

Chapter 5 : Open Economy Business Fluctuation

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1 Balance of payments

- Records of all foreign economic transactions : Current Account, Capital Account and International Reserve Account
- **Double-entry method:**
 - Foreign exchange earnings — credit (+).
 - Foreign exchange expenditures — debit (-)
 - Official reserve transactions — the opposite entry.

1. The current account (CA)

		Credit(+)	Debit(-)
	Merchandise Exports	+	
	Merchandise Imports		-
(1)	Merchandise Trade Balance	surplus	deficit
(2)	Service balance	+	-
(3)	Transfer	+	-
	CA Balance (1)+(2)+(3)	surplus	deficit

2. The capital account

	Credit(+)	Debit(-)
Public Borrowing Lending	+	-
Private Borrowing Lending	+	-
Investment Portfolio investment Direct investment	+	-
Capital Account Balance	surplus	deficit

Balance of Payments (BP) = Current Account (CA) + Capital Account (KA)

3. International reserve transactions

- Changes in official reserve assets at the central bank due to activities in the current account and the capital account.
 - Gold, Special drawing rights (SDRs), Foreign currencies, Foreign government securities, Sovereign funds.

2 Exchange Rate Determination

- Long-run v.s. Short-run theory
- Fix Exchange Rate Regime, Flexible Exchange Rate Regime and Managed Float Regime
- The nominal exchange rate (e): the price of one unit of foreign currency in terms of domestic currency; rising 'e' means depreciation in local currency.
- The real exchange rate (rer: the terms of trade) is the price of foreign goods in terms of domestic goods:

$$\text{Real Exchange Rate} = \frac{eP^*}{P}$$

2.1 Long-Run Theory : The Purchasing Power Parity (PPP)

- Accounting for the long-run movement of nominal exchange rate is often referred to the theory of purchasing power parity, i.e. PPP.
- The theorem is founded upon one the most important concepts in international trade theory so called “**the law of one price**”
- Law of One Price : an identical product should be priced the same across countries. A dollar should buy the same everywhere.
 - Holds under (i) zero transport cost and (ii) no trade barriers.
 - $P = eP^*$
 - If the condition doesn't hold, we are under the arbitrage condition.
 - * If $eP_i^* > P_i$, domestic good-i is cheaper. Foreigners buy more domestic goods; P is rising
 - * If $eP_i^* < P_i$, foreign good-i is cheaper. Domestic consumers buy more foreign goods; P is falling
 - The Big Mac Index by the Economist



Source: The Economist

- A Big Mac costs 128 Baht in Thailand and US\$5.71. Find the implied exchange rate.

- The idea is extended to aggregate level. P and P^* are consumer price index

$$eP^* = P$$

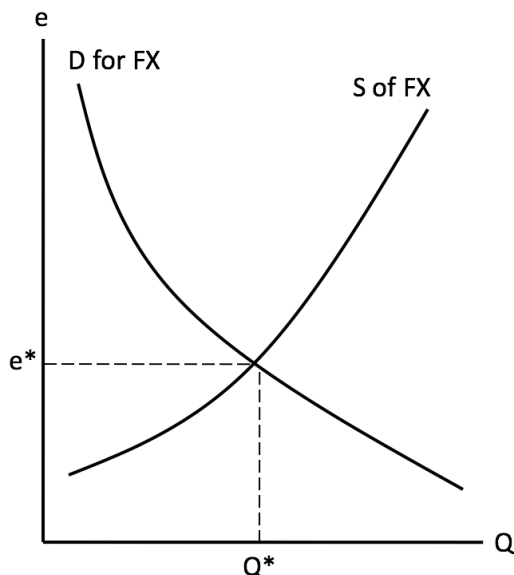
$$e = \frac{P}{P^*}$$

- If domestic inflation rate exceeds the inflation rate of foreign country, domestic currency should be depreciating.
- In the long-run, productivity matters for the exchange rate movement : Fast-growing productive economy (such as China) should have its national currency appreciate.
- PPP holds in the case of traded goods with low transport cost, e.g., crude oil.
- PPP may not hold with non-traded goods (due to physical and legal barriers), e.g., services.
- In the long-term, strong market forces push foreign and domestic prices towards PPP.

2.2 Short-Run Theory : Exchange Rate Market

- e is exchange rate quoted as domestic currency per unit of foreign currency.

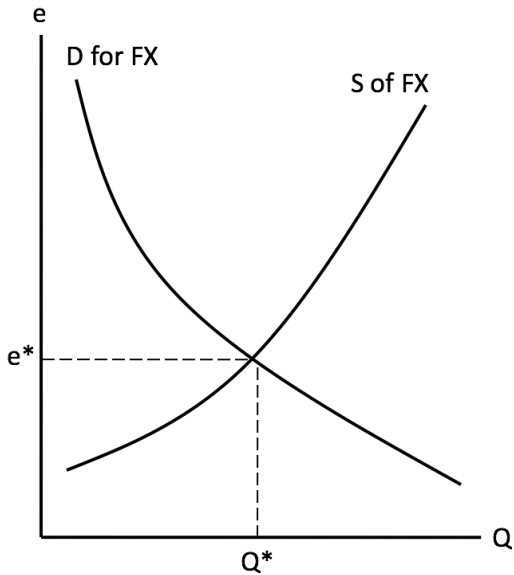
	Demand for FX	Supply of FX
Source	Capital	Capital
	$(1+r) \dots \frac{(1+r^*)e_{t+1}}{e_t}$	$(1+r) \dots \frac{(1+r^*)e_{t+1}}{e_t}$
e	Assume that $ \epsilon_X^d > 1$, $e \uparrow$ dollar price of domestic goods decreases. Export Quantity increases. Dollar value of Export ($\$P_X Q_X$) increases.	$e \uparrow$, quantity import decreases. Dollar value of Import ($\$P_M Q_M$) decreases.
FX Intervention	Central Bank dollar in the FX market	Central Bank dollar in the FX market



- Change in Exchange Rate : Movement along D and S curve
- Change in the other factors determining D and S for FX \Rightarrow Shift in D and S curve
- $BP = CA + KA = X - M + F$
- Flexible exchange rate regime : FX intervention
When $D = S$, BP 0
- Fixed exchange rate regime : FX intervention
When $D = S$, BP 0

2.2.1 Flexible Exchange Rate :

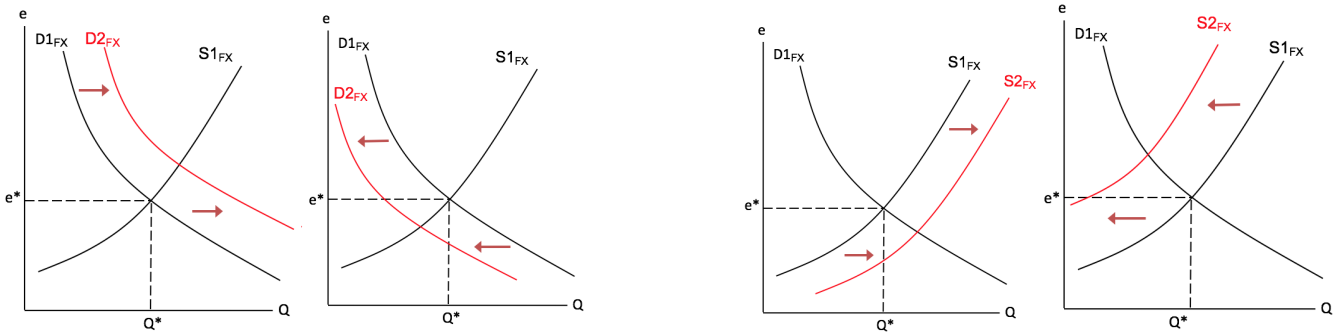
- the exchange rates that are determined by the market demand and the supply. There is **no FX intervention**.



- Supply of FX = Demand for FX
- $X = X(Y^f, e, \text{other factors})$
- $M = Z(Y, e, \text{other factors})$
- $F = F(i, i^f)$
- When $e = e^*$, FX market is in equilibrium and $BP = 0$.
- Above e^* , $BP \dots\dots\dots 0$
- Below e^* , $BP \dots\dots\dots 0$
- Flexible Exchange Rate System : BP is always equal to zero.

Under flexible exchange rate regime, at equilibrium e^* , $D = S$, $(X - M) + F = 0$. $CA + KA = 0$. $BP = 0$.

Changes in Equilibrium : Shifts in Demand or supply



Examples : How does each of these situations affect Baht exchange rate?

- Thailand imports more US products
- Foreigners invest more in Thai stock market
- Domestic price of export goods decreases and Thailand export increase.
- Foreign price of import goods decreases and Thailand value of machine import increase.
- Changes in overall price level : (1) Case of equal inflation in both countries, (2) Case of inflation in only one country (3) Case of inflation at unequal rates
- Interest rate in Thailand increases relatively to other ASEAN countries
- Interest rate in Thailand decreases relatively to other other ASEAN countries

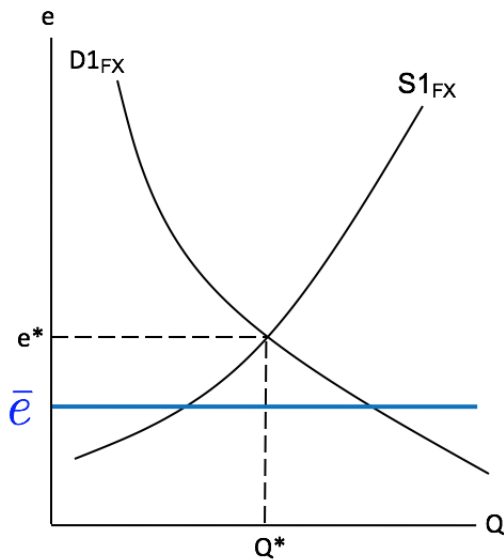
2.2.2 Fixed exchange rate system: Exchange rates are determined by central bank (fix at a particular value)

Authority makes an announcement in advance for a targeted level of exchange rate, which is called the “official exchange rate”, \bar{e} . There is FX intervention.

1. Equilibrium exchange rate is equal to the official exchange rate.

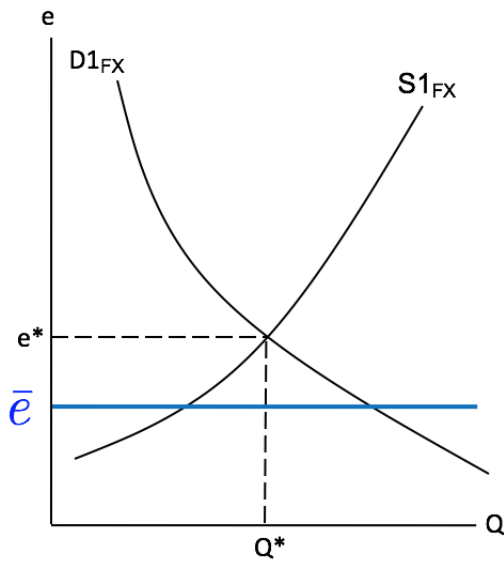
- If equilibrium exchange rate is equal to the official exchange rate, everything is fine. The central bank needs not to do anything to intervene the foreign exchange market.

2. Equilibrium exchange rate is more than the official exchange rate.



- The official exchange rate (\bar{e}) is below e^* .
- Hence, the Central Bank need to FX.
- Loss of foreign exchange reserve.
- of Dollars increases. shifts to the right.
- Exchange rate to \bar{e} .
- At \bar{e} ,
 - Balance of Payments 0.
 - Domestic currency is overvalued (compare to the market equilibrium without intervention).

3. Equilibrium exchange rate is less than the official exchange rate.

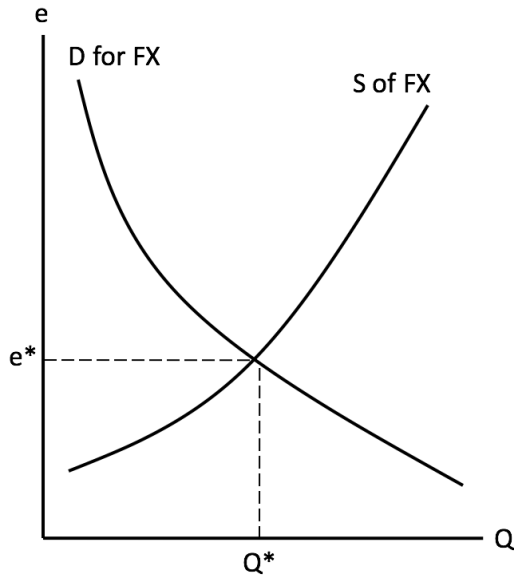


- The official exchange rate (\bar{e}) is below e^* .
- Hence, the Central Bank need to FX.
- Gain of foreign exchange reserve.
- for Dollars increases, shifts to the right.
- Exchange rate to \bar{e} .
- At \bar{e} ,
 - Balance of Payments 0.
 - Domestic currency is undervalued (compare to the market equilibrium without intervention).

Under fixed exchange rate regime, at equilibrium e^* , $D = S$, $[X - M + F] + \text{FX intervention} = 0$. BP needs not to be equal to zero.

Example.

- Initially the economy is at the equilibrium where equilibrium exchange rate (e^*) is equal to the official exchange rate (\bar{e}). $e = e^* = \bar{e}$. Initially, the Balance of Payment is equal to zero.
- Suppose “Thailand’s most popular resorts, Pattaya and Phuket, have been particularly suffering from the discernible drop in Chinese visitors.” How does this affect exchange rate market and Thailand’s Balance of Payment position? How does the central bank intervene the exchange rate market? Make the analysis under fixed exchange rate regime.



- Initially, $e = e^* = \bar{e}$. $CA + KA = 0$. Balance of Payment is equal to zero.
- After the situation happens,
 - Supply of dollars, shifts to the
 - Equilibrium exchange rate (e^*) is now the official exchange rate.
 - Hence, the Central Bank need to FX.
 - of foreign exchange reserve.
 - for Dollars increases, shifts to the right.
 - Exchange rate to \bar{e} .
 - At \bar{e} , Balance of Payments 0.