

Exercise 1: (20 Points)

a) For this exercise use the stylized balance of payments as given below:

Table 1: Balance of Payments

	Credit (+)	Debit (-)
<u>Current Account</u>		
Goods Trade		
Trade in Services		
Investment Income		
Labor Income		
Unilateral Transfers		
<u>Financial Account</u>		
Direct Investment		
Portfolio Investment		
Other Investment		
Capital in Bank Accounts		
Bank Loans		
Official Reserves		

For each of the following events show how it enters the balance of payments of Switzerland, if it does.

a.1) The Swiss central bank decreases its currency reserves by selling Euro against CHF. The people who sell the CHF (and buy Euro) are foreigners who had bank accounts (in CHF) in Switzerland.

Credit: *Official Reserves* Debit: *Capital in Bank Accounts*

a.2) A Swiss pension fund receives interest payments on foreign government debt they own. They use the money to buy more foreign government debt.

Credit: *Investment Income* Debit: *Portfolio Investment*

a.3) An employee who works in Switzerland and lives in Germany receives his year-end bonus payment. He donates the money to a museum in Switzerland.

Credit: *Unilateral Transfers* Debit: *Labor income*

a.4) A French bank gives a loan to an entrepreneur in Switzerland. The entrepreneur uses the money to import machines from France.

Credit: Bank Loans

Debit: Goods trade

b) A large part of the Greek government debt is held by foreigners. If Greece defaults on its government debt, how does this affect the balance of payments of Greece? How does it affect the net international investment position (NIIP) of Greece?

- ^{direct} No effect on balance of payment
- NIIP of Greece increases
- (can also say that investment income increases because Greece has to pay less interest payment on debt held by foreigners)

c) In recent years, Switzerland ran current account surpluses and at the same time experienced (net) capital inflows. How is this possible?

↳ With a large negative entry on ~~official~~ official reserves

Exercise 2: (20 Points)

The following graph shows the exchange rate between CHF and USD. The exchange rate is given as CHF per USD. The exchange rate at July 1st 2013 was 0.95 CHF per USD. At July 1st 2014 it was at 0.89 CHF per USD. You can use the approximative formulas for all calculations.



- a) Was there an appreciation or depreciation of the CHF vis-à-vis the USD between July 1st 2013 and July 1st 2014? By how many percentage points?

- appreciation

- by about $\ln(0.95) - \ln(0.89) = 6.5\%$

- b) The exchange rate between CHF and Euro at July 1st 2013 was at 1.22 CHF per Euro. What was the exchange rate between Euro and USD, expressed in Euro per USD?

$$\frac{\text{Euro}}{\text{USD}} = \frac{\text{Euro}}{\text{CHF}} \cdot \frac{\text{CHF}}{\text{USD}} = \frac{1}{1.22} \cdot 0.95 = \underline{\underline{0.78 \frac{\text{Euro}}{\text{USD}}}}$$

- c) The interest rate on CHF at July 1st 2013 was at 0.5% while on USD it was at 2.5% (for bonds with maturity in 1 year). If covered interest rate parity holds, what was the 1-year forward rate between USD and CHF at July 1st 2013, expressed in CHF per USD?

Covered interest rate parity:

$$i_{\text{CHF}} - i_{\text{USD}} = \ln(F) - \ln(E)$$

$$0.005 - 0.025 = \ln(F) - \ln(0.95)$$

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$$\hookrightarrow \ln(F) = -0.07$$

$$\hookrightarrow F = e^{-0.07} = \underline{\underline{0.93}}$$

d) Which currency exhibited the higher effective ex-post return for a Swiss investor, between July 1st 2013 and July 1st 2014? (Explain)

The CHF. The appreciation of the CHF was higher than the difference in the interest rates.

e) The inflation rate in Switzerland between July 1st 2013 and July 1st 2014 was at -1%. If relative purchasing power parity holds, what should have been the inflation rate in the USA?

$$\text{relative PPP: } \underbrace{\pi_{CH} - \pi_{US}}_{-0.01} = \ln(0.89) - \ln(0.95)$$

$$\rightarrow \pi_{US} = \underline{5.5\%}$$

f) If relative purchasing power parity holds, which country had the higher real interest rate between July 1st 2013 and July 1st 2014? (Explain)

Real interest rate = nominal interest rate minus inflation

$$\text{CH: } R_{CH} = 0.005 + 0.01 = 1.5\%$$

$$\text{USA: } R_{US} = 0.025 - 0.055 = -3\%$$

} CH higher real interest rate

A U.S. firm makes a contract at July 2013 to sell tractors to Switzerland for 5 million CHF, with payment and delivery at July 2014. At July 2013, they buy a put option on CHF with a strike price of 0.9 CHF per USD.

g) Explain what the option is and why the American firm bought it.

The option gives the right to sell the CHF against USD for the price of 0.9 CHF per USD

Firm wants to insure itself against a depreciation of the CHF.

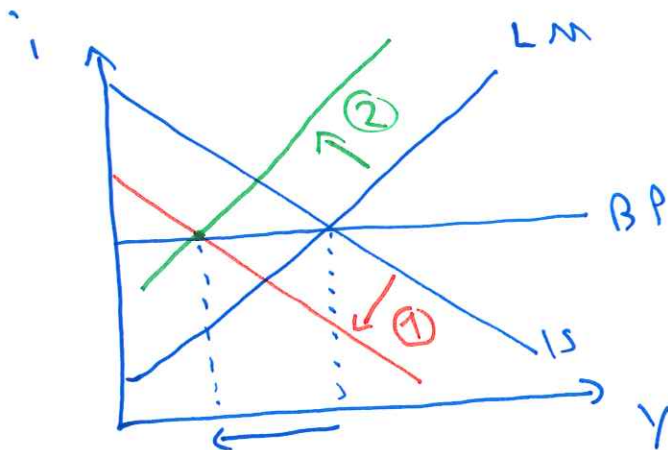
h) The option cost the firm 50'000 USD. Had they known the exchange rate at July 2014 in advance, would they have bought the option? Explain your answer.

~~They~~ They did not make use of the option since CHF was worth more than the strike price of the option \rightarrow so no they would not have bought it.

Exercise 3: (15 Points)

The domestic country is a small open economy. Draw an IS-LM-BP diagram and show the effect of a sudden decrease in the demand for an important export good of the country. Do the analysis for both a fixed and a flexible exchange rate. Carefully explain what happens and how the new equilibrium is reached. As in the lecture, we assume perfect capital mobility and perfect asset substitutability.

a) Fixed exchange rate

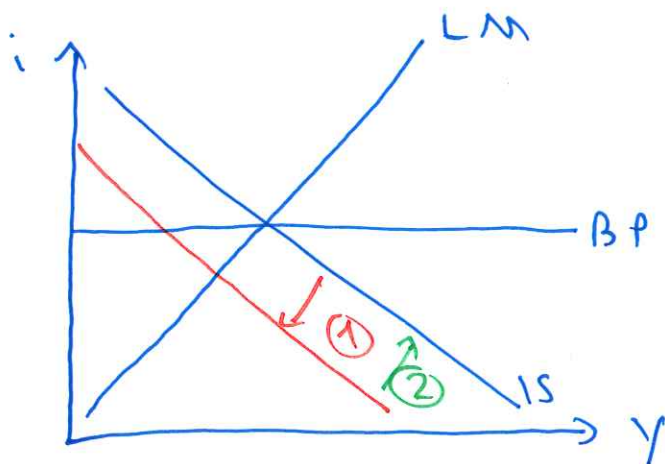


① Exports decrease, shifting IS-curve down

without intervention of the central bank, currency would depreciate because interest rate is low

② Central bank decreases money supply to increase interest rate and avoid depreciation of currency
↳ output decreases

b) Flexible exchange rate



① Same as before

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② Due to lower interest rate currency ~~depreciates~~ depreciates → this stimulates exports, shifting IS-curve upwards again. → output does not change

Exercise 4: (15 Points)

a.1) Suppose the central bank of country A depreciates the currency in order to stimulate exports. Is it possible that the trade balance of country A worsens during the currency contract period? If yes, how? If no, explain.

- Yes ↗
- If exports are denominated in domestic currency and imports in foreign currency
 - ↳ - If both export and import contracts are in foreign currency and the country has a trade deficit

a.2) Will the trade balance improve after the currency contract period? Explain.

It improves if the Marshall-Lerner condition is satisfied.

b.1) Studies have shown that the pass-through of exchange rate changes of the USD to domestic prices in the U.S. has declined. Explain what is meant by this.

It means that changes in the exchange rate of the USD have a smaller effect on the general price level in the USA.

b.2) Explain how "pricing-to-market" by foreign firms exporting to the U.S. may explain the decline in the pass-through of exchange rate changes.

✂ If firms exporting to USA pursue a policy of pricing-to-market, they might not change the ~~USD~~ USD-price of the goods they sell in the USA if the USD exchange rate changes → this means that changes of USD exchange rate have a smaller effect on price level in the USA.