Problem Set 7
Due: Wednesday, November 10.

Answers

True, False or Uncertain (each worth 10 points)

1) False. Although we might think that there should be a relation between
real rates of return of financial assets and of physical investment (since
the real interest rate is the opportunity cost of a physical investment),
this is not what happened in Brazil last year. What drove real rates of
returns for financial markets to 40% was the fear of investors that the
country would devalue its fixed exchange rate (see problem 1 below).
2) False. If a country's fundamentals deteriorate then it is bound to have
a crisis. This was the fate of Mexico in 1994 whit a current account
deficit of 8% of GDP. But a country with a fixed exchange rate can also
experience a crisis if investors lose confidence about it keeping the
current peg. This is what happened to some South East Asian countries
(Korea for example), that had good fundamentals, but that suffered
investor's fears of a devaluation.
3) True. Although an increase in the interest rate leads to an appreciation
of the exchange rate, in this case the markets already had discounted an
increase (one of 0.5 percentage points), so the exchange rate already
reflected this expectation. When the Fed announces a lower increase, this
surprises the market and acts *as if* the Fed had actually lowered
the rate. So the observed effect is a depreciation.
4) True. A bond's yield to maturity reflects the average short term interest
rates from today to the bond's maturity. If the market expect the interest
rate to increase, then as we take a longer horizon to average short term
rates we will observe higher yields, thus getting an upward sloping yield
curve (measuring yields as a function of maturity).
Problem 1) (each item worth 8 points)
a) The price of a one year bond paying 100 is given by the following formula
$P = \frac{100}{1+i}$
So for the US bond, since the nominal interest rate is 4%, give a price of
96.15 U$S, while for the Brazilian bond, the nominal interest rate is 8%,
gives a bond price of 92.59 reais.
b) To get the expected depreciation of the nominal exchange rate we can use
the interest parity condition (expressed for nominal rates) and get:
$\frac{E^e_{-2}}{2} = 8\% - 4\% = 0.04.$

Thus the expected nominal depreciation is 4%, so the expected nominal exchange rate a year from now is 2.08. What can we say about the evolution of the trade balance out of this? Nothing.

c) To do this we can either look at the interest parity condition in real terms, or directly adjust the expected depreciation of the nominal exchange rate and adjust that for foreign (US) and domestic inflation, as implied from the definition of the real exchange rate ($e=\frac{EP^*}{P}$)

change in real exchange rate=change in nominal+US inflation-Brazilian inflation=4%+2%-7%=-1%

So there is an expected appreciation of the real exchange rate of 1%. From this we can conclude that eventually Brazil will get a worsening of its trade balance (with the caveat that it might improve in the short run by the workings of the J-curve dynamic aspects).

d) If Brazil credibly pegs its exchange rate to the dollar, then interest rates in Brazil will be the same as interest rates in US, therefore at 4% in nominal terms. This implies that the bond price in Brazil will jump to a new price of 96.59 reais.

e) In this case there is an expected devaluation of 35%, coming from $\frac{(0.5*3.4+0.5*2)-2}{2} = 35\%$

Thus the interest parity condition tells us that Brazil needs to increase domestic interest rates by 35% (to the level of 39%) if it intends to defend the peg and avoid capital outflows and losing reserves.

Problem 2) (each item worth 10 points)

a) We know that in general we need to use two policy instruments to achieve a dual policy objective: a target output level, and a target trade balance. This is precisely our problem here, we want to eliminate the trade balance (target level: zero), while keeping output at the current level (target level: initial one). We know that the trade balance is given by:

NX= $X(Y^*, e)$-eQ(Y,e)

If we don't want to change output, Y should stay at the initial level, and since there is nothing to assume changes in foreign output, the only way to improve net exports is to have a devaluation (assuming long run effects under the Marshall Lerner condition). To get a depreciation of the exchange rate we need to do an expansionary monetary policy that drives the domestic interest rate down. This policy must be accompanied by a fiscal contraction so not to have effects on domestic output.

From the last point we can conclude that we cannot achieve this result if exchange rates were fixed, because the only source of an improvement in the trade balance is a devaluation, something that is ruled out if the exchange rate is fixed (we don't consider the case of a devaluation as an exchange rate policy here)

b) The story is simpler if government expenditure consists entirely of foreign goods. In this case a fiscal contraction will directly reduce imports while having NO effect on the demand of domestic goods. Thus a fiscal contraction in this case will not affect output, and as long as the initial trade deficit was lower that the level of government expenditure (eQ-X<G), we could achieve our policy targets by an appropriate

reduction of government expenditure.

The same logic tells us that we can now achieve this result also if the exchange rate is fixed, as we don't need to change the exchange rate as we did in point a).