

IFM 2014 Lecture 1

Introduction to International Finance and Money

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Lecture 1

- About the course
- Course textbooks
- Course overview

About the course

- Primarily a course in **International Finance** and **Open Economy Macroeconomics**
- In-course **assessment**:
 - 1 One essay question
 - 2 25% of marks
 - 3 Limited to 2000 words
- Final **exam** in the summer:
 - 1 Two hour written exam
 - 2 Choose two questions from four
 - 3 75% of marks

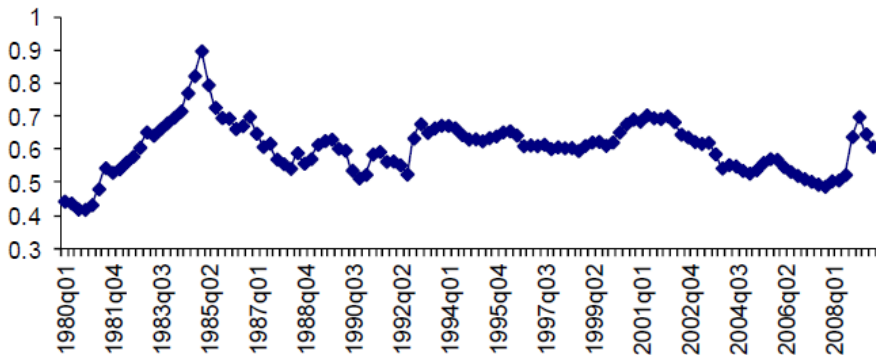
- A reading list and the lecture notes will be available on Moodle
- The main textbook for the course will be *The Economics of Exchange Rates: Theories and Evidence* by Ronald MacDonald (2007)
- This book has good coverage of the core topics
- Other textbooks with good coverage but pitched at an easier level:
 - ① *International Finance* by Keith Pilbeam
 - ② *Exchange Rates and International Finance* by Laurence Copeland

- Financial and Goods sectors are globalised
- Each country has its own currency which can be traded with others at market-determined rates – the **exchange rate**
 - ① Important in financial markets and for the real economy – eg GDP
 - ② Important for individuals, businesses, governments and policymakers
- Through the **current account** countries can borrow from abroad when home output is low, and earn a return from lending to foreigners when home output is high \implies consumption smoothing
- An important question for us is:

What determines the value of the exchange rate?

Spot Exchange Rate (S)

S: GBP per USD



Spot Exchange Rate (S)

- The spot rate S is a nominal (ie monetary) exchange rate
- It is “the number of domestic currency units per unit of foreign currency.” A rise in S is a depreciation in the domestic currency.
- **Example:** if S rises from £1 per \$ to £2 per \$, then the Pound is worth less in terms of Dollars and we say that it is ‘weaker’
- Spot exchange rates depend on supply and demand for currency
- The BoE and Fed have been accused of using QE to devalue their currencies to boost exports:

$$\text{Supply of Currency } \uparrow \implies S \uparrow$$

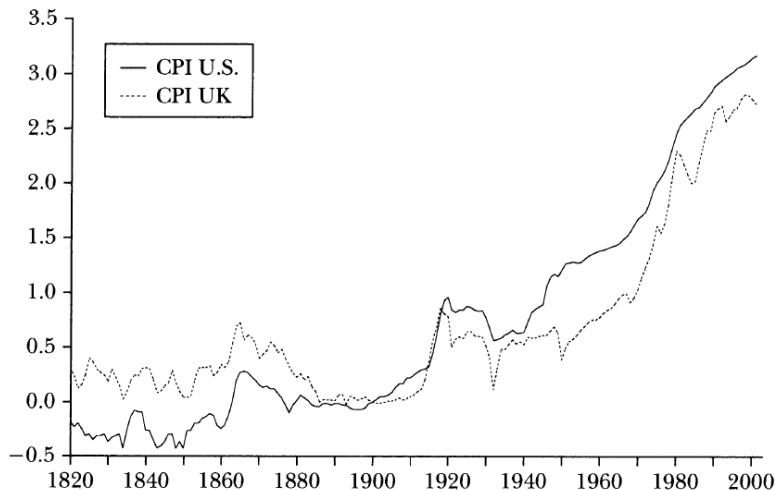
Topic 1: Purchasing power parity (PPP)

- Do domestic and foreign goods prices matter for exchange rates?
- The PPP theory of exchange rate says 'yes'. More specifically, PPP states that the domestic price index P and the foreign price index P^* will be equal when converted into a common currency:

$$P = SP^*$$

- PPP requires goods market arbitrage:
 - 1 Buy goods in cheap country and sell in expensive country at a premium
 - 2 Prices rise in the cheap country and fall in the expensive country
 - 3 This adjustment stops when prices are equal – no arbitrage opportunities left

PPP and consumer price indices



Source: Taylor and Taylor (2004)

PPP and individual goods prices

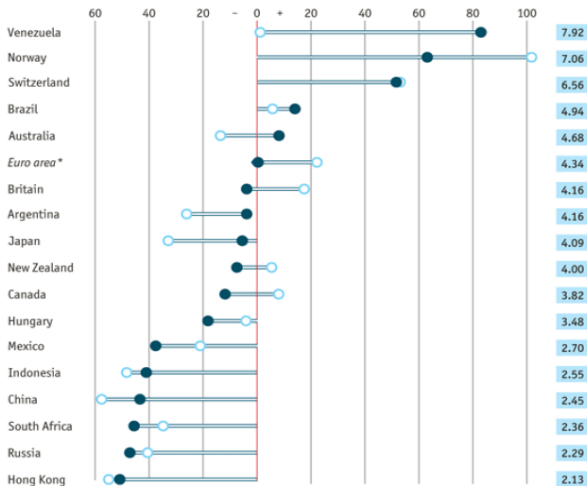
Big Mac index

Local currency under (-)/over (+) valuation against the dollar, %

○ July 2007

● July 2012

July 2012
price, \$



Sources: McDonald's; *The Economist*

*Weighted average of member countries

Topics 2 and 3: Monetary models of exchange rates

- PPP emphasises goods market arbitrage, but the value of a currency is also linked to inflation
- Countries with high **money supply growth** tend to have weak currencies
- Monetary models aim to capture the impact of money flows on exchange rates
- Emphasise **money supply** and **money demand** and assume that PPP holds

German Hyperinflation



A One Hundred Trillion Dollar Note



Monetary models of exchange rates

- Monetary models also assume uncovered interest parity (UIP) holds
- UIP states that home and foreign interest rates will only differ if the exchange rate is expected to change
- More specifically,

$$i = i^* + \frac{\Delta S^e}{S}$$

where $\frac{\Delta S^e}{S}$ is the expected rate of depreciation of the exchange rate

- Because UIP involves expectations, the exchange rate depends on expectations about the future
- \implies Asset approach to exchange rates

Monetary models of exchange rates

- The asset approach to exchange rates recognises S as an asset price
- That is, the exchange rate can change when perceptions about the future change
- This is important because it may help to explain why exchange rates are so **volatile**
- However, the expectations in these models are **rational**
- No possibility of bubbles, and psychology and behavioural traits are irrelevant

Sticky versus flexible prices

- We will first consider monetary models in which prices are perfectly flexible (Topic 2)
- This is an appropriate assumption in the long run, or if there is high inflation or hyperinflation
- We will then turn to monetary models with sticky prices (Topic 3), such as the **Dornbusch model**
- This model leads to **exchange rate overshooting** because asset prices (interest rates, exchange rate) can adjust immediately but goods prices cannot

Motivating sticky prices

- Average frequency of price changes in the US economy
- Consumer goods only

Frequency	Duration	Sector
Average	3.3 months	All
Min	0.6 months	Gasoline
Max	79.9 months	Coin-operated laundry

Source: Bils and Klenow (2004)

Topic 4: Empirical evidence on exchange rates

- There are 2 ways to test models of exchange rates
- **In-sample**
 - 1 Estimate parameters to provide a 'best fit' over the period in question
 - 2 Compare model forecasts with actual values
- **Out-of-sample**
 - 1 Estimate parameters to provide a 'best fit' for some period
 - 2 Use the model to forecast for some future period *outside* the sample
- Out-of-sample tests are stricter so we often compare our models against a **random walk**
- Simple naive forecast: exchange rate X periods ahead is equal to today's exchange rate

Empirical evidence on exchange rates

- **In-sample** tests of monetary models of exchange rates provide quite encouraging results
- But **Meese and Rogoff (1983)** show that these models cannot beat a random walk in **out-of-sample** forecast tests
- The models do better at long horizons, but their disappointing performance at short horizons has made alternative approaches popular – eg **behavioural models, market microstructure**

Empirical evidence on exchange rates (Mark, 1995)

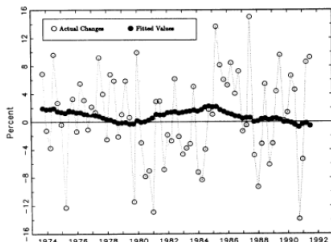


FIGURE 1. ONE-QUARTER CHANGES IN THE LOG DOLLAR/DEUTSCHE-MARK EXCHANGE RATE

Fundamentals (●) are not useful at modelling exchange rate changes (o) at short horizons

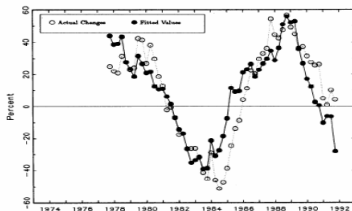


FIGURE 5. SIXTEEN-QUARTER CHANGES IN THE LOG DOLLAR/DEUTSCHE-MARK EXCHANGE RATE

Fundamentals (●) can model exchange rates (o) at longer horizons

Topic 5: Exchange rate risk

- In practice, UIP is conclusively rejected, ie

$$i \neq i^* + \frac{\Delta S^e}{S}$$

- This could be due to **risk** – eg through a risk premium
- Risky arbitraging based on interest rate differentials is known as the **carry trade**
- In other words, the carry trade is a form of **currency speculation**
- There is strong empirical evidence of positive average returns to naive carry trade strategies over long periods – ie borrow low-return currencies and invest in high-return currencies

Carry Trade Unwinding: JPY per USD 1996-2000



Source: Brunnermeier et al. (2009)

Topic 6: Concepts of exchange rates

- In this part of the course we will consider various equilibrium exchange rate concepts, including:
 - 1 Real exchange rates – $Q = SP^* / P$
 - 2 Bilateral versus effective exchange rates
 - 3 Underlying balance models
 - 4 Behavioural exchange rate models
- Different time horizons have different equilibrium concepts

Topic 7: Global Financial Crisis (2007+)

- **Causes**

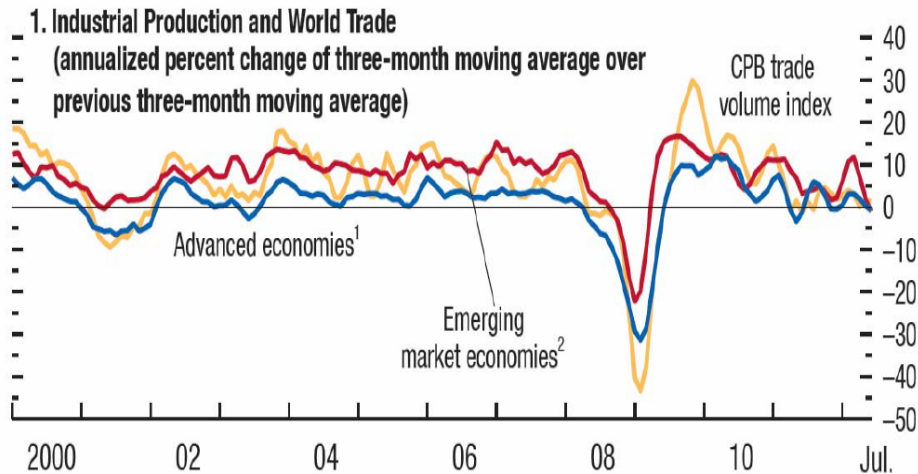
- ① Global imbalances
- ② Financial instruments
- ③ Monetary policy
- ④ Lack of effective regulation

- **Consequences** – asymmetric across countries

- **Policy implications** – regulation, global imbalances, austerity vs stimulus

- We will consider the open economy angles in particular:
- **Financial globalisation** and the spread of the Crisis
- Knock-on effects, including those on **trade**
- **Regulation** – international agreement is crucial but poses many problems

Global Financial Crisis

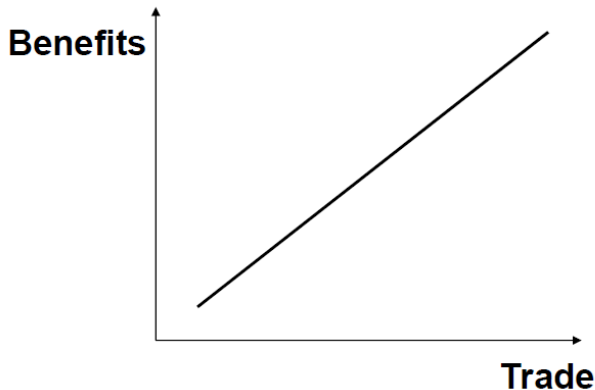


Topic 8: European Monetary Union

- From an economic perspective, the yes-no decision should be based on whether the benefits of entry are likely to outweigh the costs
- **Benefits** – trade (Rose effect), investment, price transparency and elimination of currency conversion costs
- **Costs** – loss of independent monetary policy, no option to devalue the exchange rate
- The lists above are general but they need to be applied on a case-by-case basis – eg UK has more variable-rate mortgages
- The optimal currency area (OCA) criteria give us guidance on how large the costs of monetary union are likely to be

European Monetary Union

- The benefits will depend crucially on the level of pre-entry trade with EMU countries and the impact of entry upon that trade:



Topic 9: FX Microstructure Approach

- Foreign exchange microstructure models take into account the fact that spot exchange rates are the outcome of **trading** in FX markets
- The other models we have discussed assume that these details are unimportant, but they have trouble explaining short run movements in exchange rates
- The FX approach aims to fill this gap
- These models are popular with those who have actually been involved in currency trading

Main ideas

- Some information is **not publicly available**, in contrast to the rational expectations approach used in monetary exchange rate models
- Different agents have **different beliefs and expectations** about where the exchange rate is heading
- These may be based on **trends**, for example, and need not be rational
- Additional information is revealed **within the FX market** – order flow and bid-ask spreads

Order flow

- Order flow is the difference between buyer-initiated and seller-initiated orders over a given period of time

- **Example:** agent approaches dealer:

Buys \$1000

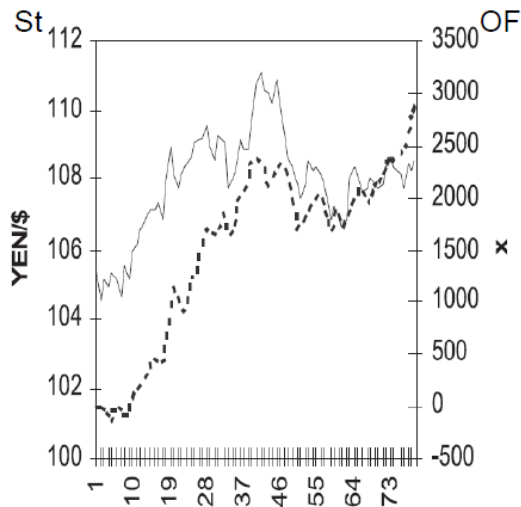
Sells \$500

Order Flow = +500

- Order flow represents willingness to

“put your money where your mouth is”

Order flow vs exchange rates over 4 months



Source: Lyons (2001)

Next time...

- We will discuss spot exchange rates and **purchasing power parity** (PPP) in detail
- We shall also discuss the reasons why PPP does not hold in practice
- These reasons include **border effects**, the **Balassa-Samuelson** hypothesis, and **pricing-to-market**
- **Advance reading:** MacDonald Chapters 2 and 3