

## QUIZ 2 SOLUTIONS, 14.02

### I. Multiple choice answers

1. (e) Relative price levels move slowly, so the driving force of real exchange rate volatility is changes in the nominal exchange rate (see graph in textbook).

2. (c) The announcement of the unemployment numbers would cause two effects. One would be a decline in expected output, which causes expected dividends to go down, and thus stock prices to go down. The other effect though, is an expectation that the Fed will conduct expansionary monetary policy in order to pull us out of the recession—this causes expected interest rates to fall, and thus stock prices will be more likely to rise.

3. (e) The trade deficit was higher in the 1980s than it is currently, is less than 20% of GDP, is caused by appreciation of the dollar, and was low after WWII because we exported lots of goods to Europe for reconstruction after the war.

4. (e) Higher output in the US causes demand to go up for US trading partners because the US will import more (and thus they get to export more). So output ( $Y$ ) and  $NX$  should go up in foreign countries. Since  $G$  is fixed,  $G/Y$  declines when  $Y$  increases.

5. (b) By definition of the J-curve and Marshall-Lerner.

6. (d) Interest parity tells us that if Mexico's nominal interest rate is higher than the US then we expect an appreciation of the dollar against the peso (which is a depreciation of the peso against the dollar). Additionally, Mexico could have a higher interest rate if there was risk involved in investing there (like risk of default). The price level in the US and Mexico today has nothing to do with relative nominal interest rates and nominal depreciation.

7. (e) The key here is that the interest rates are EXPECTED and REAL. Real rates can be negative if inflation is greater than the nominal rate, and also are generally lower than nominal rates because inflation is generally positive. The tradeoff between money and bonds is the nominal interest rate, not the real rate. Interest rate parity has to do with nominal rates, not

real. Additionally, interest rate parity does not require that interest rates are equal ( $i=i^*$ ).

8. (d) The budget deficit does not affect how real exchange rate changes affect output. The marginal propensity to consume and the marginal propensity to import are both in the multiplier and thus both affect the sensitivity of equilibrium output to changes in demand.

9. (c) The increase in the money supply causes  $Y$  to increase,  $i$  to decrease and thus  $E$  to increase (depreciate). This definitely causes increases in  $C$  and  $I$ . But it is unclear what will happen to  $NX$ : the depreciation cause exports to rise and imports to fall, but the increase in  $Y$  causes imports to rise. Thus the effect is ambiguous.

10. (a) By definition!

## II. MEDIUM QUESTIONS

**1.a. (4 points)** Stock Price=\$42.

$$2^* \left[ \frac{1}{1 - \frac{1}{1.05}} \right].$$

**1b. (3 points)** Interest rates will certainly rise since the LM curve will shift in (to the left). The price of the stock will go down since the discount rate is increasing.

**1c. (3 points)** Stock Price=\$70

$$2^* \left[ \frac{1}{1 - \frac{1}{1.05}} \right].$$

**2a.(4 points)** A Fed contraction causes interest rates to climb. Foreigners and US residents therefore want to buy more US bonds relative to foreign ones. People then demand more US dollars relative to foreign currency and the dollar appreciates.

**2b.(1 point)** This should be an upward sloping line with a slope flatter than the 45-degree line. Equilibrium (A) will be the point where the total demand for US goods intersects the 45-degree line.

**2c. (2 points)** The interest rates go up and the dollar appreciates. Investment therefore declines. Exports will decline because of the reduced value of foreign currency relative to the dollar. The demand curve shifts

down and equilibrium output decreases. One can see this also in the IS-LM framework. The LM curve is shifting in, causing interest rates to increase and output to fall. For those of you who said the output response is ambiguous, I did not take off any points since you were thinking that net exports could potentially be positive and therefore exceed the decrease in I. However, the answer is clear if you look at it in the IS-LM framework.

**2d. (3 points)** The effect will be ambiguous. There are 2 competing effects. First, a fall in output causes the demand for foreign goods to decline. However, the appreciation allows US residents to buy more foreign currency for their dollars, putting upward pressure on imports. Depending upon the relative size of these competing effects, net exports may increase or decrease. Many of you just said the answer was a decrease because of the Marshall-Lerner condition. This is not true since you did not consider the output effect on net exports.

### III LONG QUESTION

#### 1. Scenario 1.(10 points)

**a) (3 points)** Government expenditure goes up, so IS curve shifts out. As a result,  $Y^e$ , and  $r^e$  will increase.

**b) (3 points)** Since  $Y^e$  is expected to go up, both consumption and investment will go up. However, increase in  $r^e$  has negative effect on investments. Thus, the overall result is ambiguous.. If future LM curve is flat, then increase in government spending will lead to large increase in output, and small increases in interest rates. In this case, current IS curve shifts out, and both Y and r go up. If future LM curve is steep, then increase in  $Y^e$  will be small, while increase in  $r^e$  will be large. In this case, current IS curve may shift in, and then both Y and r decreases.

**c) (2 point)** If current investment is incentive to expectations of future interest rates, then IS curve unambiguously shifts out, and both Y, and r go up.

**d) (2 points)** The Fed can decrease money supply.

#### 2. Scenario 2 (10 points)

**a) (2 points)** Since government is doing nothing, 50% of machines is expected to be destroyed. Thus,  $Y^e$  will go down. This decline in output was caused by changes in supply, not buy changes in demand. Thus, in principle, we can not use IS-LM model, to show what will happen to the interest rate. However, since consumption will go down, and people will probably consume

less out of their income, we think that it is conceivable that future IS curve shifts in, and both  $Y^e$ , and  $r^e$  go down.

**b) (4 points)**

Effect of changes in  $Y^e$ , and  $r^e$  on current  $Y$  and  $r$  is ambiguous, and depends on steepness of the future LM curve. If future LM curve is flat, then current IS curve shifts in, and both  $Y$  and  $r$  go down. If future LM curve is steep, then current IS curve may shift in, and then both  $Y$  and  $r$  go up. **(3 points)**

**(1 point)** Because of the threat of war, consumers may change their consumption pattern. For example, consumer confidence can go down, as it happened during Gulf war. In this case, there is additional reason for IS curve to shift in. On the other hand, firms may be reluctant to invest, since they expect 50% of their investments to be destroyed soon.

**c) Uncertain. (4 points)**

From a) we know that both expected future output and expected future interest rates go down. This has ambiguous effect on stock prices. On the one hand, profit is expected to be lower; moreover, those firms, which machines will be destroyed completely, will cease to exist. On the other hand, discount factor is lower, and that has upward pressure on prices.

**3. Scenario 3. (10 points)**

**a) (3 points)**  $G^e$  decreases. Future IS curve shifts in, and both expected future output, and expected future interest rates go down.

**b) (3 points)** The effect on investments is ambiguous. Lower expected future output has negative effect on investments, while lower expected future interest rates affect investment positively. The exact effect once again depends on steepness of the future LM curve. Whether  $Y$  and  $r$  increase or decrease depends on  $I$ . If  $I$  goes up, IS shifts out, and  $Y$  and  $r$  go up. Otherwise,  $Y$  and  $r$  go down.

**c) (4 points)** False

Current LM curve does not depend on future variables.