

## Lecture 6

This week's lecture was about the literature in chapter 8.5 and 9. The main topics were capital arbitrage, how currency crises can evolve and the 'policy trilemma'.

### International capital arbitrage

In equilibrium the current account (CA) minus the capital account (KA) must be equal to zero, and thus CA is equal to minus KA. This implies that the current account also must be equal to the domestic saving surplus, which is determined by having the total saving minus the investment (S - I).

$$CA = (X - M) \quad \text{In equilibrium:} \quad CA = -KA$$

$$KA = (S - I) \quad \text{And thus:} \quad (X - M) = (S - I)$$

Furthermore, the capital account consists of two parts, private sector cash flows and government sector cash flows:  $-KA = -KA_{Private} - KA_{Government}$ . When  $KA_{Government}$  increases the foreign reserves grow smaller and when  $KA_{Government}$  decreases the foreign reserves thus grow larger. In recent years, China and Germany had large foreign reserves by exporting more than they import.

However, there are some constraints for this approach to use the KA to evaluate changes in global financial market integration :

- these cash flows do not give a clear indication of the global financial integration since net flows could remain constant or even change direction even if the degree of global financial integration changes dramatically. Therefore it is better to take the gross flows in account since these reflect the actual activity.
- Second, these are flows that typically relate to a time period of over one year and such flows are not very informative about the size of stocks of financial assets owned by a country.
- Also, changes in financial market integration do not need to lead to changes in mobility, simply because investors do not always react to changes in the financial market integration
- Lastly, this approach does not take the interest rate in account. When financial markets are fully integrated then there must be one global interest rate. The more a wedge exist between interest rates, the less integration there is. This wedge represents for example uncertainty, risk, transaction cost.

The interest parity does take the interest rate difference between countries in account. In equilibrium the uncovered interest parity (UIP) holds:  $r_{Home} = r_{Foreign} + dE$ . In this equation r stands for the nominal interest rate and dE for the percentage change in the exchange rate. The exchange rate is defined as the value of the foreign currency in terms of the home currency.

The equation states that the gross financial return on the home financial assets ( $r_{Home}$ ) must be equal to Gross financial return on the foreign financial assets ( $r_{Foreign} + dE$ ).

since by definition:  $i = r - \pi$  where  $\pi$  is the inflation rate

The UIP can be written as:  $(i_{Home} + \pi_{Home}) - (i_{Foreign} + \pi_{Foreign}) = dE$

$$\text{or: } (i_{Home} - \pi_{Foreign}) = dE + (i_{Foreign} - \pi_{Home})$$

Today there has been a large increase in mobility, mostly through technology developments which reduced transaction costs. Secondly now we have financial institutions and international monetary arrangements like for example the gold standard. The last reason of the increase is politics, countries have opened up their borders and made trade easier. All the determinants of capital mobility, technology, financial institutions, and politics, have an impact on the wedge between interest rates. They influence uncertainty, risk, and transaction costs. In The Netherlands we have for example a low saving rate and also a low inflation rate, while Brazil faces the opposite situation. Brazil has this higher interest rate as it has to compensate for the higher risk.

The biggest advantage of allowing capital mobility is that domestic saving does not have to be financed by domestic investment but can also come from foreign countries. Also risk sharing is improved which is a benefit of capital mobility. Lastly international trade is made easier and allows more specialization and associated welfare benefits. On the other hand, there is increased financial fragility since countries are affected by changes on the domestic financial market and on international currency markets. On top of that, increased mobility creates constraints for national economic policy makers.

## The role of capital mobility in the dynamics of currency crises

We have two situations for a country, in the first one  $CA = -KA$  and  $CA$  is in deficit. This can be the case if domestic saving is less than domestic investment ( $S < I$ ), or when domestic spending exceeds domestic output ( $Y < A$ ). In this case, there will be a payment outflow on the current account and a compensating inflow on the capital account that equal in size.

If foreign investors have confidence in the country, a private sector capital inflow can finance the  $CA$  deficit. However if confidence in the country in question falls, the gap between the deficit and the private sector inflow must be compensated for in a different manner. We distinguish four alternatives:

1. The  $CA$  deficit needs to fall
  - Investment must fall
  - Spending must fall
  - Income must rise
  - Saving must rise
2. Official capital flows must rise, the Central Bank must use its reserves to finance the difference
3. The Central Bank can raise the interest rate, thereby adding a compensation for the risk to foreign investors. This can increase the private capital inflow.
4. The currency must depreciate, this will allow the  $CA$  deficit to fall

Alternative one is aimed at the long-run and hard to archive. In practice some combination of the remaining alternatives is relied on to return the currency markets to equilibrium. However these remaining alternatives can be risky and have the potential to make the crises worse. This is the case when the remedies weaken private investor confidence. However, this does not have to be the case if:

- Foreign reserves are sufficient
- Moral hazard, adverse selection and informational asymmetries remain at levels “normal” for the particular economy
- the currency depreciation is relatively mild, and even more important: the currency stands a reasonable chance of recovering its “normal” value in the future

## **The Policy Trilemma**

The consequence of capital mobility for a country with an autonomous policy is the Policy Trillema. This Policy Trillema illustrates that governments are not able to have fixed exchange rates, capital mobility, and policy independence all at the same time. Even though a government would like to accomplish all, only two of the three are possible at one moment in time.

Case 1: When a government has an independent policy, the financial market is isolated from foreign sources of financial capital. When, on top of that, a fixed interest rate can be maintained via intervention. However, these conditions make capital mobility impossible as this requires free capital flows and a free interest rate.

Case 2: Capital mobility links the domestic interest rate to the world interest rate. Policy independence can now be achieved via flexible exchange rates. Again this contradicts with the requirement for the third government objective, a fixed exchange rate.

Case 3: A fixed exchange rate requires that the exchange rate is equal to zero, with full international capital mobility as ... Consequently, the Central Bank must aim its monetary policy at maintaining the interest rate equal to the foreign interest rate. In this case, the possibility of having an independent monetary policy is thus lost.

Nevertheless, this Policy Trilemma has become a Policy dilemma as the speculative attacks that happen today make simultaneously having a fixed exchange rate and capital mobility impossible. If the government does choose to maintain a fixed exchange rate it risks the change of a economic depression because a large amount of government reserves is needed to hold the fixed exchange rate.