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Fixed exchange rates and foreign exchange interventions (part 1)

(these lecture notes are based on the corresponding chapter in Krugman-Obstfeld)

Why study fixed exchange rates?

- Managed floating: while exchange rates of industrial countries are not currently fixed by governments, they are not left to fluctuate freely either.
- Regional currency agreements: fixed rate among members but allow fluctuation with non members.
- Developing countries and countries in transition: many countries try to peg the values of their currencies, often in terms of the dollar or another currency or basket of currencies (ex: CFA franc pegged to the French Franc, now to the Euro)
- Fixed exchange rate regimes were the norm in many periods (before WWI, mid 20's till 1931, between 1945 and 1973. Costs and benefits of fixed versus floating?

Central Bank intervention and the money supply

- An economy's money supply is the total amount of currency and checking deposits held by households and firms
- In previous lectures, we often assumed that the Central Bank determines the money supply. Let's see how.
- The Central Bank's (CB) balance sheet: assets and liabilities
- Foreign assets: Mostly foreign currency bonds owned by the CB = CB's official international reserves (also includes gold). Their level changes when the CB intervenes in the foreign exchange market. International reserves are either claims on foreigners or a universally acceptable means of making international payments (like gold)

- Domestic assets: CB holdings of claims to future payments by its own citizens and domestic institutions. Usually domestic government bonds and loans to private banks.
- Liabilities: the deposits of private banks and currency in circulation, both notes and coins. Bank are usually required by law to hold CB deposits as partially backing their own liabilities.
- CB total assets = total liabilities + its net worth
- Since changes to CB's net worth are not important to our analysis, we assume net worth = 0.

- When CB purchases an asset, it can pay for it in one of two ways:
- Cash payment: raises the amount of currency in circulation by the amount of the asset purchase.
- By check: this promises the check's owner a central bank deposit equal to the value of the asset's price. And the owner deposits it in his bank account, which makes the private bank's claims on the CB rise by the same amount.
- In either case, CB's purchase of asset raises its liabilities.
- An asset sale involves either the withdrawal of currency in circulation or a reduction of private banks claims on the CB (and thus a fall in CB's liabilities to the private sector)

Changes in CB's assets cause changes in the money supply

- Asset purchase (increase in liabilities): its payment, whether cash or check, directly enters the money supply. (increases the money supply)
- When CB sells an asset to the public, the cash or check the CB receives in payment goes out of circulation (reducing CB's liabilities), which reduces the money supply.

Foreign exchange intervention and the money supply

- Suppose the CB of a country goes to the foreign exchange market and sells $100 worth of foreign bonds for domestic currency..
- The sale reduces the CB's official holdings of foreign assets.
- The payment the CB receives reduces its liabilities as well: if it is paid with domestic currency, this amount of currency goes out of circulation (back in the CB). So domestic money supply falls.

- If it is paid with a $100 check drawn on an account at a local private bank, the CB debits $100 from this private bank's CB's account, and the private bank debits $100 from the buyers checking account. Hence, private bank deposits with the CB fall by $100, ie CB's liabilities fall by $100, and the money supply falls.
- Conversely, if CB buys foreign assets worth $100, its liabilities rise by this amount and the money supply rises.

Sterilized foreign exchange intervention

- CB sometimes make foreign and domestic asset transactions in opposite directions to nullify the impact of their foreign exchange operations on the domestic money supply.
- Ex: CB sells $100 worth of foreign assets, which as explained above, makes money supply rise; then, it buys $100 of domestic assets, which makes the money supply fall by that same amount. Net effect: money supply unchanged.

The Balance of Payments and the Money Supply

- Recall some balance of payments accounting, with a bit more detail than we did in lecture1:
- A country's balance of payments (or official settlements balance) = net purchases of foreign assets by the home CB minus net purchases of domestic assets by foreign central banks.
- A home balance of payments deficit, for example, means the country's net foreign reserves liabilities are increasing.

How CB fixes the exchange rate

- To hold e constant, CB must be willing to buy or sell currencies at the fixed exchange rate with private actors in the forex market
- Imagine the Argentinian peso per dollar exchange rate is fixed at 1.
- To keep the peso fixed, the CB of Argentina must be willing to buy pesos at that rate with its dollar reserves, in any amount the market wants. It must also be willing to buy any dollar the market wants to sell for pesos at the fixed rate.
- Otherwise, there would be an excess supply or demand for pesos at the fixed rate, and the rate would have to change to restore equilibrium on the foreign exchange market.

Let's see this with some equations

- Say the CB wants to maintain the peso per dollar rate fixed at level e.
- The forex market is in equilibrium if uncovered interest parity holds, that is when the domestic interest rate $r = r^* + (e_E - e)/e$ (as usual r^* is the foreign interest rate, here on dollar deposits, and e_E is the expected exchange rate in one year from now)
- When market expects e to be fixed at f, then $e_E = e$
- So int parity cond implies that e is the equilibrium exchange rate today only if $r = r^*$.
- To keep exch rate fixed at e, CB must therefore keep r at level r^*. And r is determined by equilibrium on domestic money market...

- Money market equilibrium: $M/P = L(r,Y)$, and for the exchange rate to be fixed, as we just said, we must have $r = r^*$, so we have $M/P = L(r^*,Y)$
- Given P and Y, this tells us what M should be for the exchange rate to be fixed at e, consistent with an asset market equilibrium at a foreign interest rate r^*.
- To hold the exchange rate fixed, CB must adjust the money supply so that the equilibrium condition $M/P = L(r^*,Y)$ is maintained, given P, Y and r^*, and given that people expect the fixed exchange rate to be maintained.
- Ex: when output rises, in a floating regime, r would rise to maintain money supply = money demand, and the home currency would appreciate.

- To prevent this appreciation, under a fixed exchange rate regime, CB must intervene in foreign exchange markets by buying foreign assets, which, as explained above, increases the domestic money supply:
- by paying for foreign assets with domestic money, the CB eliminates the excess demand for the home currency (which would remain if CB let r be higher than r*)
- If the bank did not do anything, and just held the money supply constant, the excess demand for money would not be satisfied an r would rise above r*; this would make people want to hold deposits in the domestic currency, and it would appreciate against the foreign currency.
- Let's look at a diagram of this, combining asset approach and the money market equilibrium (it will be on the board during lecture).(from Krugman Obstfeld chapter 17)

Economic Policies under a fixed exchange rate regime

- Here, we're going to play with the Mundell Fleming model (lecture 2).
- I'll do it on the board, but you can play with the diagrams ahead of time if you want to test your understanding. Here are the things we will look at:
- Monetary policy is ineffective under a fixed exchange rate.
- Expansionary Fiscal policy (increase G or reduce T) is effective under fixed regime, although it was not under a floating regime (we've done this in lecture 2)
- Changes in the fixed exchange rate: A country that is fixing its exchange rate may decide to change the fixed value: devaluation, or revaluation.

3 main reasons why governments sometimes choose to devalue their currencies:

- It allows the government to fight domestic unemployment despite the lack of effective monetary policy (due to the fixed rate regime). For example, if government spending and budget deficits are unpopular, the government may opt for devaluation as a substitute to boost demand.
- It results in an improvement in the current account balance (net exports rise, i.e. become more positive or less negative)
- Devaluations affect central bank's foreign reserves: If the CB has low reserves, a one time devaluation can be used to draw in more. (a one time unexpected devaluation lowers the value of the government's domestic currency liabilities to the private sector, so the gain in reserves is financed by a sort of surprise tax on holders of government bonds and money)

Balance of payment crises and capital flight

- So far, we assumed that the foreign exchange market believes that a fixed exchange rate will be maintained at its current level forever.
- But if the CB is running sort of foreign reserves, or the gvt faces fight high unemployment, market actors know that CB may respond to such situations by devaluing the currency.
- Then, e_E is not equal to the fixed rate e anymore.
- This belief by market participants that change in the fixed rate may occur