

International Finance
Problem set 4
City University
Spring 2007

Short (independent) questions:

1. What does the law of one price say?
2. Say a coffee costs 1 Pound in the UK, and \$3 in the US. If the nominal exchange rate is $e = £0.5/\$1$, does the law of one price hold?
3. Suppose that between year t and $t+1$, inflation was the same in the UK and in the US. If relative PPP holds, what does this imply for the behavior of the Pound/Dollar exchange rate between t and $t+1$?
4. What does absolute PPP imply for the real exchange rate?

Problem 1: The monetary approach to exchange rates (NB: floating exchange rate assumed throughout the rest of this problem set).

Let P be the domestic price level in the UK, P^* the price level in the US, e the nominal exchange rate (in $£ e = \$1$), M/P and M^*/P^* the real money supply in the UK and the US (respectively), and $L(r, Y)$ and $L(r^*, Y^*)$ the real money demand in the UK and the US (respectively), where r, Y, r^*, Y^* are the interest rate and output in the UK and in the US (*).

1. Write the absolute PPP condition.
2. Write the equilibrium conditions on the money market in the UK and in the US.
3. According to the monetary approach, what is the equilibrium value of the nominal exchange rate in the long run?
4. Now, starting from such an equilibrium, suppose that output in the US, Y^* , increases. Does this lead to an appreciation or a depreciation of the Pound versus the Dollar?

Problem 2: Real factors and the nominal exchange rate.

This exercise will help you understand slides 12-17 in lecture 4 (the ones I didn't have time to go through during the lecture)

Let P be the domestic price level in the UK, P^* the price level in the US, e the nominal exchange rate (in $£ e = \$1$).

- What is the real exchange rate q (expressed in number of UK goods per unit of US good)? Then, write e as a function of q, P and P^* .
- When q increases, does this mean that UK goods become relatively cheaper or more expensive compared to US goods?
- What is the effect on the ratio P/P^* of an increase in the relative demand for UK goods? Does this lead to a real appreciation or depreciation of the Pound against the Dollar?
- On a graph with q on the vertical axis, plot RD (relative demand for UK goods) and RS (relative supply of UK goods).
- What is the effect on q of an increase in UK productivity?

Now, you know how real factors (i.e. that influence RS and RD) affect q and therefore e .

The next step to have the more general model is to combine these insights with effects of monetary factors that we learned in the monetary approach (in particular, we are going to use the equilibrium conditions on the UK and US money markets).

Take a few minutes to study slides 15, 16 and 17 in lecture 4.

- Suppose that there is a change in M (and only M , no change in real factors), the quantity of money printed by the Bank of England. What is the effect on the nominal exchange rate e ? What is the effect on the real exchange rate q ? Does relative PPP hold in this case?

Now, suppose there is an increase in UK productivity.

- Does this lead to a real appreciation or depreciation of the Pound?
- But look at slide 16: an increase in UK productivity also means that Y , output in the UK, increases, which has an impact on the UK money market. Then, what can you say about the NET effect of an increase in UK productivity on the real exchange rate q ?