Review Problems: Exchange Rate Regimes
Prof. Lutz Hendricks. April 19, 2012

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1 Basics

1. What questions do the nominal and real exchange rates answer?
2. What do relative and absolute PPP assert?
3. The U.S. inflation rate is about 2% per year. Suppose the Mexican inflation rate is 4%. What do you expect to happen to the Mexican peso over time. Explain the mechanism through which this happens.

2 Uncovered Interest Parity

1. What does UIP assert in words?
2. You should be able to derive / explain the UIP condition.
3. If the real interest rate in the U.S. is 5% and in Mexico it is 3%, what would you expect to happen to the peso/dollar exchange rate over time?
4. Given the following data: Euro interest rate 3%, exchange rate today 1.5$/Euro, expected exchange rate next year 1.65$/Euro.
   (a) Calculate the dollar return of investing in Euro.
   (b) Calculate the dollar interest that is consistent with UIP. Assume no risk premia.
   (c) Suppose Euro interest rate rises to 6%. What should happen to the Euro now and in the future?
   (d) What would happen to the Euro if investors view the Euro as more "risky" than the dollar?
5. Is the dollar strong when U.S. interest rates are high?
6. "Whether the euro will tend to appreciate or depreciate in relation to the dollar in the early stages is quite unpredictable. The short-term interest rate that is likely to exist at the ECB in January is 3%. ... In the United States, the basic short-term rate–the Federal funds rate–was about 4.75% as of mid-December. That alone would point to some appreciation of the dollar in relation to the euro." – Robert Solomon 1999

7. Some observers argue that the dollar was strong in the late 1990s because of a "safe heaven" argument: in the wake of LDC currency crises, investors became hesitant to invest in LDC currencies. Explain what would happen to U.S. interest rates according to uncovered interest parity and to the U.S. trade balance, if this story is correct.

2.1 Answers: UIP

1. The dollar returns of investing abroad and at home are the same.

2. See slides.

3. A trick question: investors do not compare real interest rates, they compare nominal interest rates.

4. Plug the numbers into the UIP formula.

   (a) $(1 + i_{Euro})\ (1 + x)$ where x is the expected appreciation rate of the Euro: $1 + x = 1.65/1.5$.

   (b) Solve $(1 + i_{\$}) = (1 + i_{Euro})\,(1 + x)$.

   (c) Assume the future exchange rate stays the same. Otherwise, everything has to be expressed relative to it. Today the Euro appreciates so that $1+x = (1 + i_{\$})\,/\,(1 + i_{Euro})$ continues to hold. Over time, the Euro must depreciate, so that $x < 0$ and the dollar returns of investing in dollars (low interest) and Euros (high interest) remain the same.

   (d) Same as a reduction in the Euro interest rate.

5. While the dollar interest rate is high, the dollar must depreciate. When the interest rises, the dollar appreciates on impact.

6. According to UIP, assuming the risk premium is small, a positive interest differential (4.75% - 3% > 0) implies that the euro should appreciate. One could add that over a short horizon Mr. Solomon may be right (b/c UIP may fail).

7. The safe-heaven story suggests that the risk premium for foreign currency increases. Presumably the foreign interest rises as well, but not enough to offset the rise in RP* (this is why capital flows to the U.S.). Capital inflows should reduce the dollar interest rate, which is consistent with UIP. The trade balance would obviously have to worsen (CA + KB = 0). Note that this question asks what would happen "according to UIP."

3 Exchange rate regimes

1. You should be able to explain what floating and fixed exchange rate regimes do.

2. Why are fixed exchange rate regimes inherently vulnerable to speculative attacks?

3. Why does a country that fixes its exchange rate against the dollar have to adopt an inflation rate that is equal to the dollar inflation rate?

4. What are benefits and drawbacks of fixing the exchange rate?

5. Explain the Impossible Trinity.

3.1 Fixed exchange rates

1. Italy's inflation rate is about 2 percentage points above that of Germany. Suppose the Italian lira's exchange rate is fixed against the Deutsche Mark. Why exactly is this not sustainable?

2. Why does a central bank lose control over the money supply under fixed exchange rates? Is this the case in the short run? Is it the case in the long run?

3.1.1 Answer

1. The trouble is that the real exchange rate diverges: $q = e\, P^* / P$. As Italian inflation is larger than German inflation, q declines by 2% a year. Italy loses competitiveness, which causes trade deficits and eventually the Italian central bank runs out of reserves. This has nothing to do with interest parity. Nominal interest rates may be the same in both countries. There could even be capital controls (as there have been for a long time in the Italian case). The argument would still go through.

2. The central bank loses control over the money supply only in the long run (except when there are strong capital flows). The answer is related to question (a). In the long run, only the real exchange rate that leads to BOP equilibrium (private supply of currency = private demand for currency) is sustainable. Therefore, money supply must get the price level in line with the foreign country. In the short run, any deviation from the market clearing exchange rate causes (through CB interventions) changes in the money supply, but they can be sterilized for some time.

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