

# International Monetary Policy

## 12 Fixed vs. Flexible Exchange Rates <sup>1</sup>

Michele Piffer

London School of Economics

---

<sup>1</sup>Course prepared for the Shanghai Normal University, College of Finance, April 2011

# Lecture topic and references

- ▶ In this lecture we understand the key difference between fixed and exchange rate regimes. This is essential to understand the different effectiveness of economic policies across different monetary regimes
- ▶ Mishkin, Chapter 18 (we will do a simplified version)

## Review from previous lecture

$$\text{BoP} = \text{CA} + \text{KA} =$$

$$= X^{D_{\mathcal{D}_c}, S_{\mathcal{F}_c}} - IM^{D_{\mathcal{F}_c}, S_{\mathcal{D}_c}} + K_{in}^{D_{\mathcal{D}_c}, S_{\mathcal{F}_c}} - K_{out}^{D_{\mathcal{F}_c}, S_{\mathcal{D}_c}} = \Delta \cdot IR$$

$$\text{CA} = \Delta \cdot IR - \text{KA} = \Delta \cdot IR + K_{out} - K_{in} = \Delta \text{NFA}$$

$$S^{\text{Private}} = G - T + I + \underbrace{K_{out} - K_{in}}_{\text{CA}}$$

# Balance of Payments

- ▶ We have seen that the BoP captures the transactions between the domestic economy and the rest of the world
- ▶ As a counterpart of cross-country payments, the BoP gives a synthesis of demand and supply of domestic vs. foreign currency

$$\text{BoP} = \text{CA} + \text{KA} =$$

$$= X^{D_{\mathcal{D}_c}, S_{\mathcal{F}_c}} - IM^{D_{\mathcal{F}_c}, S_{\mathcal{D}_c}} + K_{in}^{D_{\mathcal{D}_c}, S_{\mathcal{F}_c}} - K_{out}^{D_{\mathcal{F}_c}, S_{\mathcal{D}_c}} = \Delta \cdot \text{IR}$$

- ▶ This is our starting point for understanding the differences across monetary regimes

## An Example

- ▶ Let's start from an example. Suppose that originally both the current and the capital account are balancing
- ▶ Suppose that a preference shock increases the world preferences for the domestic goods, so that the domestic economy will register a current account surplus. Consider the capital account to have no initial variation
- ▶ What is the effect of this on the forex market??

## An Example

- ▶ Now the demand for domestic currency will exceed the supply of domestic currency: the domestic currency that domestic citizens supply when importing goods is not enough to satisfy the domestic currency that importers from the rest of the world demand in exchange of our exports
- ▶ Similarly, the demand for foreign currency will run short of the supply of foreign currency: the foreign currency that domestic citizens demand when importing goods is not enough to drain the foreign currency that importers from the rest of the world supply in exchange of our exports
- ▶ Does this imply that the domestic currency appreciates and the foreign currency depreciates? It depends on the exchange rate regimes

## An Example

- ▶ Continue imposing a zero capital account. Under flexible exchange rates the domestic currency would appreciate nominally. If prices are fixed this will lead to a real appreciation
- ▶ The real appreciation of the domestic currency will decrease the competitiveness of domestic goods, increasing imports and decreasing exports
- ▶ The reduction in net exports reduces the current account surplus and eliminates the disequilibrium on the forex market
- ▶ Under flexible exchange rate regimes, nominal exchange rate variations allow for the BoP to actually balance

## An Example

- ▶ What if the central bank did not want the currency to appreciate, say because of the adherence to a fixed exchange rate regime?
- ▶ What the CB has to do is to avoid that the excess demand of domestic currency appreciates the domestic currency. Equivalently, avoid that the excess supply of foreign currency depreciates the foreign currency

## An Example

- ▶ To do this the CB can purchase foreign currency and provide domestic currency in exchange: this will eliminate the excess supply of foreign currency and the excess demand of domestic currency
- ▶ From the BoP you see that this will lead the international reserves to increase. The BoP will balance even without a movement in the nominal exchange rate

## An Example

- ▶ So far we have assumed that the capital account is balancing, so that there is no excess demand or supply from the financial side of the BoP
- ▶ The story is not different if we allow for net capital inflows or outflows
- ▶ Continue considering the possibility of a positive current account. This means that the domestic currency is attracting more foreign currency than it actually uses for imports
- ▶ Instead of accumulating foreign currency as in the fixed exchange rate regime, this extra currency can potentially be used for buying foreign assets

## An Example

- ▶ The increase in net foreign assets will imply a demand for foreign currency in exchange of the purchase of foreign assets. This will lead to an opposite effect on the forex market that we saw from the current account
- ▶ If the economy exports net capital in equivalent amount to the net exports, there will be no disequilibrium in the forex market and the exchange rate will not adjust
- ▶ If the capital account does not match the current account perfectly, either there will be an exchange rate adjustment or the international reserves will change

# Monetary Interventions on the Forex Market

- ▶ We have seen that CBs can influence the external value of their currencies by engaging in purchase and selling of foreign vs. domestic currency
- ▶ Let's see this mechanism a bit more formally. Remember what we saw in the lecture on money supply: CB have a balance sheet that looks like this:

Federal Reserve System	
Assets	Liabilities
Government securities	Currency in circulation
Discount loans	Reserves
International Reserves	

# Monetary Interventions on the Forex Market

- ▶ Suppose that the CB is following a fixed exchange rate regime. Suppose that the Forex market is experiencing a disequilibrium that would lead the domestic currency to depreciate. What should the CB do?
- ▶ The CB has to avoid the materialization of the excess demand of foreign currency, or equivalently, the excess supply of domestic currency
- ▶ To do this, it simply supplies extra foreign currency and drains domestic economy from the market

# Monetary Interventions on the Forex Market

- ▶ Let's see an example. Suppose that the CB sells 1 billion of foreign currency and asks a payment either as cash or as a deduction from the reserve account of the counterpart

Federal Reserve System			
Assets		Liabilities	
Foreign Assets (International Reserves)	-\$1B	Currency in circulation	-\$1B

Federal Reserve System			
Assets		Liabilities	
Foreign Assets (International Reserves)	-\$1B	Deposits with the Fed (reserves)	-\$1B

- ▶ This reduces the excess demand of foreign currency

## Monetary Interventions on the Forex Market

- ▶ The same happens in the opposite scenario. What if the tendency of the domestic currency is to appreciate?
- ▶ The CB buys foreign currency and supplies domestic currency on the Forex market. The disequilibrium in the Forex market disappears and the nominal exchange rate remains constant
- ▶ Note that under both cases the monetary base changes, either decreasing (first case) or increasing (second case)

# Monetary Interventions on the Forex Market

- ▶ In short, under fixed exchange rates we have

$BP > 0 \rightarrow D_{\mathcal{D}c} > S_{\mathcal{D}c}$  i.e.  $D_{\mathcal{F}c} < S_{\mathcal{F}c} \rightarrow \mathcal{D}c$  would appreciate  $\rightarrow$   
 $\rightarrow IR \uparrow \rightarrow MB \uparrow \rightarrow M^s \uparrow$

$BP < 0 \rightarrow D_{\mathcal{D}c} < S_{\mathcal{D}c}$  i.e.  $D_{\mathcal{F}c} > S_{\mathcal{F}c} \rightarrow \mathcal{D}c$  would depreciate  $\rightarrow$   
 $\rightarrow IR \downarrow \rightarrow MB \downarrow \rightarrow M^s \downarrow$

# Monetary Interventions on the Forex Market

- ▶ Go back to our first case, where the CB sells international reserves to avoid a domestic currency depreciation. You see from the above figure that this inevitably reduces the monetary base
- ▶ What if the monetary authority did not want to do a contractionary monetary policy but still had to intervene in the forex market?
- ▶ It turns out that it can sterilize the effect on the forex market on the monetary base. How?
- ▶ Just do an OMO on the opposite direction

# Monetary Interventions on the Forex Market

- ▶ The CB reduces its foreign currency, and to avoid a decrease in the monetary base it buys securities. In exchange of this it will offer extra monetary base to the economy

Federal Reserve System	
Assets	Liabilities
Foreign Assets (International Reserves)	Monetary Base (reserves)
-\$1B	0
Government Bonds	+\$1B

# Monetary Interventions on the Forex Market

- ▶ The same happens in case the CB had to counteract a tendency of domestic appreciation
- ▶ In this case the CB buys foreign currency and increases monetary base. To avoid this monetary policy expansion it sells securities through an OMO and withdraws the extra monetary base

# Monetary Interventions on the Forex Market

- ▶ Does this mean than the central bank can shield the monetary base from forex operations indefinitely?
- ▶ No, a constant tendency of domestic appreciation will sooner or later run into the fact that the stock of securities by the CB is limited
- ▶ Similarly, a constant tendency of domestic depreciation will sooner or later run into the fact that the stock of international reserves by the CB is limited

## Exercise 3 on Exchange Rates

- ▶ Suppose that the current account balances and that suddenly there is an increase in capital inflows. This means that the demand of domestic currency suddenly exceeds / falls short of the supply of domestic currency
- ▶ As a consequence, the domestic currency tends to appreciate / depreciate (equivalently, the direct exchange rate goes up / down). This would increase / decrease the domestic net exports, realizing a current account deficit /surplus that would ultimately balance the Balance of Payments

## Exercise 4 on Exchange Rates

- ▶ What if instead we were under a fixed exchange rate regime? The Central Bank would intervene buying / selling foreign currency and ultimately avoiding the foreign appreciation / depreciation. But the indirect effect of such an operation is that money supply increases / decreases
- ▶ To avoid this the Central Bank can intervene with sterilizing operations by buying / selling treasury bonds from /on the secondary / primary market. The exchange rate stabilization is achieved, despite no change in the money supply occurring

# Monetary Policy under Fixed Exchange Rates

- ▶ We are finally able to see why fixed exchange rates put a constraint on the management of domestic monetary policies. Consider the exercise 1 on monetary base that we saw on the lecture on money supply
- ▶ Suppose that initially central bank owns 100 in T bonds, 0 in discounted loans and 150 in international reserves. Out of this, 200 were issued as currency, the rest are held by the private sector as reserves
- ▶ Suppose that the CB intervenes with OMOs buying T bonds for 50. The counterpart will be credited 50 on his reserves account. Is this compatible with a fixed exchange rate regime?

# Monetary Policy under Fixed Exchange Rates

Balance Sheet situation before the monetary policy operation

Assets		Liabilities	
T bonds	100	Currency	200
Discount Loans	0	Reserves	50
International Reserves	150		
	250	MB	250

# Monetary Policy under Fixed Exchange Rates

Balance Sheet situation after the monetary policy operation

Assets		Liabilities	
T bonds	150	Currency	200
Discount Loans	0	Reserves	100
International Reserves	150		
	300	MB	300

# Monetary Policy under Fixed Exchange Rates

- ▶ The increase in money supply will inevitably decrease interest rate (remember what we saw in the IS - LM model)
- ▶ As a result, the country will experience a capital outflow, as foreign assets offer higher returns, This will increase demand for foreign currency and decrease demand for domestic currency
- ▶ As a result, the domestic currency will tend to depreciate. To avoid this, the central bank has to sell international reserves and avoid the appreciation of the foreign currency
- ▶ But this operation has an opposite sign on the monetary base: monetary policy becomes ineffective

# Monetary Policy under Fixed Exchange Rates

Balance Sheet situation after the Forex operation

Assets		Liabilities	
T bonds	150	Currency	200
Discount Loans	0	Reserves	50
International Reserves	100		
	250	MB	250

## Exercise 5 on Exchange Rates

- ▶ Under a fixed exchange rate regime, suppose that the central bank decreases the reserve requirement. This will increase / decrease money supply and put upward / downward pressure on domestic interest rates
- ▶ As a result, net capital inflow /outflow will increase, causing a positive / negative balance of payment
- ▶ To avoid the depreciation / appreciation in the domestic currency and the depreciation / appreciation in the foreign currency the central bank has to buy / sell international reserves, increasing / decreasing its monetary base. The overall effect on the money supply is null