Exercise Sheet 5: Short Solutions.

Exercise 1

a) Export contracts in SFR and import contracts in foreign currency: Trade balance increases.

Both export and import contracts in foreign currency: No change in trade balance.

b) The trade balance decreases (a given trade surplus in foreign currency becomes smaller if expressed in CHF).

c) The trade balance decreases after the currency-contract period.

d) No it does not matter whether the Swiss exporters bill their exports in CHF or in foreign currency. In both cases, the foreign currency price of their exports increases. If they bill in CHF, the foreign currency price increases because of the appreciation of the CHF. If they bill in foreign currency, the firms need to increase their (foreign currency-) prices if they want to keep their profit margins constant, since their costs are in CHF, and hence their costs increased in foreign currency terms.

e) In this case, foreign firms charge higher prices (in foreign currency) in Switzerland than in other countries. This implies that the CHF-price of imports decreases by less (or does not decrease at all) after the appreciation of the CHF. How this changes the trade balance compared to c) depends on the price-elasticity of imports. There are two effects on the trade balance: First, since prices of imports decrease by less than in c), the amount of imports is smaller. Second, prices for imports are higher than in c). Which effect dominates depends on the price-elasticity of imports. If the price-elasticity of imports is high, the trade balance will be higher compared to c).

e.2) The price of imported inputs (such as oil, gas, etc.) in CHF decreases. Also, Swiss firms that compete with importers will have to decrease their prices. Both things

lead to a decrease of the general price level in Switzerland in the medium term. As Swiss goods become cheaper, Swiss export goods become more competitive again. Therefore the trade balance should rebalance in the medium term.

f) The trade balance first increases (during the currency-contract period), then decreases (since M-L condition is fullfilled) and eventually goes back to zero due to the pass-through effect.

g) The statement is true since price-elasticity of imports cannot be negative.

Exercise 2

a) The trade balance decreases after a depreciation during the currency-contract period if export contracts are denoted in domestic currency and import contracts in foreign currency.

b) One plausible reason why the M-L condition might not have held for Japan during this time are the high energy imports. After Fukushima, Japan shut down its nuclear power plants and imported energy (oil, gas) on a very large scale in order to produce electricity. Those imports might be very price inelastic (consumption of electricity is probably very price inelastic). Hence a depreciation of the Yen will increase the costs (expressed in Yen) for those energy imports, which has a negative effect on the trade balance.

c) No. If the Japanese Yen appreciates, the pass-through effect will cause the price level in Japan to decrease over time. If the price level in Japan decreases, production costs for Japanese firms decrease. Hence, assuming that Japanese export firms keep their profit margins constant, they will decrease the price of their exports (otherwise they would make higher profits than before). In the end, both imports and exports are lower (expressed in Yen) and the trade balance will go back where it was in the beginning.

d) The most plausible explanation is a large positive entry on investment income. The other candidates (unilateral transfers, labor income) are implausible in the case of Japan. (note: By trade balance it was meant goods trade and services trade - this should have been made clearer in the exercise question).

Exercise 3

With prices normalized to one, the trade balance is given by:

$$TB = X\left(\frac{1}{E}\right) - EM(E)$$

To derive the Marshall-Lerner condition, we must derive the condition for $\frac{\partial TB}{\partial E} > 0$:

$$\frac{\partial TB}{\partial E} = -\frac{1}{E^2}X' - M - EM' > 0$$

Dividing by M yields the condition:

$$-\frac{1}{ME^2}X' - \frac{E}{M}M' > 1$$

With prices normalized to one, the price-elasticities of exports and imports respectively are given by:

$$\begin{aligned} \epsilon_X &= -\frac{1}{EX}X' \\ \epsilon_M &= -\frac{E}{M}M' \end{aligned}$$

Hence we can rewrite the condition as:

$$\frac{X}{EM}\epsilon_X + \epsilon_M > 1$$

We see that the Marshall-Lerner condition is indeed the condition for $\frac{TB}{E} > 0$, but only if the initial trade balance is zero, i.e. $X = EM$.