

## Week 21 - Question 2.4

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March 4, 2016

**The question asks, for an economy with a floating exchange rate, output at the natural level and inflation equal to an inflation target at 2 percent, to consider the effect on output of a change in the inflation target from 2 to 3 percent when the nominal interest rate remains constant.**

First, let's examine the effect of a change in the inflation target on the nominal exchange rate. If the inflation target is changed, then future inflation should be permanently higher (recall that prices are fixed in the short run). In the long-run, the real exchange rate is constant by assumption. Thus we can see from the definition of the real exchange rate, using the assumption that in the long-run the real exchange rate is constant, that the nominal exchange rate has to depreciate:

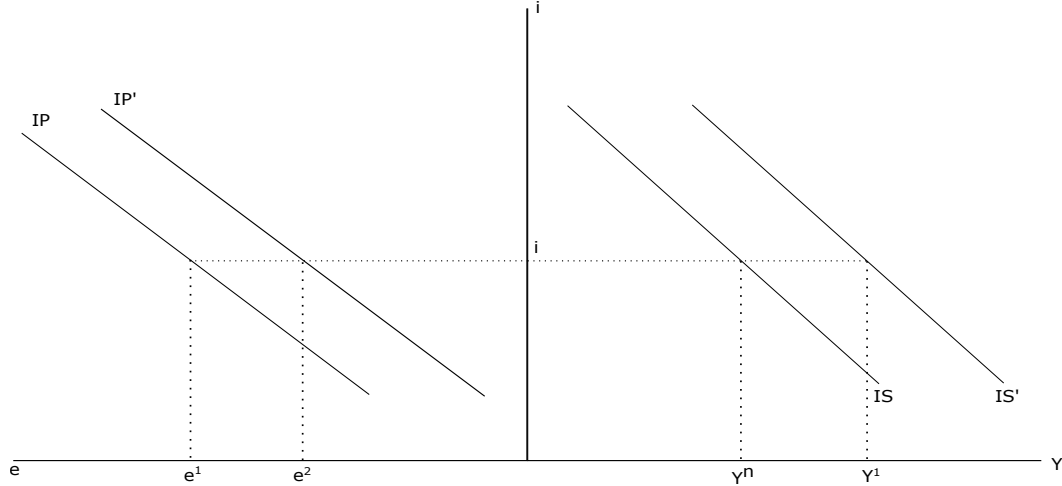
$$\begin{aligned}\frac{\Delta \varepsilon}{\varepsilon} &= \frac{\Delta e}{e} + \pi - \pi^* = 0 \\ \frac{\Delta e}{e} &\downarrow = \pi^* - (\pi \uparrow) \downarrow\end{aligned}$$

A higher inflation target reduces the RHS as the domestic inflation rate enters negatively. To restore equality, the LHS has to decrease as well. Intuitively, this can be explained as follows: In the long-run - by the logic of the purchasing power parity - the price for goods at home and abroad is the same in real terms. If the nominal price in the domestic economy is increasing relatively more than abroad, the relative price of foreign goods decreases in nominal terms, so the domestic currency has to become cheaper to make up for the difference so in real terms goods cost the same.

If in the long-run the nominal exchange rate has to decrease, current expectations about the future nominal exchange rate decrease. For a constant nominal interest rate, this in turn decreases the current nominal exchange rate. To see this, consider the interest parity condition

$$e_t \downarrow = \frac{1 + i_t}{1 + i_t^*} e^e \downarrow$$

Figure 1: Question 2.4



For a fixed nominal exchange rate, this shifts the IP curve to the right (to IP'): For a given foreign nominal interest rate and lower expectations, for every nominal interest rate the nominal exchange rate will be lower. Also, the IS curve shifts to the right (to IS'): For a lower nominal exchange rate and, in the short-run fixed prices, the real exchange rate decreases, so NX increase and aggregate demand is higher for every nominal interest rate.

In the short-run, we end up in a situation where the nominal exchange rate is lower ( $e_1$  to  $e_2$ ), the nominal interest rate is the same, and output is above the natural level at  $Y_1$ . Results are shown in figure 1.

Just as a side note, over time prices would adjust to the higher inflation target of course, and the real exchange rate would increase (to its natural level arguably), so the economy would end up at the natural level of output with higher inflation and a lower nominal exchange rate.