

Set 7

The Balassa-Samuelson effect

Marshall-Lerner condition

Marshall-Lerner condition says that, starting from a position of equilibrium in the current account, a depreciation will improve the current account only if the sum of the export and import elasticities is greater than unity. An exchange rate depreciation will improve the balance of payments when

$$\frac{p_x x}{ep_m m} \eta_x + \eta_m > 1 \quad \text{where} \quad \eta_x \equiv \frac{dx/x}{de/e}, \quad \eta_m \equiv \frac{dm/m}{de/e}$$

since current account equals $CA = p_x x(e) - ep_m m(e)$

$$\text{then} \quad \frac{dCA}{de} = p_m m \left(\frac{p_x x}{ep_m m} \eta_x - 1 + \eta_m \right)$$

Law of one price

If two goods are identical, they must sell for the same price. This applies though to tradeables goods only. Non-traded goods (non-tradeables) are items for which interregional price differentials cannot be eliminated by arbitrage.

$$\text{Law of one price} \quad \frac{eP_T^*}{P_T} = 1$$

The Balassa-Samuelson effect

Higher productivity growth in the tradable sector causes an increase in wages in this sector, and assuming mobility and homogeneity of labour, it also translates into growth of non-tradeables prices. Increase in the relative price of non-traded goods results in a general increase the price level and real appreciation of domestic currency.

Question 1. Lets suppose that the dollar weakened 3.9% against the euro over the last month. What will happen if the dollar continues to weaken (assume that the Marshall-Lerner condition holds). How would it affect the US exports and trade balance? Shall we take into account the variation of foreign and domestic prices in order to fully assess the overall impact?

Question 2. Assuming that all other variables are constant, what would be the impact on real exchange rate of the following incidents:

- a) the overall sum of spending remains constant, however, foreign residents decide to spend more on non-tradeables goods and less on tradeables;
- b) national residents shift their demand from national export goods towards non-tradeable ones.

Question 3. Assume that the domestic price level P is given by $P = (P_N)^\alpha (P_T)^{1-\alpha}$ and that the foreign price level P^* is given by $P^* = (P_N^*)^\beta (P_T^*)^{1-\beta}$ where P_N (P_N^*) is the domestic (foreign) price index for non-traded goods, P_T (P_T^*) is the domestic (foreign) price index for trade goods and $0 < \alpha, \beta < 1$. The real exchange rate is defined as $\varepsilon \equiv \frac{eP^*}{P}$. Show that if the law of one price holds for traded goods and if

$\frac{P_N^*}{P_T^*}$ is approximately constant, then variation in the real exchange rate can be mainly explained by variations in the ratio $\frac{P_N}{P_T}$.

Question 4. Consider the same model as before in which the domestic (foreign price) indices are given by $P = (P_N)^\alpha (P_T)^{1-\alpha}$ ($P^* = (P_N^*)^\beta (P_T^*)^{1-\beta}$). Assume now that domestic (foreign) consumers spend a share a (b) of their tradeable-spending on home produced tradeable goods (H) and a share $1 - a$ ($1 - b$) on foreign produced tradeable (F). Price indices (using a Cobb-Douglas utility function) are:

$$P_T = P_H^a P_F^{1-a} \quad P_T^* = P_H^{*b} P_F^{*1-b}$$

Define the real exchange rate for tradeables as $\varepsilon_T = \frac{eP_T^*}{P_T}$

- a) What would the law of one price for tradeables suggest you about goods H and F?

- b) Use the ratios $\frac{eP_F^*}{P_F}$, $\frac{eP_H^*}{P_H}$ to identify the determinants of the real exchange rate for tradeables.
- c) If the law of one price holds then the real exchange rate ε is equal to one. True or false?
- d) If the law of one price holds then the real exchange rate for tradeables ε_T is equal to one. True or false?

Question 5. Consider a two-country world (home and foreign). The foreign country consumes only tradables. The home country, instead, consumes both tradables and nontradables. The share of non-tradables in the home consumption basket is 0.5. The production function for tradables is identical in both countries and is given by $Y_T = a_T L_T$, where Y_T is tradable output, L_T the associated labour input and $a_T > 0$, its productivity. The home production function for non-tradables is $Y_N = a_N L_N$, where Y_N is non-tradable output, L_N the associated labour input and $a_N > 0$, its productivity. Both product and labour markets are perfectly competitive and labour is perfectly mobile within a country.

- (a) Assuming that the Law of One Price holds for tradables, derive an expression for the real exchange rate between the home and the foreign country as a function of the relative productivity in the two sectors.
- (b) Suppose that both a_T and a_N grow at 3%. What is the rate of growth of the real exchange rate? Do absolute or relative PPP hold? Explain your findings.
- (c) Suppose that a_T grows at 4% while a_N grows at 3%. What is the rate of growth of the real exchange rate? Do absolute or relative PPP hold? Explain your findings.