The currency market

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Introduction

- In the international monetary system there exists a remarkable variety of currencies. It is therefore necessary a market to allow to exchange different currencies to carry out trade and financial transactions abroad

- In this class we will deal with
  - the international market for capitals and the currency market, considering the factors that favoured in recent times the real and financial globalization process
  - the main features of the theoretical approaches meant to explain the behavior of the above mentioned markets
  - how to measure the degree of mobility of capitals and the theoretical implications of the hypothesis of perfect capital mobility

The causes of globalization

- IMF defines globalization as: "the growing interdependence among countries achieved through the increase in the volume and in the variety of internationally traded goods and services, the growth of international capital flows and the quick and wide-spread diffusion of technology" (IMF, 1997, p. 45).
- Causes:
  - trade and financial liberalizations (GATT, WTO, IMF and World Bank, abolition of controls on capital flows)
  - transport cost reduction, thanks to infrastructure investments, technological improvements and new technologies (adoption of the container) - see Tab. 3.1

The causes of globalization

- Causes:
    - technological innovation (e-commerce and ICT made finding information, the trade of goods and services and capital movements easier)
    - financial innovation (keywords: derivatives, securitization, international financial market development, rise of non-bank operators and bond issues - from a *bank-financed* to a *bond-financed market*).

The international capital market

- According to the IMF, real and financial integrations are complements.
- Fig. 3.1: the degree of financial integration and its growth rate have been greater than those of the real economy.
- Tab. 3.2: a greater stock of assets and liabilities leads to greater financial flows and capital market.

The international capital market

- For instance: the daily size of international financial transactions is equal to approximately the 20% of the world trade of goods and it is more than the 70% of the stock of official reserves (excluding those in gold) of central banks.

- Capital flows are sizeable and they are growing both in industrialized and in developing countries. There, foreign direct investments are rather steady, while recurrent financial and currency crises cause a remarkable volatility of portfolio investments.

Size and volatility of the currency market

- Tab. 3.3
- The currency market is open 24 hours a day.
- The number of operators shrank due to a vast consolidation process caused by technological innovations.
- The London market, due to its geographical position, to its legal and fiscal rules and to its technological platform hosts about a third of world financial transactions.
- The currency market is much more volatile than its underlying fundamentals (money supply, national income and so on).

International currencies

- In April 2001, the US dollar was used in 90% of international transactions involving 2 currencies, while for the Euro and the Yen the same percentage was about 38% and 23% respectively.
- The status of international currency of the US dollar means that
  - central banks use it as reserve currency and to carry out market interventions
  - governments use it as reference currency to define exchange rates
  - the private sector uses it to carry out investments, as unit of account and as means of payment, thanks to its liquidity.

The currency market: the flow theory

- In a world without financial transactions, the exchange rate would be fixed by the interaction between the demand and supply of a currency, that correspond to the demand for exports and imports of goods of a given country.

- In a world with only financial transactions, the demand for a currency is equal to the foreign demand for domestic financial assets and the supply of a currency is equal to the domestic demand for foreign assets. In this context the interest rate and expectations markedly affect future exchange rates:
  - an increase in the domestic interest rate causes a capital inflow and an appreciation of the currency of a country.
  - a variation in the exchange rate affects the return of an asset.

The currency market: operators and transactions

- Transactions
  - *spot*: transactions settled within the second day after the price is fixed
  - *forward*: transactions settled after the second day the price is fixed

- Operators:
  - *arbitrageurs*: they carry our riskless transactions making profits out of price differences for the same good on different markets. E.g.: a US bank offers a deposit with a 10% interest rate, while European banks offer only a 5% interest rate. An arbitrageur buys dollars to lend them to the US bank, selling dollars forward. If many arbitrageurs do this transaction there will be a spot appreciation and a forward depreciation of the dollar that will erode the profits of this operation.
  - *hedgers*: agents that insure themselves against the exchange rate risk. E.g.: a European exporter receives dollars in exchange of her commodity after one year the price is fixed. To hedge this risk, she sells dollars forward.

The currency market: operators and transactions

- Operators:
  - *speculators:* agents that carry out risky transactions given the future uncertainty of the exchange rate. E.g.: suppose that both in the US and in Europe the interest rate is 10%. The spot and forward exchange rates are both equal to 1.5, but a speculator expects it to be 2 within a year. Then she will buy dollars bearing the exchange rate risk to make a profit.

The currency market: the stock theory

- For all the goods that are not stores of value, a variation in the exchange rate has only effects on concurrent trade flows
- For all financial and real assets, changing the exchange rate affects all their existing stock. The equilibrium exchange rate is the one that equalizes the demand and supply of the whole stock of the assets.
- The very currencies are financial activities that are demanded to alter the composition of a given portfolio.
  - the exchange rate depends on expectations about its future level.
  - if the currency market is efficient, there will not be the ex-ante possibility to make speculative profits. If an appreciation of the exchange rate is expected, this will happen because agents do not make systematic mistakes. E.g.: innovation in the semiconductor industry in Japan.

The currency market: the stock theory

- According to the portfolio approach, the demand for an asset is positively correlated to wealth (which can vary after new flows of savings or changes in the underlying assets) and its expected return and negatively to its degree of risk.
- Marked variations in the exchange rate happen only due to surprises caused by economic policies and the arrival of new information.
- Small variations in the stocks can, given the size of the stocks, cause large capital flows, which are behind the continuous sizeable changes of exchange rates. They can also undermine the ability of central banks to successfully intervene in the currency markets.

Advantages of international capital mobility

- A high capital mobility makes it possible to diversify risk
  - Fig. 3.2
    - there exist two countries
    - production has a stochastic nature: the state of the world 1 happens with probability p and 2 with probability $1 - p$.
    - expected utility is $pU(C_1) + (1 - p)U(C_2)$
- A high mobility of capital makes it possible an optimal intertemporal allocation of consumption.

How to measure the international mobility of capital

- In this part of the class, we will deal with the following questions: how mobile is capital? Are we getting close to a world with perfect capital mobility? Capital mobility is only a recent phenomenon?

- These questions are important because many theoretical models assume a perfect capital mobility and because this has relevant policy implications.

- Measuring capital mobility implies a reference scale.

  - One can have an absolute benchmark, taking as reference the forecasts of some theoretical models assuming perfect capital mobility.
  - One can have an historical benchmark, analyzing how capital mobility evolved in the last 150 years.

How to measure the international mobility of capital

- From a theoretical point of view there exists a perfect capital mobility when:
  - there do not exist legal obstacles to international financial transactions
  - there do not exist so high transaction costs to make some international financial transactions unprofitable
- Empirical tests
  - interest rate differentials
    - spread between on-shore and off-shore interest rates: Obstfeld (1995) shows that this spread for French and Italian interest rates fell after capital flows controls were abolished in the second half of the 80s.
    - covered interest rate spread, which would seem to be rather small thanks to arbitrageurs

Covered interest rate parity

- A domestic investor, buying a foreign asset hedging against the exchange rate risk selling forward the value of the asset, will obtain a return equal to $(1 + i_t^*)\frac{F_t}{S_t}$
- Due to arbitrage one has $(1 + i_t) = (1 + i_t^*)\frac{F_t}{S_t}$
- From which the covered interest rate parity follows: $i_t = i_t^* + \frac{F_t - S_t}{S_t}$

International risk diversification

- Equity home bias puzzle: investors tend to invest a very high portion of their wealth in domestic assets
- Studies:
  - French and Poterba (1991): in 1989 94% of US invested capital was allocated in domestic activities and only the 6% abroad
  - Tesar and Werner (1998): in 1996 the latter percentage was 10%, far below the one implied by the portfolio model adopted by Lewis (1999) which would be 40% in presence of a high risk aversion and 70% with a low risk aversion.

International risk diversification

- if there was a substantial risk diversification, consumption should be highly correlated among different countries and have a small correlation with domestic output, which is subject to idiosyncratic shocks and therefore less correlated across countries.
- We observe the opposite: Tab. 3.4. The last line of the table shows the results of the regression

$$\Delta c_{i,t} = \theta(t) + \beta \Delta y_{i,t} + u_{i,t}$$

where $\Delta c_{i,t}$, $\Delta y_{i,t}$ are the growth rate of consumption and output in each period and $\theta(t)$ captures differences between average consumption and output growth rates.

Correlation between savings and investments

- In presence of perfect capital mobility, investors should buy assets with a higher return independently from them being domestic or not. As a consequence, there should be a low correlation between domestic savings and investments.

- Feldstein and Horioka (1980), Obstfeld (1995) and many other studies documented a high correlation between the investment/GDP and the savings/GDP ratios.

Correlation between savings and investments

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    - These features of consumption and savings could be due more to the lack of complete markets than to the lack of capital mobility: it might not be possible to diversify risk because there do not exist assets that give a return in every state of the world.
- If it was so, it would not be possible to diversify risk neither at the national nor at the international level. However, Bayoumi (1993), Crucini (1999), Obstfeld (1995), Bayoumi and Rose (1993), Sterne (1993) and Iwamato and Van Wincoop (2000) show that capital mobility is lower among countries than within countries.

International capital mobility in historical perspective

- Two globalization periods: from 1870 to 1914 and from 1973 to nowadays.
- Figg. 3.3 and 3.4.
- Differences between the two periods
  - the first globalization happened with a fixed exchange rate regime (*gold standard*), the second one under flexible exchange rates.
  - the present process involves a greater number of nations, of financial instruments and short-term operations.
  - in the present process international economic institutions played a primary role especially in financial and currency crises.