14.02 PRINCIPLES OF MACROECONOMICS

QUIZ 3

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NAME:

FRIDAY RECITATION:

1. TRUE/FALSE/UNCERTAIN [30 POINTS]

Please state whether each of the following claims are true, false or uncertain, and provide a brief justification for you answer.

(1) A decrease in taxes generates a larger short-run increase in output under a flexible exchange rate regime than under a fixed exchange rate regime.

   FALSE. Absent government intervention, a decrease in taxes leads to an increase in the interest rate and the exchange rate. Thus, under a fixed exchange rate regime, output increases more because the government is forced to also increase the money supply to keep the exchange rate unchanged.

(2) High inflation can lead to high expected inflation, but not the other way around.

   FALSE. Inflation expectations are self-fulfilling. Indeed, high expected inflation shifts the AS up. If the government does not do anything, prices increase but remain lower than the expected price, and the unemployment rate increases. If the government wants to keep unemployment at its natural level, it is forced to increase the AD and meet the inflation expectations.

(3) A moderate level of inflation can help to promote investment.

    TRUE. A moderate level of inflation helps keeping the real interest rate low, increasing desired investment.

(4) An implication of the Ricardian Equivalence is that expected reductions to *future* government spending can increase output today.

    TRUE. If households expect government spending to decrease in the future, they will also expect the net present value of their taxes to decrease. This will induce them to increase their desired consumption today, so output will increase today.

(5) The expropriation of a private enterprise by the government can lead to a reduction of aggregate demand.

    TRUE. As the risk of expropriation increases, desired investment decreases for each level of output and real interest rate. This causes output to decrease for each level of prices, so the AD decreases.

2. CURRENCY ATTACKS [35 POINTS]

Consider a small open economy in the context of the model studied in class. Throughout the question, assume that foreign policy is such that, no matter what happens in the domestic economy, the foreign price level, P^*, interest rate, i^*, and output, Y^*, remain constant and at their natural levels. Moreover, assume that the domestic economy is in a recession (i.e. its output is below its natural level) and that the Marshall-Lerner condition holds.

(1) Write down expressions for the IS curve and the LM curve in the domestic economy. The only endogenous variables in both expressions must be the nominal interest rate and output (assume that expected inflation is zero). Illustrate how the AD can be

derived from these two expressions. Finally, find an expression for the AS.

The IS curve is given by

$$Y = C(Y - T) + I(Y, r) + G + NX(\varepsilon, Y, Y^*).$$

The UIP gives $(1+i) = (1+i^*)\frac{E}{E_{t+1}^e}$, and the real exchange rate is defined as $\varepsilon = E\frac{P}{P^*}$. Moreover, since $\pi^e = 0$, $r = i$. Substituting above we obtain the IS in terms only of i and Y:

$$Y = C(Y - T) + I(Y, i) + G + NX\left(\frac{P}{P^*}\frac{(1+i)}{(1+i^*)}E_{t+1}^e, Y, Y^*\right).$$

The LM curve is just:

$$\frac{M}{P} = L(Y, i).$$

To derive the AD consider what would happen to the IS and LM as P decreases. Since the Marshall-Lerner condition holds, both curves shift to the right so output increases. Thus, the AD is a decreasing curve.

The AS is derived in the usual way from the PSE and WSE. It is given by

$$P = P^e(1 + \mu)F(u, z).$$

(2) Can we say in general whether the AD will be more or less steep under a flexible or a fixed exchange rate regime?

No. It depends on whether the shift in the IS due to the change in prices dominates the shift in the LM. Indeed, when P goes down, both curves shift to the right. If the shift in the IS dominates the shift in the LM, the interest rate (and thus the exchange rate) will increase absent government intervention. Under a fixed exchange rate regime, the government would have to respond by increasing the money supply to return the interest rate (and the exchange rate) to its original level. This change would increase output even more, so the AD would be flatter under a fixed exchange rate regime than under a flexible regime. However, if the shift in the LM caused

by the decrease in prices dominates the shift in the IS, the interest rate (and the exchange rate) would decrease absent government intervention. In a fixed exchange rate regime, the government would then have to reduce the money supply, dampening the original increase in output. Thus, in this case the AD would be flatter under a flexible exchange rate regime.

(3) Suppose that the economy is under a fixed exchange rate regime and that the pubic deficit is large enough so that expansionary fiscal policy is not feasible. Provide a detailed description of how the economy would return to its natural level of output if the government does not devalue the currency, and financial investors believe that the government will not devalue. What will happen to the real exchange rate in the medium run?

Since output is below its natural level, the price must be below the expected price. This will lead the expected price to adjust downwards over time, shifting the AS down and decreasing the price level. This process will continue until the expected price catches up with the price. In the medium run, P decreases, so the domestic currency loses value in real terms.

(4) Now suppose that there is a currency attack. That is, financial investors expect that the government is going to devalue the currency. What will happen to the AD if the government decides to defend the currency and not devalue? What will happen to output in the short run? Finally, illustrate what happens in the IS-LM diagram.

If the government is to keep the current exchange rate unchanged, the domestic nominal interest rate must increase $(1+i = (1+i^*)\frac{E}{E^e_{t+1}})$. Since, the nominal exchange rate will remain unchanged, this implies that for any P, the equilibrium output in the goods market will be lower, so the AD will shift to the left. Thus, output decreases in the short run.

The change in the future expected exchange rate initially shifts the IS to the right. To compensate and keep the nominal exchange rate fixed, the government is forced

to reduce money supply and shift the LM to the left. From the argument above we know that this shift must be large enough so that the new equilibrium level of output is below the original one.

(5) What will happen to the AD and output in the short run if the government decides instead to meet the financial investors' expectations about a devaluation? Illustrate what happens in the IS-LM diagram.

   With the change in the expected exchange rate, the IS shifts to the right. If the government is going to meet exactly the expectations, it must increase money supply (shifting the LM to the right) just enough so that the interest rate does not change. Thus, at the same prices, output will increase and the AD shifts to the right. Output will increase in the short run.

3. The Ricardian Equivalence and the Mundell-Fleming Model [35 points]

   Consider an small open economy with a flexible exchange rate regime.

   (1) If households are myopic and current taxes do not change, what is the short run effect of a decrease in government spending on unemployment, output and the exchange rate.

      A decrease in government spending shifts the IS to the left, decreasing output (and increasing unemployment), and decreasing the interest rate and the exchange rate.

   (2) How does your answer to (1) change if the decrease in government spending is accompanied by an equivalent decrease in current taxes.

      If the marginal propensity to consume is less than one, desired consumption will increase but less (in absolute terms) than the decrease in government spending. Thus, the IS will still shift to the left, but less than in (1). As a result, output will decrease

by less relative to (1), unemployment will increase by less and the exchange rate will depreciate less.

(3) Suppose households have perfect access to credit markets and that they expect the government's debt to be repaid within their life-cycle. Would your answer to (2) change if the decrease in government spending leads to an equivalent cut in future taxes rather than a cut in current taxes?

The answer would not change. The Ricardian Equivalence states that households will react in the same way to any combination of present and future tax cuts with the same net present value.

(4) If households did not have access to credit markets, how would your answer to (3) change?

Without perfect access to credit, households' desired consumption today would increase more with a decrease in current taxes than in future taxes. Indeed, with limited access to credit, households would have trouble transferring future wealth to the present. Thus, in the short run, output would decrease less, unemployment would increase less, and the exchange rate would decrease less if the reduction in government spending is accompanied by an equivalent reduction in current rather than in future taxes.

(5) Can you think of a situation where a decrease in current government spending could lead to an increase in AD? Explain.

A decrease in government spending today can be viewed by households as a signal of future decreases in government spending. If this is the case, households will perceive that the net present value of their taxes will decrease by an amount greater than the decrease in current government spending. The subsequent increase in desired consumption can then potentially offset the decrease in current government

spending, and the total effect on the AD can be positive.

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