

14.02 PRINCIPLES OF MACROECONOMICS

QUIZ 3

READ INSTRUCTIONS FIRST:

Read all questions carefully and completely before beginning the quiz. Label all of your graphs, including axes, clearly; if we can't read the graph, you will lose points on your answer.

Please answer each question in the assigned space, and keep your answers brief and to the point. If you require additional space for a particular question, you may use the extra page provided at the end of the quiz. Write your name, TA name, and circle your section or recitation time below. Return your copy of the quiz to the TAs when you complete the test. You will have 90 minutes to complete the quiz. Good luck!

Name:

MIT ID number:

Circle your section/lecture-recitation

Indradeep Ghosh 9 AM

Indradeep Ghosh 11 AM

Bill Kerr 1 PM

Veronica Rappoport 2 PM

Veronica Rappoport 3 PM

Professor Gilchrist's lecture:

Andrew Healy 9 AM

Andrew Healy 10 AM

Andrew Healy 11 AM

Multiple choice questions (2 points each)

1. If a Central Bank is fully committed to a fixed exchange rate but investors expect a devaluation, it is likely that the economy will experience:
 - A. an increase in the amount of money in circulation
 - B. no change in the amount of money in circulation
 - C. a decrease in the level of output**
 - D. a decrease in the interest rate

2. A given increase in government spending is more effective at increasing output in a country that
 - A. is very open to trade.
 - B. is closed to trade.**
 - C. has a flexible exchange rate.
 - D. has a large sensitivity of net exports with respect to exchange rate.

3. In the short run, under a flexible exchange rate, an expansionary monetary policy
 - A. has an ambiguous effect on investment
 - B. has an ambiguous effect on net exports**
 - C. has an ambiguous effect on the exchange rate
 - D. has an ambiguous effect on the interest rate

4. In the short run, under a flexible exchange rate, an expansionary fiscal policy
 - A. definitely has a negative effect on investment
 - B. definitely has a positive effect on investment
 - C. definitely has a negative effect on net exports**
 - D. has an ambiguous effect on net exports

5. The primary motivation for a crawling peg exchange rate arrangement is
- A. to allow complete freedom with monetary policy
 - B. to prevent real appreciation and loss of export-competitiveness**
 - C. to preserve nominal exchange rate stability
 - D. none of the above
6. Consider a small open economy (i.e., it takes world prices and interest rates as given). If money is neutral, then an increase in the money supply in this economy will
- A. not affect the real exchange rate
 - B. increase domestic prices in the same proportion
 - C. depreciate the nominal exchange rate in the same proportion
 - D. all of the above**
7. The pound-dollar exchange rate is 0.6 pounds to the dollar. The yen-dollar exchange rate is 180 yen to the dollar. The yen-pound exchange rate is 120 yen to the pound. Starting with 1 pound, you can make arbitrage profits of
- A. zero
 - B. 1 pound
 - C. 1.5 pounds**
 - D. 2 pounds
8. If a country wishes to fix its exchange rate and deny itself the ability to conduct autonomous monetary policy, then of the following, the exchange rate arrangement that signals the strongest commitment is
- A. EMS-type exchange rate band.
 - B. currency board.
 - C. dollarization.**
 - D. a crawling peg.

9. Consider a small open economy (takes world prices and interest rates as given) with flexible exchange rates and full capital mobility. Assume the Marshall-Lerner condition is satisfied. Then a fiscal expansion will have the short run impact of

- A. worsening the current and capital accounts.
- B. improving the capital and current accounts.
- C. worsening the current account, but improving the capital account.**
- D. worsening the capital account, but improving the current account.

[Note – an improvement in an account means an increase in the balance on that account, where $\text{Balance} = \text{Inflows} - \text{Outflows}$]

10. Which of the following describes conditions that could have helped lead to the large US trade deficits of the early 1980s?

- A. large budget deficits and an appreciating dollar**
- B. large budget deficits and a depreciating dollar
- C. small budget deficits and an appreciating dollar
- D. small budget deficits and a depreciating dollar

11. To decrease the trade deficit and to increase short-run output, which of the following could work?

- A. a depreciation of the dollar**
- B. a depreciation of the dollar and a monetary contraction
- C. adoption of a fixed exchange rate
- D. contractionary monetary policy

12. A country with a fixed exchange rate
- A. must give up control of its monetary policy.
 - B. must open its capital markets.
 - C. gives up control of its monetary policy if it maintains open capital markets.**
 - D. none of the above
13. Higher government spending will not crowd out investment in
- A. an open economy with fixed exchange rates.**
 - B. an open economy with flexible exchange rates.
 - C. a closed economy.
 - D. none of the above.
14. A country will be expected to have a larger trade volume to GDP:
- A. The bigger the country is.
 - B. The farther the country is to other countries.
 - C. The more the country's products and services differ from other nations.**
 - D. All of the above.
15. Which of the following is not a concern for the adoption of the Euro?
- A. Europe's economies have inflexible labor markets.
 - B. Europe's economies are subject to uncorrelated shocks.
 - C. Europe's economies are already highly dependent on trade with each other.**
 - D. All of the above are concerns.

Long Question – Interest Parity (30 points)

Suppose the current exchange rate between USA and Mexico is 0.48 dollars to the peso. Assume uncovered interest parity holds.

- (a) In the US, the 3-month, 6-month, and 1-year nominal interest rates are 12%, 10% and 8% on a **yearly** basis. In Mexico, the corresponding rates are 8%, 10% and 12%. Describe quantitatively and qualitatively the expected future path of the dollar-peso exchange rate (i.e., what is the expected depreciation over 3 months, 6 months, and 1 year). You do not have to consider compounding (i.e., just take the yearly interest rate and divide by 4 to get the three-month rate).

First convert the interest rates from annualized rates where required

3 months – Expected depreciation in dollar = $(12/4)\% - (8/4)\% = 1\%$

6 months – Expected depreciation in dollar = $(10/2)\% - (10/2)\% = 0\%$

1-year – Expected depreciation in dollar = $8\% - 12\% = -4\%$

So, the dollar first depreciates, then appreciates back to its original value, and then appreciates further by 4%

- (b) Consider only the 1-year bonds from part (a). Suppose the dollar-bond is default-risk free, but the Mexican bond will only pay off with 90% probability. What is the expected dollar-peso exchange rate (in terms of dollars per peso) after 1 year?

Expected depreciation in dollar = $8\% - 0.9 \cdot 12\% = -2.8\%$, which implies that the expected 1-year ahead value of the peso is approximately $0.48 - 0.48 \cdot 0.028 = 0.48 \cdot 0.972 = 0.467$

- (c) Consider again only the 1-year bonds from part (a), and this time both bonds are default-risk free. Suppose the real exchange rate is expected to be constant over this period, but Mexican inflation is expected to be higher than US inflation. By how much is Mexican inflation expected to exceed US inflation?

4% since the dollar is expected to appreciate by 4%

- (d) Consider now the following situation – a US seller and a Mexican buyer close a deal where the buyer agrees to pay 5 million pesos in 3 months' time to the seller. The US seller then decides to buy a “forward contract” (commonly available in financial markets) to sell the 5 million pesos “forward” at a particular exchange rate called the “forward rate” (it does this to assure itself a particular dollar amount in 3 months time). If i is the 3-month US interest rate, i^* is the 3-month Mexican interest rate, the forward rate is f , and the current exchange rate is e , write down an arbitrage equation relating these 4 quantities? Given the values for i and i^* in part (a), and $e = 0.48$ dollars to the peso, what would the forward rate be?

$$i = i^* + (f-e)/e; 0.48 * 1.01 = 0.4848$$

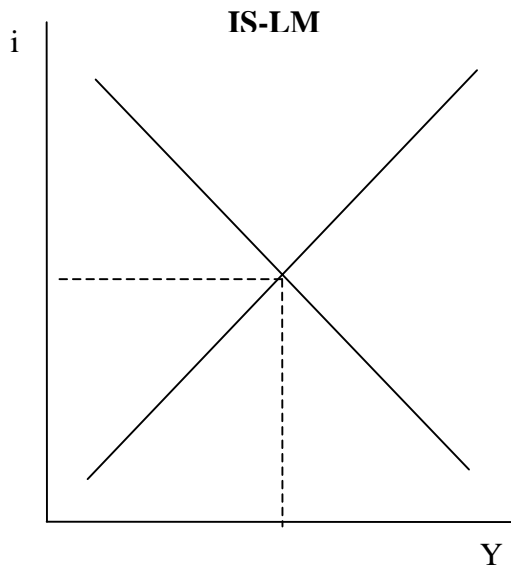
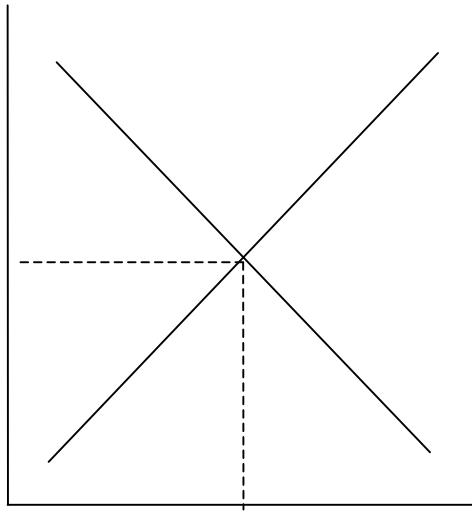
- (e) List any two reasons why uncovered interest parity between Mexico and USA may not hold in reality.

Risk, Transactions Costs

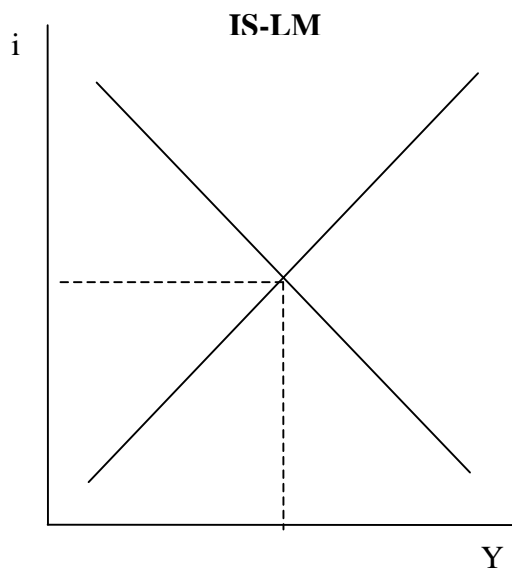
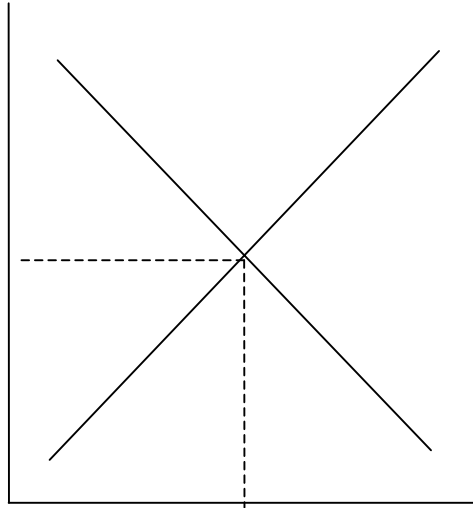
Long Problem (40 points):

This question will ask you to analyze the effects of an INCREASE IN TAXES using the graphs on the following page. Assume that we start at the natural level of output.

- a) Under flexible exchange rates, show the transition to the *short-run* equilibrium using the IS-LM graph. To the right of the graph, explain in one or two sentences what happens to the nominal exchange rate (and why) and to the real exchange rate (and why):



b) Under fixed exchange rates, show the transition to the *short-run* equilibrium using your IS-LM graph. To the right of the graph, explain in one or two sentences what happens to the real money supply (and why) and to the real exchange rate (and why):

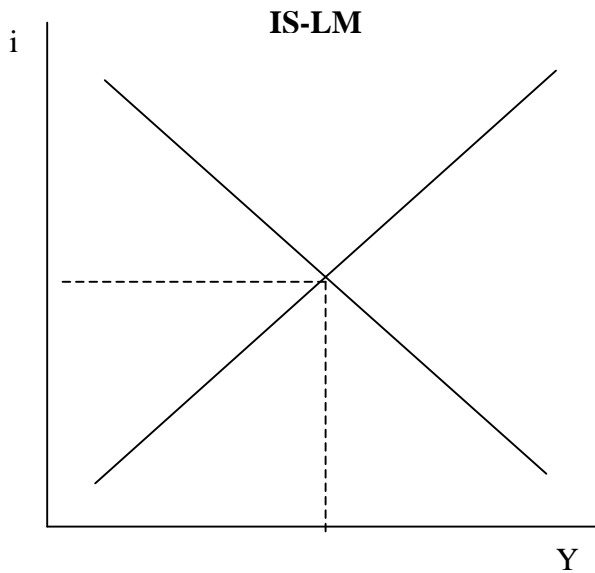
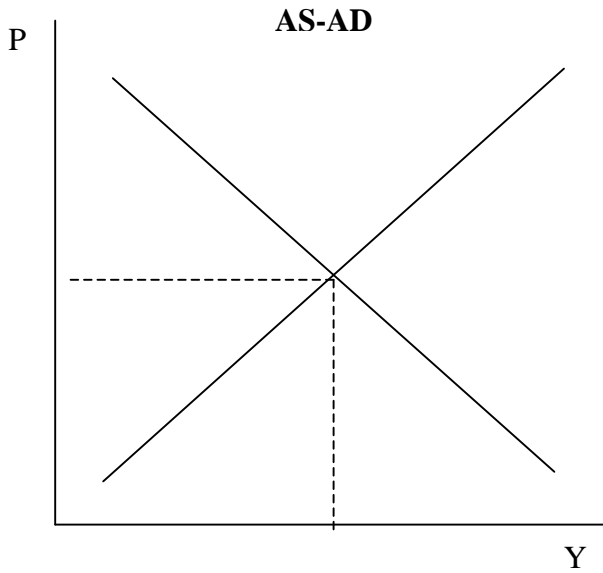


c) In the chart below, compare the *short-run* values for fixed vs. flexible exchange rates for the following set of variables. Put a check in the correct box for each of the five variables.

	Larger in fixed	Larger in flexible	Ambiguous
Investment			
Interest rate			
Net exports			
Real exchange rate			
Output			

Note: For the real exchange rate, either “larger in flexible” or “ambiguous” is acceptable.

d) Under fixed exchange rates, show the transition from the *short-run to the medium-run* equilibrium using both the IS-LM and AS-AD graphs. You should start by including your short-run curves from part b). Label those with subscript *s*. Label the medium-run cruves with subscript *m*. To the right of the graphs, explain in one or two sentences what happens to the real money supply (and why) and to the real exchange rate (and why), between the short-run and the medium-run:

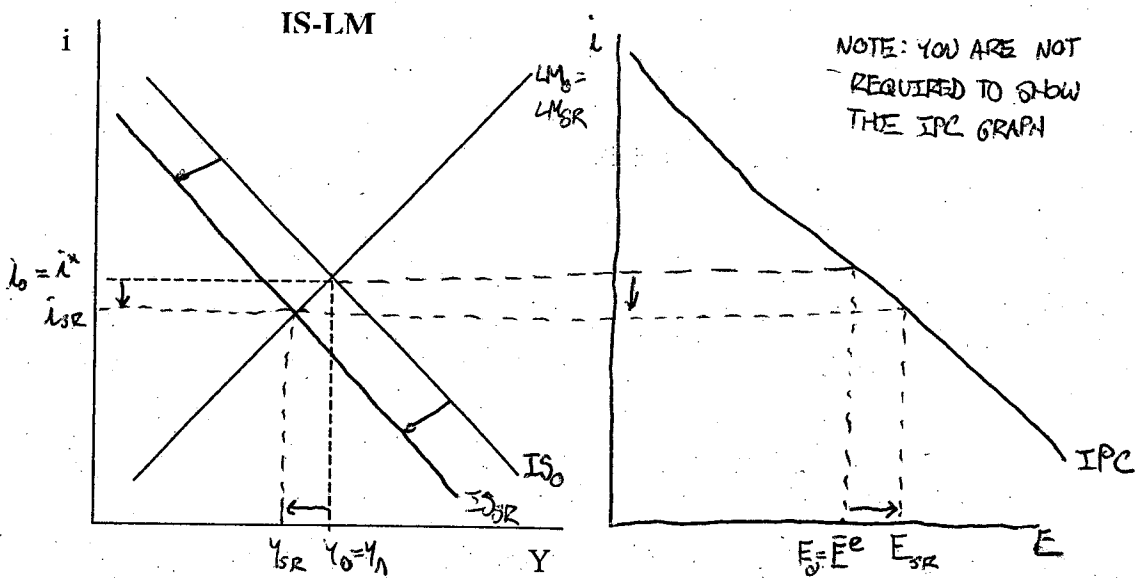


Long Problem (40 points):

This question will ask you to analyze the effects of an INCREASE IN TAXES using the graphs on the following page. Assume that we start at the natural level of output.

a) Under flexible exchange rates, show the transition to the *short-run* equilibrium using the IS-LM graph. To the right of the graph, explain in one or two sentences what happens to the nominal exchange rate (and why) and to the real exchange rate (and why):

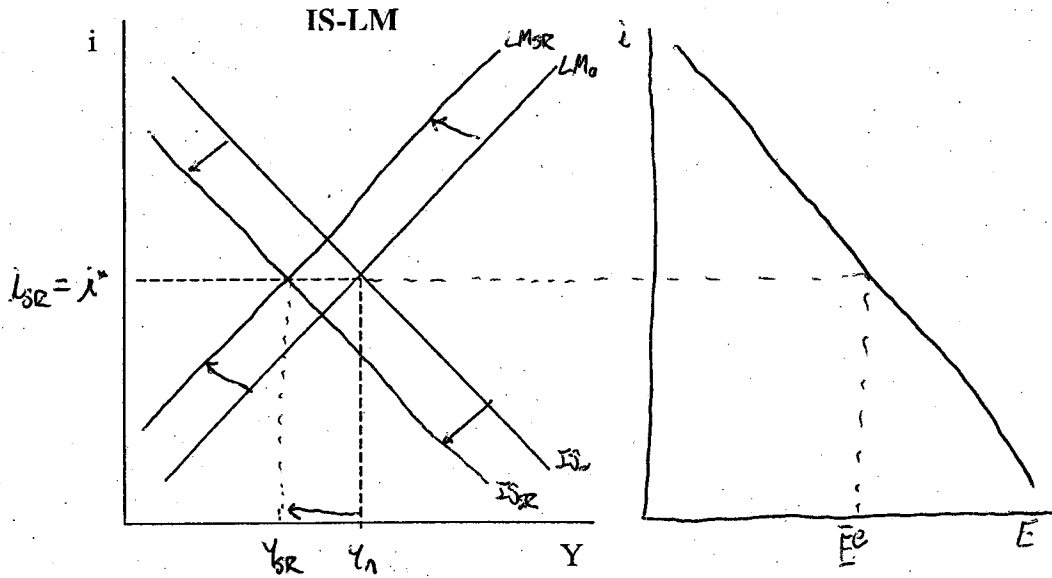
PRICES ARE FIXED IN S.R.:



THE NOMINAL EXCHANGE RATE DEPRECIATES (AS DOES THE REAL EXCHANGE RATE $e = EP^*/P$ SINCE PRICES ARE FIXED). THE INTEREST PARITY CONDITION REQUIRES EXPECTED APPRECIATION IN THE HOME COUNTRY (BACK TO E_0) TO SUPPORT $i_{SR} < i^*$. (AN ALTERNATIVE PERSPECTIVE IS THAT THE DECLINE IN i BELOW i^* INDUCES INVESTORS TO WANT TO SHIFT OUT OF HOME COUNTRY BONDS INTO FOREIGN BONDS; THE LOWER DEMAND FOR HOME COUNTRY CURRENCY WILL PRODUCE A DEPRECIATION IN ITS VALUE).

b) Under fixed exchange rates, show the transition to the *short-run* equilibrium using your IS-LM graph. To the right of the graph, explain in one or two sentences what happens to the real money supply (and why) and to the real exchange rate (and why):

PRICES ARE FLEXIBLE IN SR:

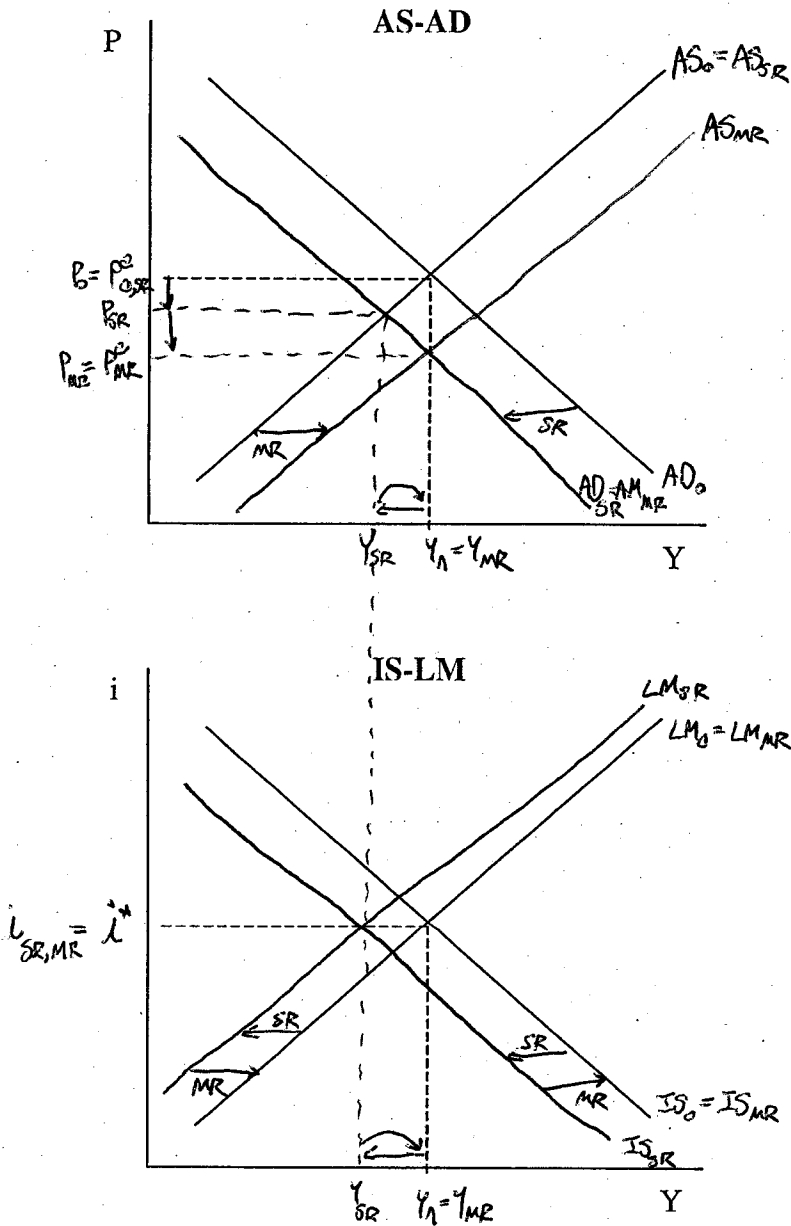


THE REAL MONEY BALANCES MUST DECLINE IN ORDER TO MAINTAIN A STABLE $i = i^*$ SINCE Y IS DECLINING ($LM: \frac{M}{P} = YLLi^*$). THE PRICE IS FALLING, SO THE MONEY SUPPLY MUST BE CONTRACTED EVEN QUICKER. ALTHOUGH THE NOMINAL EXCHANGE RATE IS CONSTANT, THE PRICE DECLINE CAUSES REAL DEPRECIATION.

c) In the chart below, compare the *short-run* values for fixed vs. flexible exchange rates for the following set of variables. Put a check in the correct box for each of the five variables.

	Larger in fixed	Larger in flexible	Ambiguous
$I(Y, i)$ Investment		✓	
i Interest rate	✓		
$NX(Y, Y^*, \epsilon)$ Net exports			✓
$\epsilon = \frac{EP^*}{P}$ Real exchange rate			✓
Output		✓	

d) Under fixed exchange rates, show the transition from the *short-run* to the *medium-run* equilibrium using both your IS-LM and AS-AD graphs. You should start by including your short-run curves from part b). Label those with subscript *s*. Label the medium-run curves with subscript *m*. To the right of the graphs, explain in one or two sentences what happens to the real money supply (and why) and to the real exchange rate (and why), between the short-run and the medium-run:



AFTER ITS SHORT-RUN DECLINE, REAL MONEY BALANCES WILL RISE WITH THE OUTPUT INCREASES, AS Y FULLY RETURNS TO Y_n (THE STARTING VALUE) AND $i = i^*$ THROUGHOUT, REAL MONEY BALANCES MUST RETURN TO THEIR ORIGINAL LEVEL ($\frac{M}{P} = Y_n L(i^*)$), ALTHOUGH BOTH M AND P WILL BE SMALLER. AS THE PRICE LEVEL CONTINUES TO DECLINE, THE REAL EXCHANGE RATE FURTHER DEPRECIATES.