower level of output and a trade surplus.

Part III:

1. Inflation = expected inflation = 0 implies that $i = r$. We will use r for the interest rate in what follows.

FUTURE PERIOD:

$$\begin{array}{rrr} \text{IS:} & Y' = & A(Y', r', T') + G' \\ \text{LM:} & \frac{M'}{P} = & Y'L(r') \end{array}$$

CURRENT PERIOD:

$$\begin{array}{rrr} \text{IS:} & Y = & A(Y, Y'^e, r, r'^e, T, T'^e) + G \\ \text{LM:} & \frac{M}{P} = & YL(r) \end{array}$$

2. The IS-LM graph is the usual one, with Y' on the x-axis and r' on the y-axis and IS sloping down and LM sloping up. The fall in consumer confidence in the future period causes IS to shift left, reducing Y' and r'. As a result, Y'^e and r'^e both fall.

3. Starting from the usual IS-LM graph,

i) the reduction in Y'^e would cause the IS curve to shift left through effects on wealth, whereas the reduction in r'^e would cause the IS curve to shift right through present value effects on investment and consumption, and

ii) the reduction in consumer confidence in the current period would cause IS to shift left.

The net result of these changes is ambiguous with respect to both Y and r.

The price of long-term Treasury bonds will move inversely with the long-term interest rate, which is an average of expected short-term rates. The expected future short-term rate, r'^e , falls. If the current short-term rate, r, also falls, then clearly the long-term rate falls and the price of long-term bond increases. If r increases, then, within our model, there is theoretically some ambiguity in the result, since future rates fall, while current rates rise. However, we would probably expect long-term rates to fall, because: i) the future period is really a short-hand way to represent all of the future, so it effectively represents a much longer time period than the current period, which we understand to represent the very short run (say up to a year), and ii) in any case, we might think that r was unlikely to rise much, given the conflicting forces on the IS curve. In short, essentially it is expected future short-term interest rates that matter for the long-term rate, since these carry more weight than the current short-term rate in an average of rates over a long time period.

4. The fall in consumer confidence in the future period causes IS to shift left. To compensate for the effect on output, the Fed must increase M', shifting LM

to the right. As a result, Y' remains constant, while r' falls by even more than in part 2. So Y'^e is unchanged and r'^efalls by a lot.

5. Since Y'^e is unchanged, it doesn't cause a shift in IS in the current period. The fall in r'^e causes IS to shift right through its effects on investment and consumption (through the increase in the expected present value of human wealth). On the other hand, the fall in current period consumer confidence causes IS to shift left, so the net effects on Y and r are still ambiguous. However, although we don't know whether IS shifts left or right, we know that it shifts further to the right (less to the left) than in part 3 because the contractionary effect of the fall in Y'^e is eliminated and the stimulative effect of the fall in r'^e is increased (since r'^e has fallen further with Fed action).

The effect on the price of Treasury bonds is qualitatively the same as in part 3, although since r'^e has fallen further, we would probably expect bond prices to increase more, even though r has fallen less (risen more) than in part 3.

6. A reduction in long-term yields means that r'^e falls. An increase in short-term yields means that r increases. If the Fed takes no action in the current period, then the LM curve does not shift. Thus, the only way for r to increase is for IS to shift right, which means Y must increase as well.

The reduction in r'^e is consistent with the answer to part 4. The increase in r is consistent with the answer to part 5, since the shift in IS was ambiguous. In fact, the yield curve moved in just this way after the announcement on retail sales.