FX

C15.0042
Lesson 11
Edward M. Kerschner

The History of the FX Market

Depression — Bretton Woods

- Prior to the Great Depression
  - most currencies were freely exchanged
  - many had been convertible (via a gold or silver standard)
  - after the 1929 market crash, the metal convertibility waned

- As WWII came to an end — Bretton Woods Conference (1944)
  - designed a new (hopefully stable) international monetary system
  - established the International Monetary Fund (I.M.F.) and World Bank
  - resolved to tie major currencies (via a par level) to the U.S. dollar; the U.S. dollar was then tied to gold (@ $35.00/oz.)
  - served to make the U.S.$ the primary reserve currency
  - individual countries responsible for maintaining their currency's value

The Fifties and Sixties

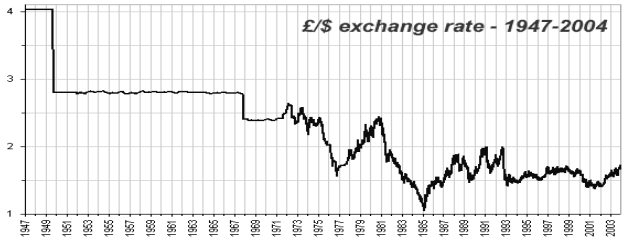
- In the 1950's
  - the advent of the TELEX helped facilitate these markets
  - since exchange rates were 'fixed', only saw frenzied trading around devaluations or revaluations
  - these were known as "creeping pegs"

- In 1967, the GBP (British Pound) was attacked
  - the Bank of England fought (with the help of the other Central Banks) to protect the pound
  - they were unsuccessful; it was devalued in November of 1967
  - for the first time since the Bretton Woods conference, central bank intervention via currency market operations failed

The Fifties and Sixties

In 1947 the £/$ rate was about $4.03, at least until September 1949. After immense pressure on the pound, and after nine months of continual denials that the pound would be devalued, on 18 September 1949 Stafford Cripps devalued the pound by 30%.

During the 1950s and 1960s Great Britain had a fixed exchange rate against other currencies such as the German Mark and the Dollar. Unfortunately Britain's economy ran badly during this period, with imports growing more than exports creating an ever larger deficit in the balance of payments. The value fluctuated between about $2.78 and $2.82, and then in November 1967 it was again devalued by 14.3%, resulting in an exchange rate of $2.41.



E. Kerschner

The End of the Gold Standard

- In 1968, the U.S. dollar was under pressure
  - the DeutscheBank reluctantly absorbed billions of dollars to keep the DeutscheMark from appreciating, which it ultimately did in 1969.

- By 1971, the U.S. dollar was in crisis
  - it was thought to be a depreciating currency; gold convertibility was suspended
  - Nixon imposed wage and price controls. Something had to give.
  - in December 1971, the Smithsonian Agreement superceded Bretton Woods.
  - gold was to be supported at $38.00; that is, the dollar was devalued, allowed currency valuation within a 2.25% central rate band (not a peg).

E. Kerschner

The Rise and Fall of the “Snake”

- In 1972, in Europe
  - the E.E.C. attempted to narrow (halve) the band between their currencies ('"the snake').
  - membership in this co-operative was voluntary; saw many countries come and go. It also failed.
  - foreign exchange markets and market participants were maturing and using more sophisticated electronic equipment.
  - DeutscheMarks continued to strengthen, Lira weakened, the snake died.

- In 1973, the U.S. dollar was devalued by a full 10%
  - this was the beginning of floating exchange rates.

The European Monetary System

- By the mid-1970's, international (bank) brokers dominated FX markets.

- In 1978-1979,, the European Monetary System (EMS) was established.
  - Defined a new currency unit, the ECU (European Currency Unit).
  - Set up the Exchange Rate Mechanism (ERM).
  - Targets (within a band) each member currency at an ECU central level.

- In 1982, Treasury Secretary Donald Regan vowed that the U.S. was through systematically intervening in the foreign exchange markets.

Market Turmoil Starts in mid-’80s

• In 1985, the Plaza Accord (New York) with G-7 members attempted to lower the value of the U.S. dollar (which had returned to 1970 levels).

• By 1986, the dollar was down about 25% vs. the European majors.
  • The U.S. dollar's fall had serious economic implications.
  • Many central banks intervened in 1987 to stop the dollar's fall.
  • This type of activity is known as a “dirty float”.

• In 1992, England and Italy withdrew from the EMS.
  • ERM broke down.
  • This same year, the Maastricht Treaty set up the European Union (in place of the old European Economic Community).

Modern Times

• In 1993, widened bands from 2.25% to 15% - effectively floating rates.

• In 1999, Euro and ECB.

Trade Weighted US$

E. Kerschner

Exchange Rates

Nominal Exchange Rate: the rate at which a person can trade the currency of one country for the currency of another.

$$e = \frac{\text{Foreign Currency}}{\text{Domestic Currency}}$$

E. Kerschner

Exchange Rates

Appreciation: When the domestic currency is appreciated, the value of the currency in terms of other currencies is high: this means that foreign-produced goods are relatively cheap to domestic buyers, but that domestic-made goods are relatively expensive for foreigners. Imports are likely to be high; exports are likely to be low.

Depreciation: When the domestic currency has depreciated the opposite is the case: domestically-made goods are cheap to foreign buyers--thus exports are likely to be high, or at least about to rise--but domestic consumers' and investors' power to purchase foreign-made goods is limited. Thus imports are likely to be low.

E. Kerschner

Exchange Rates

Real Exchange Rate: rate at which people can exchange goods and services of one country for the goods and services of another.

$$\text{Real Exchange Rate} = \frac{(e) \times (\text{Domestic Price})}{\text{Foreign Price}}$$

If U.S. rice sells for $100 a bushel and Japanese rice sells for 16,000 yen, and the nominal exchange rate (e) equals 80 yen/$:

U.S. rice ($100/bushel) is equivalent to 8,000 yen per bushel (i.e., 80 yen/$ x $100).

Therefore, U.S. rice is half as expensive as Japanese rice.

$$\text{Real exchange rate} = \frac{8{,}000 \text{ yen}}{16{,}000 \text{ yen}} = .5$$

E. Kerschner

Purchasing Power Parity

This is a **long run** theory if exchange rates whereby a unit if any given currency should be able to buy the same quantity of goods in all countries.

This is based on a principle called the **law of one price**. This law asserts that a good must sell for the same price in *all locations*. Otherwise, there would be opportunities for profit left unexploited.

For example, the same coffee bean is cheaper in Boston than in Seattle, then people would *buy* it in Boston and *sell* it in Seattle. That process is known as *arbitrage*.

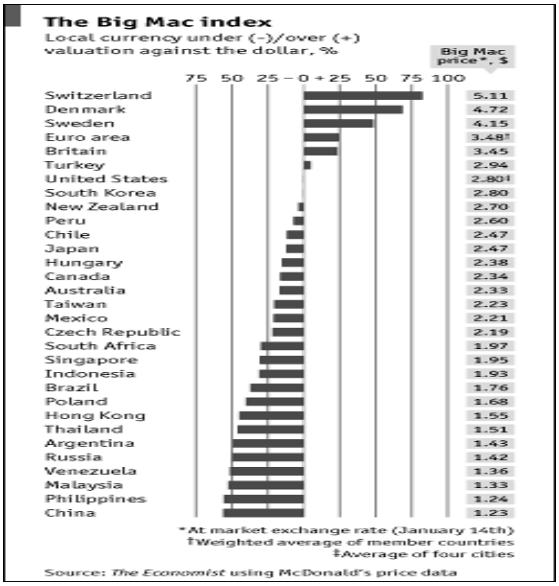
Purchasing Power Parity

In international markets, if the dollars could buy more coffee in the U.S than in Japan, then international traders could *buy* beans in the U.S. and *sell* it to Japan.

This process would drive up U.S. prices and drive down Japanese prices. In the *long run*, through a process of this kind, the dollar should be able to *buy* the *same* amount in all countries.

That process leads to the theory of ***Purchasing Power Parity*** : a currency must have the same purchasing power in all countries.

Purchasing Power Parity



Factors Influencing Exports, Imports and Trade Balance

- The tastes of consumers for domestic and foreign goods.
- The prices of goods at home and abroad.
- The exchange rates at which people can use domestic currency to buy foreign currencies.
- The incomes of consumers at home and abroad.
- The cost of transporting goods from country to country.
- The policies of the government toward international trade.

Factors Influencing Exports, Imports and Trade Balance

Because the nominal exchange rate depends on the price levels, it must also depend on the money supply and money demand in each country.

If the central bank increases the supply of money in a country and raises the price level, it also causes the country's currency to depreciate relative to other currencies in the world.

When a central bank prints a large amount of money, that money loses value both in terms of the goods and services it can buy and in terms of the amount of other currencies it can buy.

FX and Interest Rates

•Money (cash) balances have the disadvantage of not offering any nominal return (zero interest rate); they have the advantage that you can use them to do transactions (buy/sell goods).

•Short term bonds have the advantage that they earn interest; however, they have the disadvantage that they cannot be used to make transactions (you need money to buy goods and services).

•So, an investor will decide to allocate its portfolio between money and bonds considering the benefits and costs of both instruments.

Determinants of the nominal demand for money

Interest rates. An increase in the interest rate will lead to a reduction in the demand for money because higher interest rates will lead investors to put less of their portfolio in money (that has a zero interest rate return) and more of their portfolio in interest rate bearing assets (Treasury bills).

Real income. An increase in the income of the investor will lead to an increase in the demand for money. In fact, if income is higher consumers will need to hold more cash balances to make transactions (buy goods and services).

The price level. An increase in the price level will lead to a proportional increase in the nominal demand for money: in fact, if prices of all goods double, we need twice as much money to make the same amount of real transactions.

Fixed vs Flexible Exchange Rates

When a country has "**flexible exchange rates**", it will allow the demand and supply of foreign currency in the exchange rate market to determine the equilibrium value of the exchange rate. The exchange rate is market determined and its value changes depending on the demand and supply of currency in the market.

Some countries, do not allow the market to determine the value of their currency. Instead they "peg" the value of the foreign exchange rate to a fixed parity. In this case, that country has "**fixed exchange rates**".

In order to maintain a fixed exchange rate, a country cannot just announce a fixed parity: it must also commit to defend that parity by being willing to buy (sell) foreign reserves whenever the market demand for foreign currency is greater (smaller) than the supply of foreign currency.

Fixed vs Flexible Exchange Rates

If exchange rate depreciation is an exogenous cause of domestic inflation (as the price of imported goods goes up with a depreciation), a country with a fixed exchange rate will be able to achieve an inflation rate that is close to the world inflation rate.

In fact, if the PPP holds, domestic inflation is equal to foreign inflation plus the percentage depreciation of the domestic currency.

If the currency depreciation rate is zero, as in fixed rates, domestic inflation will equal foreign inflation.

Fixed vs Flexible Exchange Rates

Countries with large budget deficits might be tempted to finance their budget deficit by printing money rather than by issuing bonds.

In turn, this monetary financing of the deficits causes a vicious circle of high inflation and currency depreciation. Fixed exchange rates then force the country to avoid devaluations and high inflation rates.

But the only way to avoid eventual high inflation and currency devaluation is to stop financing budget deficits by printing money (seigniorage). So fixed exchange rate prevent countries from creating seigniorage and inflation taxes.

Fixed vs Flexible Exchange Rates

However, being in a regime of fixed exchange rates does not mean that the fixed parity will never be changed.

For example, if the central bank runs out of reserves to defend the currency, a devaluation might occur at some point.

This means that a fixed parity may not be fully credible in the sense that there is a positive probability that the future exchange rate will be different from the current one if a devaluation occurs.

In other terms, in spite of the current fixity of the exchange rate, changes in the expectations about the future value of the exchange rate might occur even in a regime of fixed exchange rates (that is not fully credible).

Fixed vs Flexible Exchange Rates

Such changes in expectations may be due to good reasons such as changes in fundamental variables (high domestic inflation, large budget deficits, political risks and so on) . . .

. . . or might, at times, also be caused by "irrational" changes in the investors' sentiments.

Self-fulfilling changes in expectations may lead investors to believe that a fixed parity will collapse and this will lead them to a speculative attack on a currency that has a fixed parity, even if there has been no change in the underlying fundamental determinants of exchange rates.

Sterilized vs Non-Sterlized Intervention

Given this change in expectations, what can a central bank do to prevent the devaluation of the exchange rate from occurring?

The answer to this question is simple: the central bank has to allow the domestic interest rate to rise above the world interest rate to make sure that the capital outflows induced by the expected depreciation of the domestic currency fail to materialize.

In a "**non-sterilized intervention**" the central bank allows the intervention to affect the equilibrium level of the money supply in the domestic economy.

Sterilized vs Non-Sterlized Intervention

There is however another type of forex intervention that takes the name of "**sterilized intervention**".

Suppose that you intervene in the foreign exchange market; such intervention, if it is not sterilized, would lead to a reduction in the money supply and an increase in domestic interest rates.

Now suppose that, after you intervene, you want to sterilize, i.e. you want to eliminate the effects of your intervention on your money supply and interest rates.

You might want to do that for a number of reasons: for example high interest rate might lead the economy into a recession.

Sterilized vs Non-Sterlized Intervention

How do you sterilize your intervention?

After you intervene in the forex market, you bring back the money supply to its previous level via an open market purchase of domestic bonds so that the money supply goes back to the level it had before the original forex intervention.

Central banks often attempt to sterilize the effects of their intervention in the forex market to prevent changes in the domestic money supply and interest rates coming from such forex interventions.

Sterilized vs Non-Sterlized Intervention

However, such sterilization policies have the negative consequences: in fact, in times when the domestic currency is subject to devaluation pressures, sterilized interventions do not allow the intervention to increase the domestic interest rate.

Therefore, sterilized interventions do not eliminate the original cause for a pressure on the exchange rate.

When your currency is subject to devaluation pressures and you are trying to maintain fixed exchange rates, the only way to defend the currency is to perform non-sterilized interventions that reduce the money supply and increase interest rates so that the incentive to dump domestic assets is eliminated.

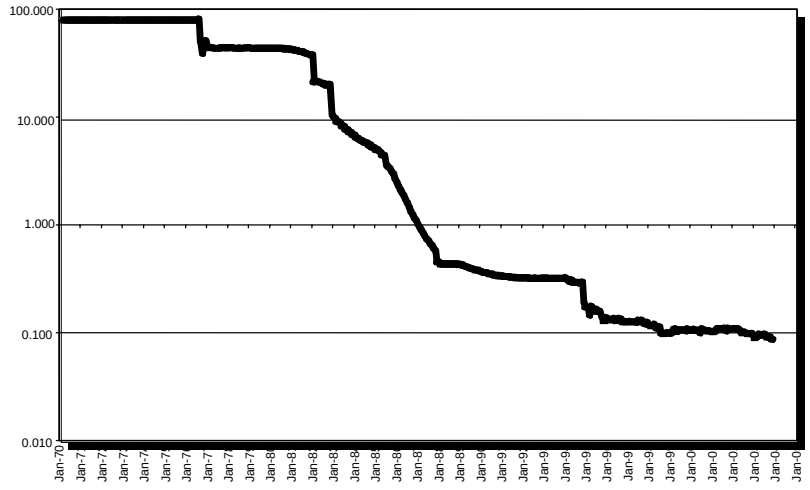
Sterilized vs Non-Sterlized Intervention

If your interventions are sterilized, you do not allow the intervention to affect your money supply and interest rates.

Therefore, such sterilized interventions lead to further losses of foreign reserves as the original cause of the initial pressure on the exchange rate (higher expected returns on foreign assets relative to domestic assets) is not eliminated through higher domestic interest rates.

E. Kerschner

Exchange Rate Collapse: Mexico ‘82



E. Kerschner

Exchange Rate Collapse: Mexico ‘82

The case of Mexico in 1982 shows what happens when you try to peg for too long the exchange rate to a parity that is inconsistent with fundamentals, PPP and budget deficits.

Fundamentals. Mexico's fixed exchange rate was inconsistent with its other policies. While Mexico attempted to fix its currency, its monetary policy led to much more rapid growth in its stock of money than in the US. The reason for this excessive increase in the Mexican money supply was the existence of large budget deficits in Mexico that were being financed by the central bank purchases of government debt; these purchases, in turn, led to excessive creation of money supply.

Exchange Rate Collapse: Mexico ‘82

As a result of the monetary financing of its budget deficit, prices in Mexico rose more rapidly than those in the US, with Mexico averaging between 20 and 30 percent inflation between 1979 and 1981.

By the end of 1981, prices had risen substantially more in Mexico than the US, leading many Mexicans to shift their spending and investments outside the country.

By February 1982, the discrepancy in prices proved to be indefensible, and the peso imploded. The enormous departure from PPP was too much for the system to withstand, so the exchange rate collapsed. The decline in the peso brought prices back into line with PPP (for a while).

Exchange Rate Collapse: Mexico ‘82

Fixing the Exchange Rate. The Banco had some trouble backing up the exchange rate policy in February 1982, when a run on the peso depleted almost half of its reserves. If they ran out of reserves, of course, they would be unable to deliver on their pledge to meet market demand at the current price.

They compromised by letting the peso fall, which relieved some of the pressure for a time. In August of 1982, renewed pressure on the peso lowered reserves further.

This time the bank outlawed many forex transactions, thereby taking the exchange rate out of the hands of the market. The peso was no longer "convertible" into foreign currency without explicit permission from the central bank.

Exchange Rate Collapse: Mexico ‘82

These exchange controls caused serious problems for both:

• Mexican business and foreign businesses operating in Mexico, since without foreign currency they could not import foreign goods.

• And since foreign investors could not be assured of repatriating their earnings, many avoided investing in the first place.

Exchange Rate Collapse: Mexico ‘82

Lessons

1. Fixed exchange rates aren't fixed forever. They simply substitute infrequent large movements for more frequent smaller movements. If you get caught, they can kill you. Anyone holding pesos on February 19, 1982, lost 29 percent of their dollar-equivalent value in a day, and more after that.

2. Operate in hard currencies when you can. One strategy for dealing with such risk is to do business in dollars, or some other hard currency. US banks, for example, denominated their loans in dollars, so the collapse in the peso did not hurt them on its own. But the collapse of the economy that went with the fall in the peso did hurt them, with the result that most loans were repaid only in part. Mexicans, too, tried to switch to dollars, but government restrictions made this difficult to do on a large scale.

Why Fix the Exchange Rate?

1. Under flexible exchange rates, the exchange rate might be affected by speculative factors that have little to do with fundamentals.

These speculative factors might lead to excessive exchange rate volatility, misalignments of the nominal and real exchange rate from their equilibrium level and negative effects of production, trade and investment.

High exchange rate volatility might increase the risk of assets and investment in a country and also reduce real trade in goods.

Why Fix the Exchange Rate?

2. Flexible exchange rate leads to "beggar thy neighbor" policies where countries try to gain competitive advantage for their exports through policies of devaluation of the domestic currency. This is a source of conflict among countries since devaluation exchange rate policies may be a substitute for protectionist trade policies.

3. Flexible exchange rates may be a cause of high inflation and fixed exchange rates allow a country to converge very fast to low levels of international inflation.

So, the big advantage of fixed exchange rates is that is a quick way to gain credibility in your attempt to reduce inflation from very high levels to very low levels in a country that is otherwise stuck historically in a bad high inflation equilibrium.

Why Fixing the Exchange Rate fails?

So, what is the problem with the above strategy of using the exchange rate as a nominal anchor for inflation expectations ?

1. PPP does not hold exactly in the short run since domestic and foreign goods are not perfectly substitutable.

2. Since many wages are set in multi-year contract that are renewed only over time, the wage inflation might not fall right away.

So, the problem of anti-inflation stabilization policies that use the fixed exchange rate as the policy tool to fight inflation is that fixed rates lead to a real exchange rate appreciation and to a significant worsening of the current account.

A Policy of a Crawling Peg

Instead of having strictly fixed rates, you could follow a policy of crawling peg where the rate of crawl (currency depreciation) per year is limited to the remaining inflation differential.

Such a crawling peg exchange rate rule prevents an inflation differential from causing a real appreciation that is bad for the trade balance.

Countries that do not like the idea of following a crawling peg and who stick instead to tightly fixed rates argue that a crawling peg accommodates the inflation differential between home and the world and does not allow a full convergence of domestic inflation to the world level.

A Policy of a Crawling Peg

So while a crawling peg prevents domestic inflation from fully converging to the world rate, it also prevents the real exchange rate from appreciating.

A variant of the crawling peg would be to have a rate of crawl lower than the inflation differential: the advantage of variant is that since the rate of crawl does not fully accommodate the inflation differential, domestic firms and workers will be pressed over time to reduce their price and wage inflation.