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Exchange rates and the foreign exchange market: an asset approach

(NB: Throughout this lecture, we assume floating exchange rates)

Who buys and sells on the foreign exchange market?

- **The main players:**
- Commercial banks and other depository institutions: transactions involve buying/selling of bank deposits in different currencies for investment.
- Non-bank financial institutions (pension funds, insurance funds) may buy/sell foreign assets.
- Private firms: conduct foreign currency transactions to buy/sell goods, assets, or services.
- Central banks: conduct official international reserve transactions; foreign exchange intervention.

Remark: Buying and selling on the foreign exchange market are **dominated by commercial banks**.

Foreign exchange markets

- Trading occurs mostly in major financial cities: London, New York, Tokyo, Frankfurt, Singapore
- Electronic information transmission has helped to integrate forex markets.
- This implies that there is no significant arbitrage between markets: the price of a currency is the same on all markets (otherwise, this would just until this is so)
- **Two kinds of exchange rates:**
- Spot rates: exchange rates for currency exchanges on the spot, that is, when trading is executed in the present
- Forward rates: rates for currency exchanges that will occur at a future date (typically 30, 90, 180 or 360 days)

Demand for currency deposits

- What affects the demand for deposits denominated in domestic or foreign currency?
- The factors that influence the return on assets:
- **Rate of return**: % change in value that an asset offers during a time period. (£100 at 2% interest rate per year yield £102 in a year, that is, 2% rate of return per year)
- **Real rate of return**: inflation-adjusted rate of return. (How much more goods, in %, can an asset purchase after one year? = Rate of return – annual inflation
- **Risk**
- **Liquidity** (how easy is it to use the asset to buy goods and services?)

Demand for currency deposits (2)

- Let's assume, for simplicity, that investors only care about the rates of return on deposits. The rates of return are determined by:
- **Interest rates** that the assets earn
- And **expectations about appreciation or depreciation** of the currency in which the deposit is denominated (you wouldn't get a bank account in Japan with a bunch of yens on it if you knew the yen won't be worth very much in the future)
- So we assume investors always prefer the asset that has the **highest expected return** (for now, ignore risk, etc. but you could easily guess how to include such other factors) (by the way, this was our implicit assumption in Mundell Fleming, but there too you could introduce things like risk)

Demand for currency deposits (3)

- The rate of return of a deposit is the interest rate that the bank deposit earns.
- To compare the expected rates of return on a deposit in domestic and foreign currency, 2 factors to consider interest rates for each, but also the expected rate of appreciation or depreciation of the domestic currency. (again, think about the bank account with yens in Japan.)
- Let $R_{£}$ be the interest rate on deposits in Pounds and $R_{€}$ that of deposits in Euros. And let e be the £ per Euro exchange rate in the present, and e^E or e_E the expected exchange rate one year from now.
- If I invest £1 in the UK, in one year, I get $(1+ R_{£})$
- What if I put this Pound in France? Well, this means I am using it to get a deposit in Euros:

Demand for currency deposits (3)

- And in one year, I will have $(1/e)(1+R_€)$ Euros. Given the expected exchange rate at that time, I will then have
- $(e_E/e)(1+R_€)$
- Thus, the Pound rate of return on Euros is
- $[(e_E/e)(1+R_€) – 1]/1 = (e_E/e)(1+R_€) – 1$
- For more convenient use, we can simplify this a little bit:
- $= e_E/e + R_€e_E/e \ -1 + e/e – e/e + R_€ - R_€$
- $= R_€ + (e_E – e)/e + R_€ (e_E – e)/e$
- Since the last term is small, we can neglect it and just use:
- $R_€ + (e_E – e)/e$ as a good approximation for Pound rate of return on Euros

The Market for foreign exchange

- The foreign exchange market is in equilibrium when deposits of all currencies offer the same expected return: this is called **interest parity**.
- That is, interest parity says: $R_{£} = R_{€} + (e_E - e)/e$
- If if didn't hold, one currency would be more desirable than the other. For example, assume $R_{£} > R_{€} + (e_E - e)/e$
- Then, nobody wants Euro deposits, which drives down the demand for Euros and hence the relative price of Euros.
- All investors want Pound deposits, which drives up demand for Pound and hence the relative price of Pound.
- Thus, the Euro would depreciate and the Pound would appreciate (e ~~increases~~ decreases), which, given e_E, would increase the right side until equality holds.

Equilibrium

- So we just described how e adjust to its equilibrium value.
- Look at graph with e on vertical axis and rates of returns on horizontal axis.
- Now it is easy to see the effects of changing interest rates on the equilibrium exchange rates. Just make the curves shift.
- Similarly, you can see the **effect of a rise in the expected future Pound/Euro exchange rate** (e_E):
- if people expect a stronger Euro in the future, this raises the expected return to Euro deposits, which **leads to a current appreciation of the Euro** (curve shifts and so equilibrium e increases)