Problem sets 3: Foreign exchange market

EE312: Intermediate macroeconomics

Semester 2/2018

Instructor: Dr. Kittichai Saelee

Due on Feb 19th ,2018 at the BE office. (before 3 pm)

Part 1: (Graded by TA) Use the exchange rate theorem and analyze the impact of the following developments on the market exchange rate, i.e. the value of Thai baht against the USD. (When you answer each question, use the diagram that we discussed in class, and provide some economic intuitions that support your narrative answer.)

1.1) Market expects that the Bank of Thailand will raise its policy rate soon.

The expectation should attract more capital inflow from aboard, and hence resulting in the increase supply for foreign currency (say USD). At the same time, Thai investors will tend to lower their financial investment abroad, and hence resulting in lower demand for foreign currency (say USD). Taking into account the two effects, Thai baht will appreciate (lower e) as demand for Thai baht is higher than before. The quantity of USD traded is a trivial issue that we are not interested in. (See figure 1.1)

1.2) Productivity growth in Thailand has increased rapidly.

Rising productivity implies that Thai's producers become more effective. Given the fixed resource, more units of output can be produced; this results in a lower price. As a result, rising productivity ensure more competitiveness in the global trading market. The consequent to this can be illustrated into two ways. First this should attract more local people to buy domestic product; imports should be lower. Second, this should attract more foreigner to buy our domestic products; the higher competitiveness leads to higher exports. The former results in lower demand for foreign currency; meanwhile the latter cause a rise in supply for foreign currency. Given these, Thai baht will appreciate (lower e). The prediction is consistent with that obtained under PPP theorem; country with rising productivity should expect a currency appreciation. (See figure 1.2)

1.3) Market expects that the financial trouble in the Euro area will be resolved soon.

Money should be returning back to the Euro area. The capital inflow that had previously been attracted to Thai market, because of the perceived riskiness of the financial investment in Euro, would soon revert to the Euro. This effect can be captured by the lower of supply of foreign currency (lower capital inflows.) At the same time, Thai investor might consider finding the investment in Euro area more attractive; and hence demand for more foreign currency (more capital outflows). Both unilaterally causes a depreciation in Thai baht (higher "e") (See figure 1.3)

1.4) Rumor about the trouble in Thai banking sectors has become materialized.

Foreign investors will likely delay the investment in Thai financial markets as the level of perceived risk has increased. Supply for the USD will drop. Thai investors find it risker to hold Thai denominated assets, and decidedly switch to purchase more foreign-denominated assets. This brings about an increase in the demand for foreign currency. The effect of both changes will lead to a depreciation in Thai baht (higher "e") (See figure 1.4)

Part 2: (**Graded by Instructor**) Use the answer given to question "1.4" in part 1, analyze the appropriate actions required by the central bank if it were to resist the movement of the exchange rate. Also, discuss what happens to the balance of payments and the level of foreign reserve. What are the sided effects of exchange rate intervention on domestic economy? How to prevent the sided effects?

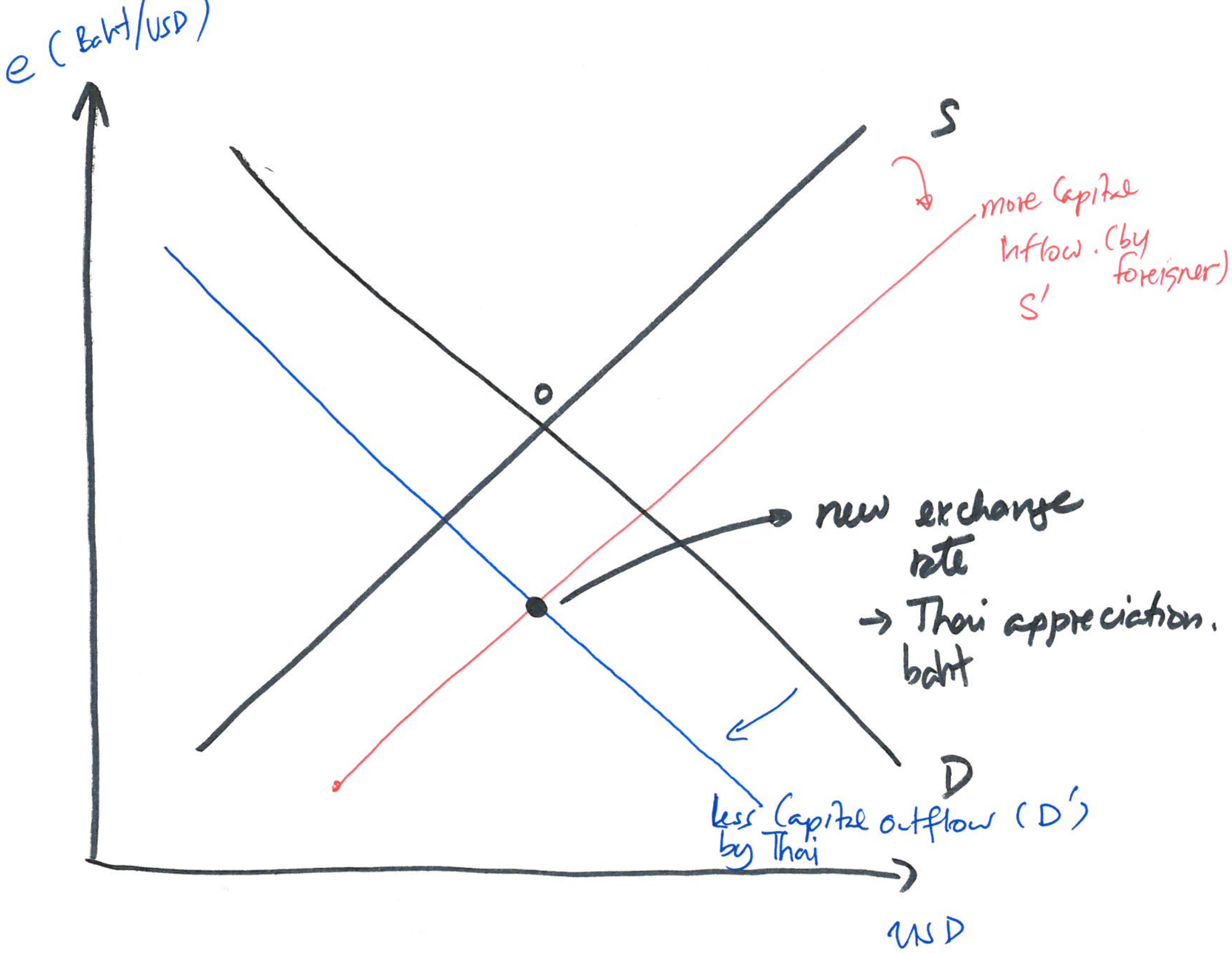
From 1.4, Thai baht will depreciate (lower e). To prevent Thai baht from getting weak, central bank must sell the foreign currency to regain the value of Thai baht. The supply for USD will increase by the intervention of the central bank. (See figure 2)

The direct effect to this intervention program is the decrease in the stock of foreign currency reserve under the central bank. Without any remedial plan, the level of domestic money supply will drop. The side effect to the intervention program is the impact of a decrease in money supply on macroeconomy. In general, this tends to push the market interest rate up, and hence likely to result in a slowdown of macroeconomy.

In order to limit the sided effect, central bank may simultaneously conduct an OMO purchase so that they keep the level of money supply the same as original level. Domestic market will not be affected from the FOREX intervention.

However, the problem is not about the sided effect. In fact, the amount of foreign reserve will eventually run down if the banking problem lasts long, and resulting in an acceleration in net capital outflows. The intervention program could not be sustained in the longer term; forex intervention is self-defeating at the end.

Figure 1.1



o: original.

Productivity rising

⇓

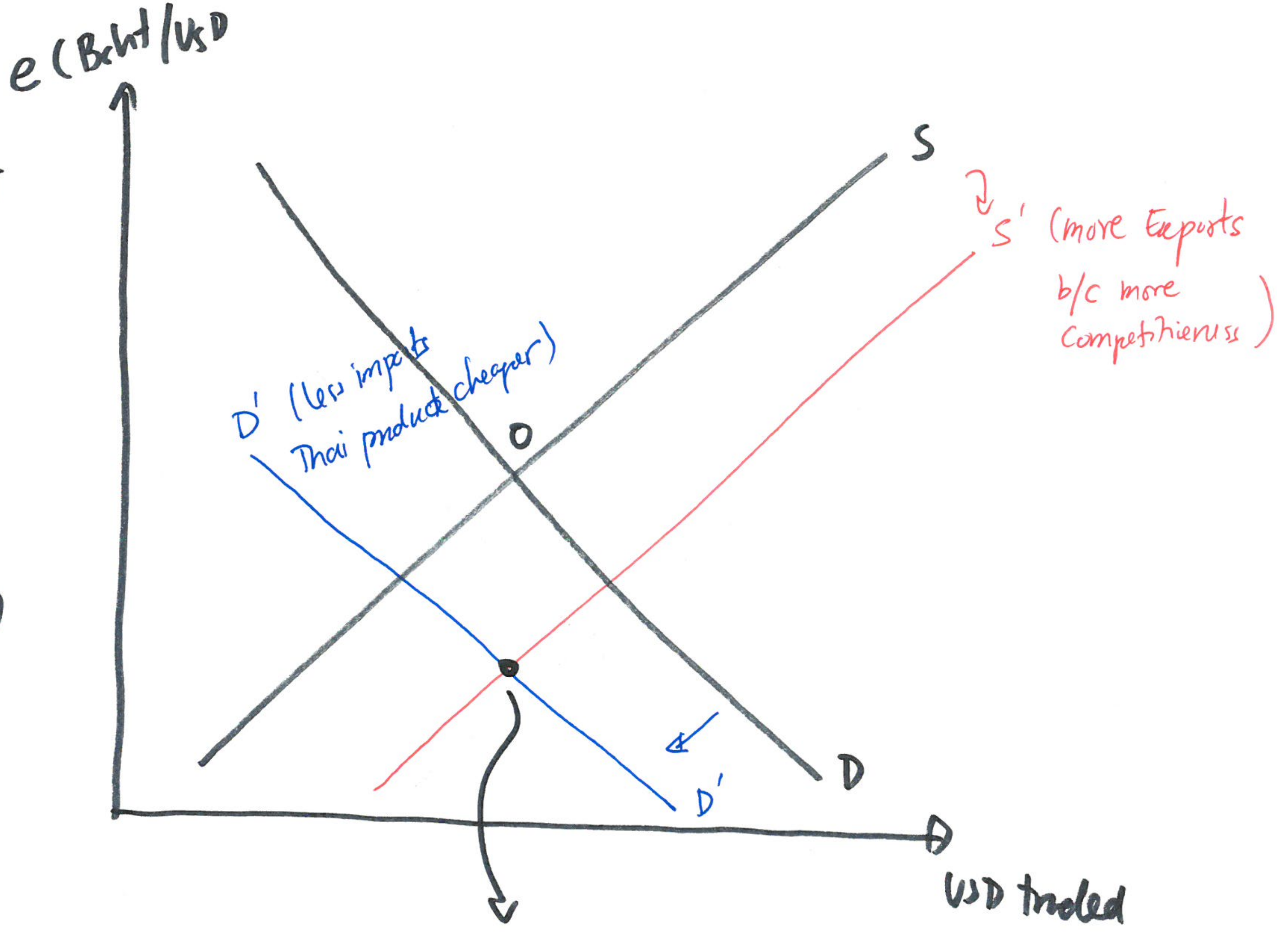
Thai can produce more

⇓

Domestic Price (P) falling.

⇓

Competitiveness.



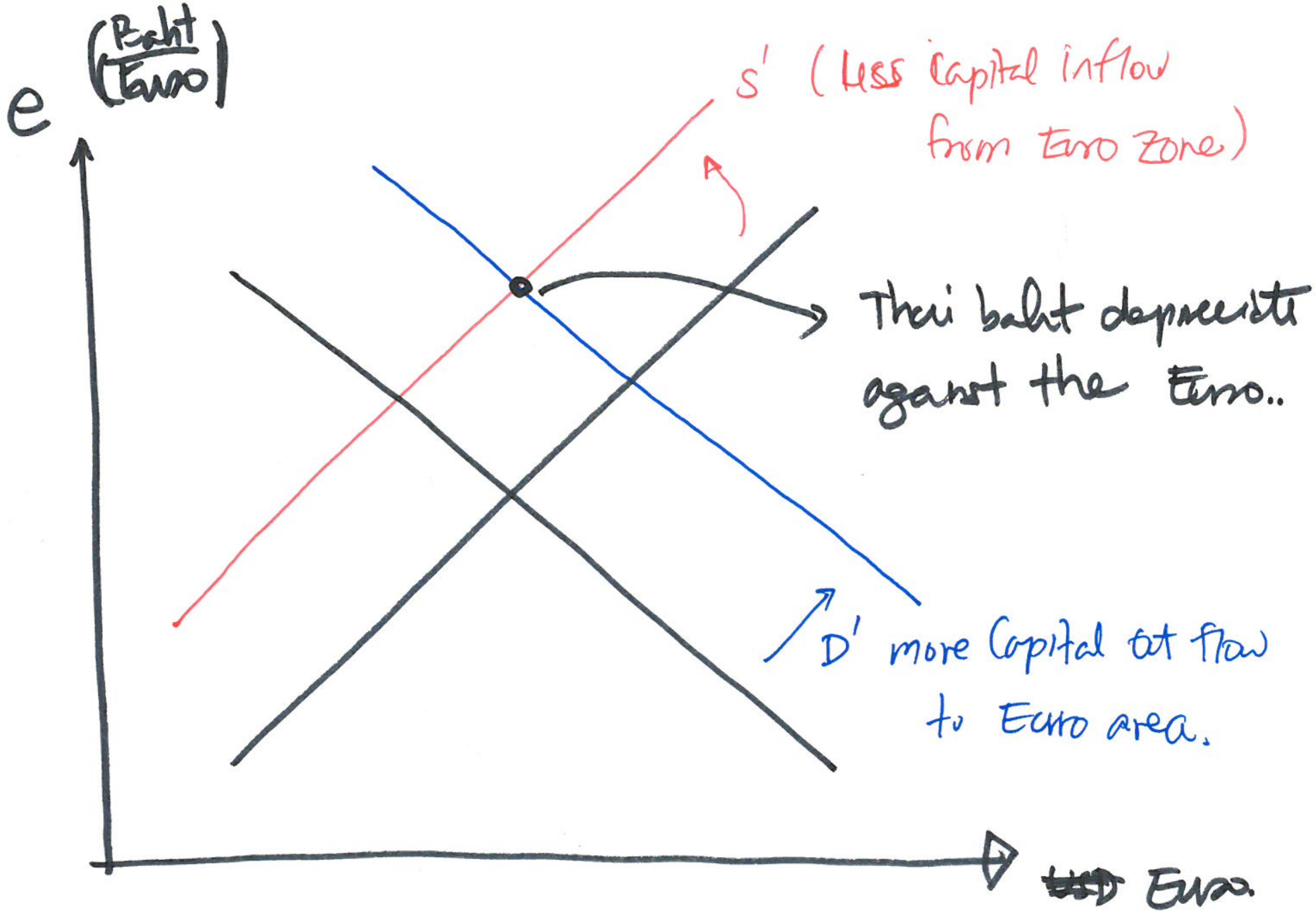
new Exchange rate

Thai baht appreciates

O : original

Figure 1.2

Figure 1.3



e $\left(\frac{\text{Baht}}{\text{Euro}}\right)$
S' (less capital inflow from Euro zone)
Thai baht depreciate against the Euro..
D' more capital out flow to Euro area.
~~USD~~ Euro.

Figure 1.4

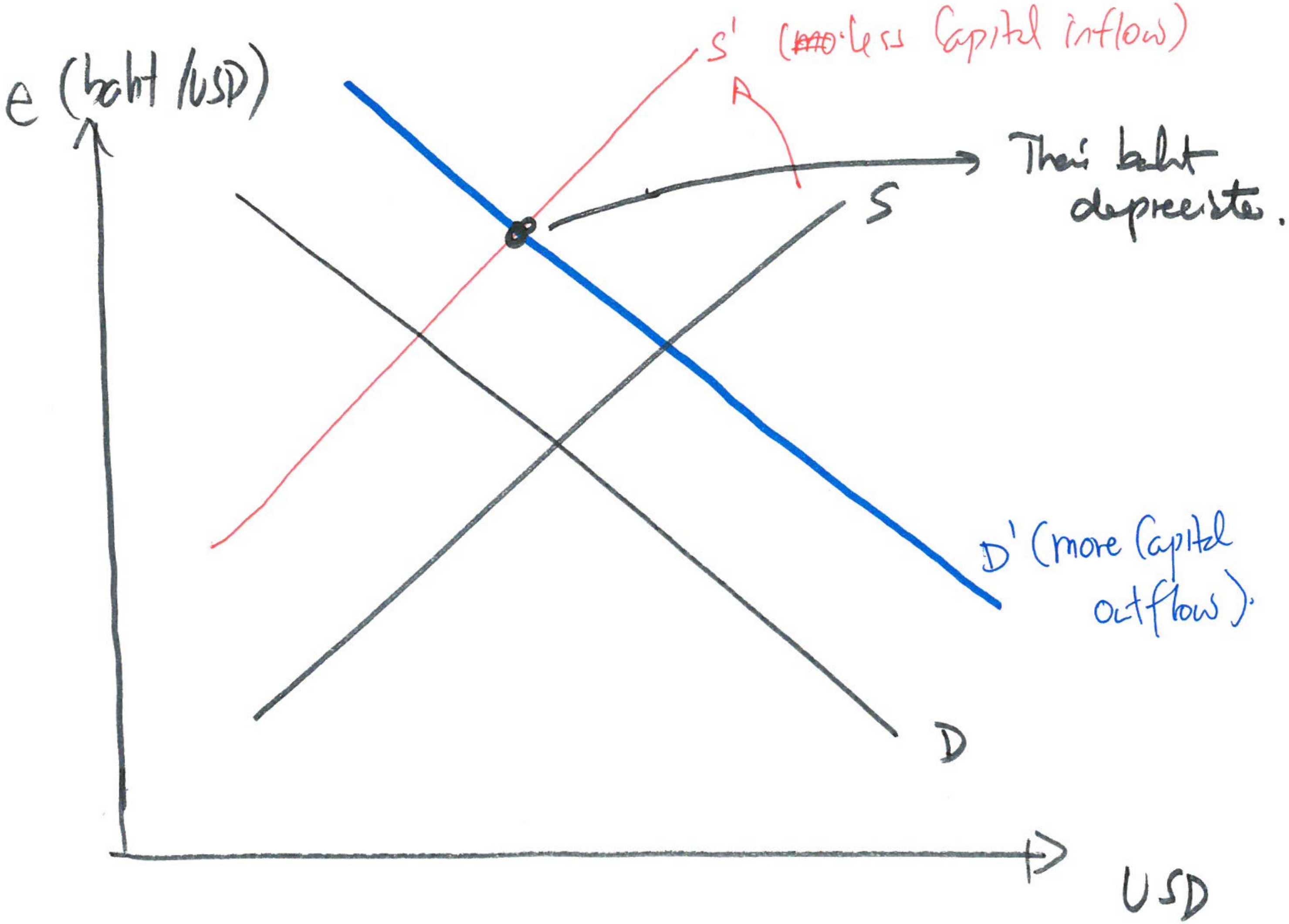
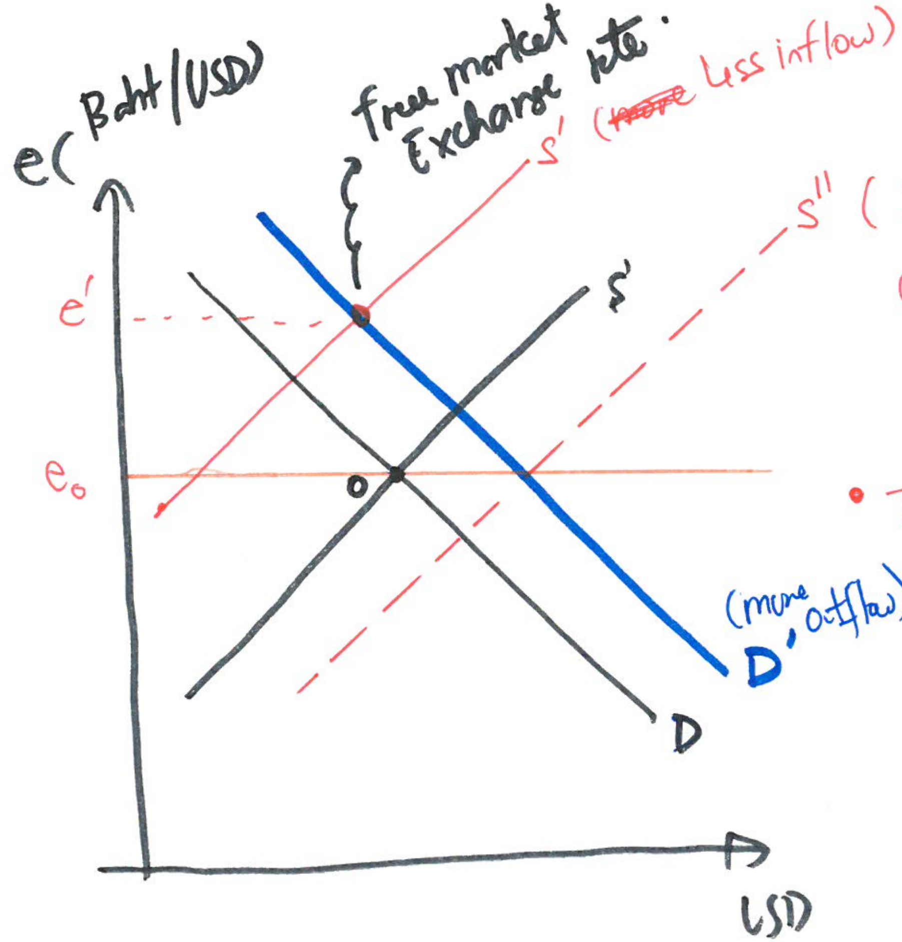

e (baht/USD)
S' (less capital inflow)
Thai baht depreciate.
S
D' (more capital outflow).
D
USD

Figure 2



S'' (Supply when CB conducts Exchange rate Intervention program.)

- CB ~~They~~ sells USD to sustain the value of Exchange rate at e_0; without more USD supply (created by central bank), the exchange rate would jump from e_0 to e'.

Assets	Liability
⇓ ⇓ Forex reserve	Currency
⇑ Govt Bond	Reserve (deposit of Commercial Bank) ⇓ (no change)

- Foreign reserve will decrease as CB keeps selling the Forex reserve. This will result in a decrease in money supply ($\boxed{\text{red arrow}}$; unsterilization program).

- With the sterilized intervention program, CB $\boxed{\text{(Blue arrow)}}$ prevents money/Reserve from falling by simultaneously buying govt. bond to recirculate liquidity in the financial system.