Exchange Rate Determination

Suppose a car costs $20,000 in the U.S., and the same car is ¥3 million in Japan. With an exchange rate of 100 ¥/$ (now it’s about 106), PPP says that the car costs $30,000 in Japan. Given this, you should engage in arbitrage by buying cars here and selling them in Japan and keep this up until the exchange rate is 150. However, this doesn’t happen in real life so PPP is not equal. This indicates that one country is somehow restricting trade.

Suppose we decide that the exchange rate should be 150. To get there, we need to look at two factors – inflation and productivity growth. The difference between these two numbers is the unit cost of productivity and will determine how exchange rates adjust. Currently, the U.S. has inflation of 5% and productivity growth of 4%. Japan has 3% and 1%. So the unit cost of productivity in U.S is 1% while in Japan it is 2% – meaning that the US currency will appreciate from year to year at these growth rates.

In present times, it is accepted that capital flow with flexible exchange rates will dominate and that trade will follow along. This thinking arose in the 1970s as fixed exchanges were abandoned. Before then, capital flows were thought to be too small to affect anything.

Economic effects on exchange rate

Think of exchange rates as just the equilibrium of supply and demand for a currency with the rate being the price in another currency. In this graph, the demand curve for the euro is the supply curve of the pound and vice versa – D₀ and S₀ are the initial equilibrium curves.

Now if the UK has a recession, demand for euros goes down (to D₁) due to lower incomes in the UK and the exchange rate falls to P₁. If the UK has an increase in productivity (better services), then the supply of euros (by foreign tourists) shifts out (to S₁) and the exchange rate again falls.

If interest rates in Europe go down (left), then demand for euros go down while supply goes up. If the UK offers a tax credit (right), then the supply of euros will rise and shift out.
Now suppose that there is a fixed exchange rate and the UK experiences an economic boom. The demand for euros would then go up and the exchange rate would appreciate. But to keep the exchange rate at \( P_0 \), the UK would have to sell some euros (g amount). This would shift supply out and keep the exchange rate constant.

It’s easy for a government to hold the exchange rate lower than equilibrium because they can just print money and keep supply of their own currency high. Keeping it higher than equilibrium is harder because they can’t print foreign currency to sell.

In addition to fixed and flexible exchanges, countries can also have crawling pegs (where the exchange rate is fixed but changed every so often by the government) or banded exchange rates (where the government keeps the exchange rate within a certain tolerance level - these are often called snakes because how the exchange rate looks over time). These are usually downward sloping exchange rate curves.

**Chile**

In 1880, Chile was the 11\textsuperscript{th} richest country in the world. It became this way by exporting nitrates, which were an abundant natural resource there and used in gunpowder. During WWII, the Germans developed a method to make nitrates artificially by taking nitrogen out of the air and overnight, the Chilean nitrate industry collapsed, taking the economy with it. (In modern times, the same thing could happen to the Middle East with the advent of fuel cells – oil may have no value in the future.)

In the early 1970s, Chile had a military coup (Pinochet) and instituted some policies to spur economic growth. In general, coups are bad because they cause economic instability but Chile adopted policies that the IMF recommends without having to. This provides a good case study as to whether IMF policies actually work like people claim they do. These policies included:

1. Balanced budget – they increased taxes and decreased spending.
2. Provident fund social security (forward-funded) – this increased savings. Such a plan would be impossible in the developed world (including the U.S.) because the transition from a pay-as-you-go system is impossible. Chile had no previous system so there was no transition.
3. Increased interest rates – stop inflation.
4. Health care accounts – savings like social security.
5. Value-added tax – savings were tax-free and it was self-policing as someone was always paying the taxes. It can also be rebated on exports which helps to drive them up (many say U.S. is stupid for not having VAT). However, this is also regressive because it is a tax on consumption.
6. Cut tariffs and lowered quotas.
7. Implemented skill programs for upgrading the workforce.
8. Switched exchange rate from fixed to flexible.
9. Privatized a few firms – they were, however, reluctant to give up control and were afraid that foreigners would buy up everything.

10. Changed the labor structure so that unions were much less prominent.

The first thing that happened was a decrease in inflation but also a decrease in GDP, i.e., a recession, as would be expected from these policies. After the recession, Chile achieved reasonable economic growth – about 5%. (This highlights the general problem with IMG policies – things have to get worse before they can get better.)

In 1982, the economy fell by 14% as it felt the effects of the Mexican currency crisis. After 1982, the government put controls on short-term capital in the form of a 30% reserve requirement for investments of less than a year. This encouraged long-term investments but also limited the capital inflows. Additionally, they switched to a crawling peg exchange rate. After all, Chile had 13 years of fairly decent growth.

Since 1996, Chile is back in a recession. It experienced growth of 5% in 1997, 2.5% in 1998, -2.5% in 1999, and is expected to be negative for 2000. Does this prove that IMF policies don’t work? Probably not, a 1-2 year recession doesn’t prove that the system doesn’t work – recessions cannot be avoided in capitalistic markets (even the US has recessions). The problem is not the recession, but collapses of 15-20 years. The big question is can the Chileans get out of their recession?

NAFTA or MERCOSUR

Chile is debating if it wants to join NAFTA or MERCOSUR. Examining the issue from the Chilean standpoint: NAFTA offers a larger, wealthier market; the ability to set its own external tariffs; and the backing of the American legal system. MERCOSUR, in contrast, is a much smaller and poorer market (Chile would be richest there), has a common external tariff that is already quite high and is governed by Latin American countries. NAFTA, however, is controlled by the U.S. as well. Joining NAFTA is like joining the American economy – Chile would have no say in running and regulating and has to go along with whatever the U.S. says. In MERCOSUR, Chile would have much greater leverage in decisions.

Weighing these, it seems that Chile would be better off joining NAFTA than MERCOSUR. However, U.S. is currently unwilling to admit Chile because it couldn’t justify admitting it and not Brazil. MERCOSUR is ready to accept Chile but Chile is better off staying out. Right now, though, Chile is not doing much of anything as it is still debating what it wants to do.