FINANCIAL MARKETS AND INSTITUTIONS

FOREIGN EXCHANGE MARKET

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Prof. Alberto Dreassi – adreassi@units.it

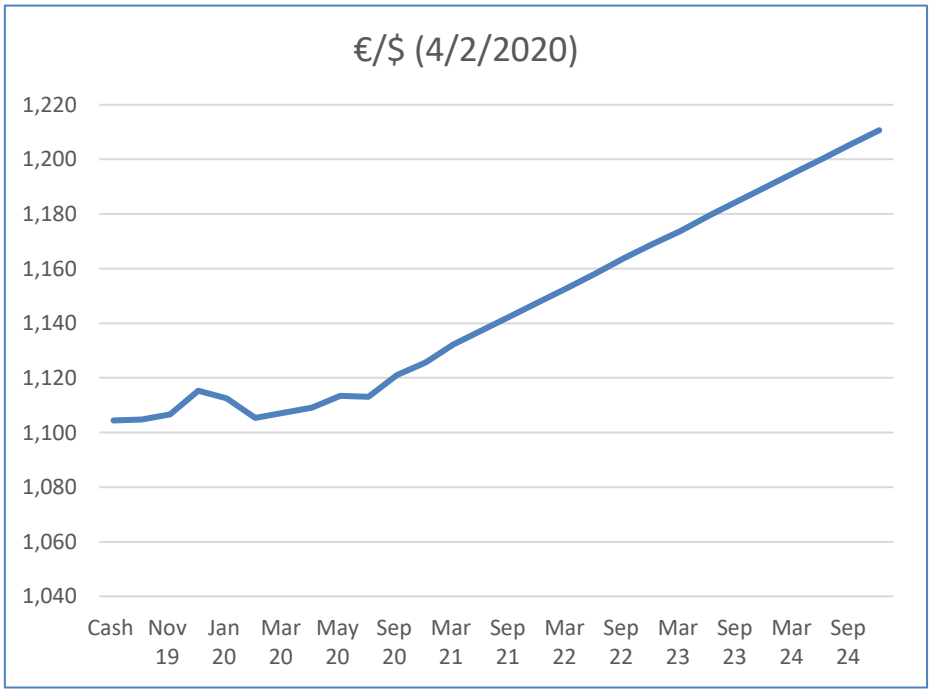
DEAMS
University
of Trieste

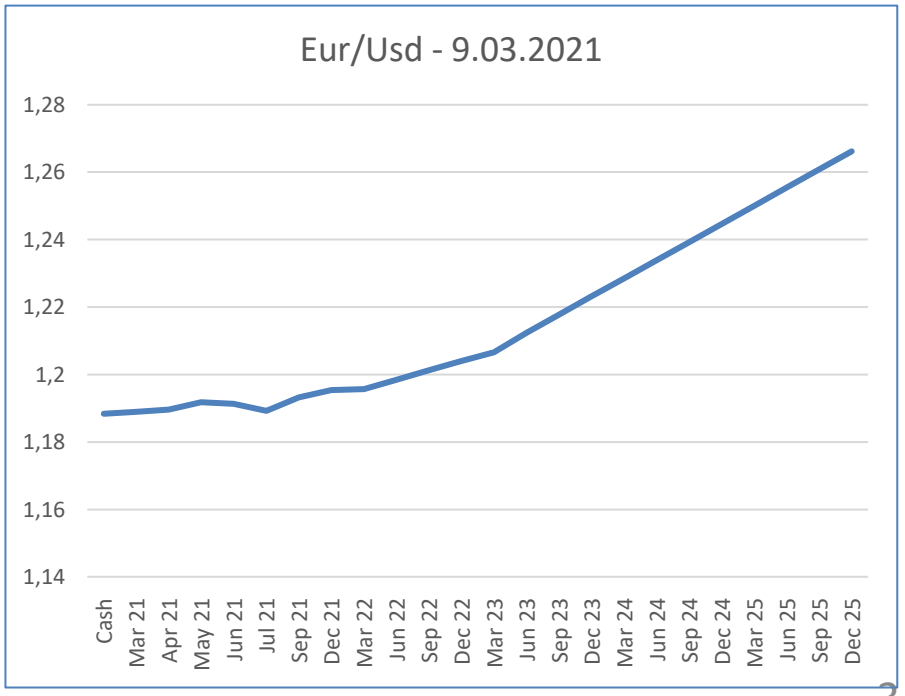
AGENDA

- Why do we need the FOREX?
- How do ER work?
- Can we predict ER?
- Is there a link between ER and IR?

PURPOSE AND FEATURES

- Trading currencies and, especially, **deposits in foreign currencies**
- Demand/supply determine Q and **prices are set as ER**: cost of purchasing foreign goods, services and financial assets
- Trading on **three markets**: **spot, forward/future, swap**





APPRECIATION VS DEPRECIATION

- Usually quotes are in **units of domestic per foreign currency**:
  - appreciation represents a fall in this exchange rate
  - (f.i. in EU, from 0.75 €/$ to 0.7 €/$)
- Easier: **units of foreign per domestic currency**:
  - appreciation represents an increase in this exchange rate
  - (f.i. in EU, from 1.33 $/€ to 1.43 $/€)

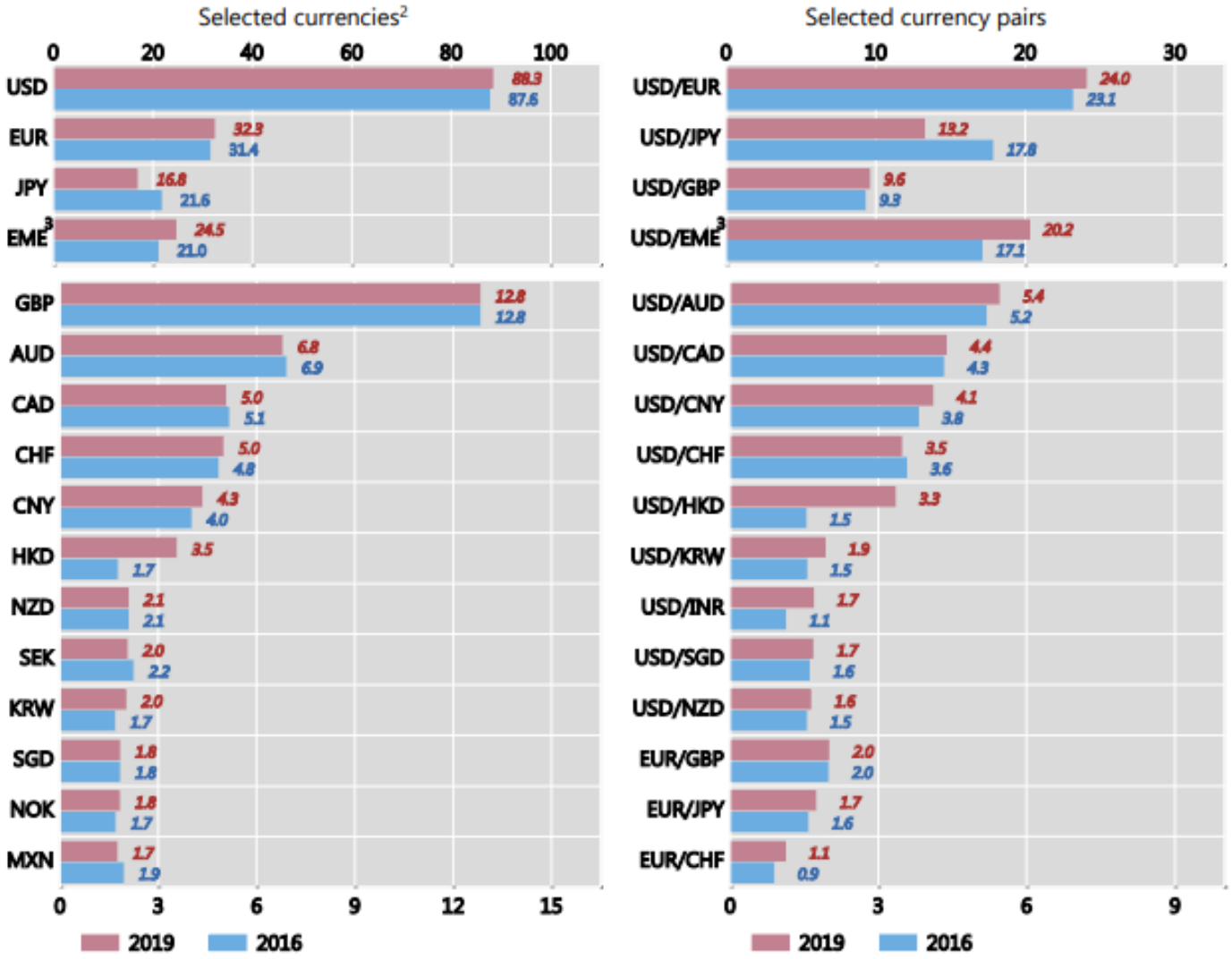
Purpose and Features

- **ERs affect economy**:
  - appreciation makes **own goods more expensive** and **foreign good cheaper** if prices are constant (depreciation the opposite)
  - economic and financial integration makes this **relevant for the overall economy, not just for importers/exporters**
  - ER are (at least partially) **linked with IR** through returns on assets
- Trading is **OTC between dealers**, despite words such as Forex/FX
- Trading deals with large (mln $-€) **deposits** in different currencies
- Currently the **largest market** (around 5-6 TRN USD of daily turnover for wholesale operations in recent years)
- Extremely **liquid and deep worldwide** market

PURPOSE AND FEATURES

Foreign exchange market turnover by currency and currency pairs[1]

Net-net basis, daily averages in April, in per cent — Graph 1

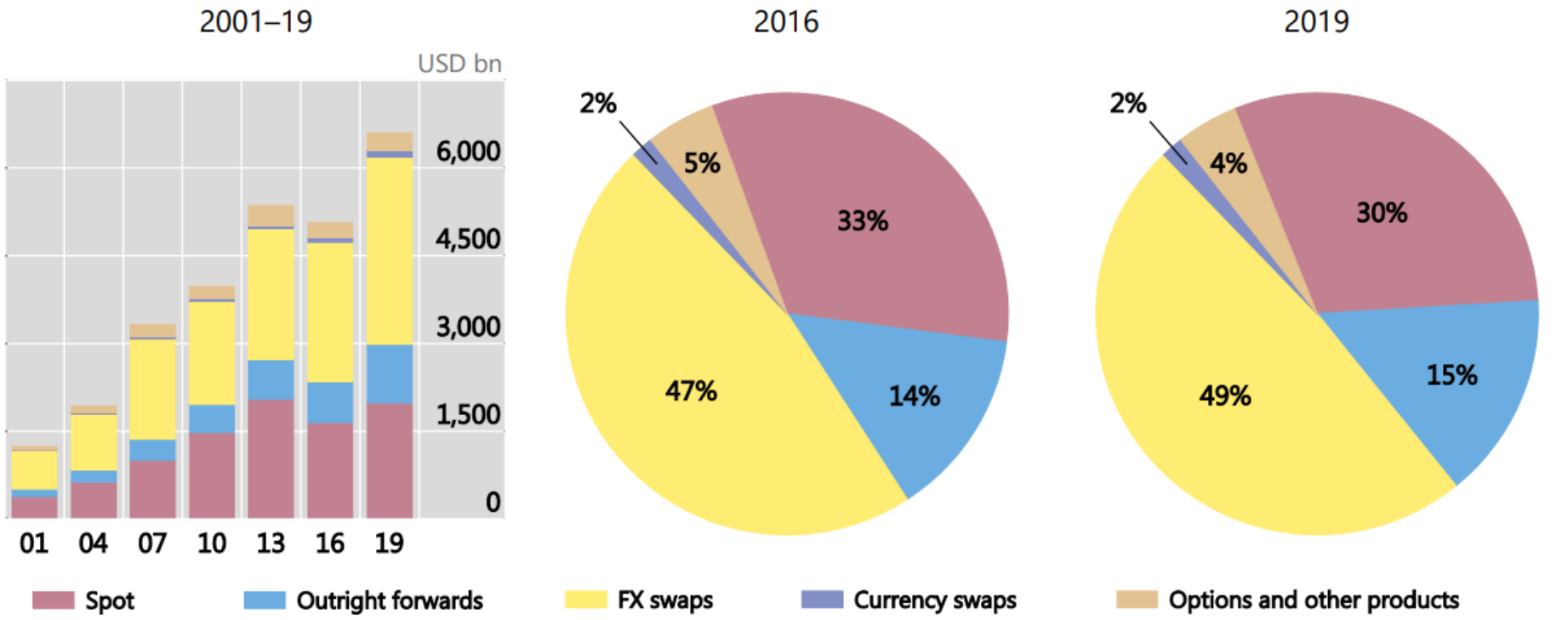


PURPOSE AND FEATURES

Foreign exchange market turnover by instrument[1]

Net-net basis, daily averages in April

Graph 2



THEORIES OF ER: LONG RUN

Theory of purchasing power parity (PPP)

- ***Law of one price****: two countries producing the same good with negligible transportation costs and barriers should price them at the same level*
- ER between two currencies reflect **changes in price levels**
- If price levels rise here, currency depreciates and others appreciate: **always think in relative terms!**
- **Real ER** (rate of exchange between national and foreign goods) are representative of currency's relative cheapness or expensiveness, therefore PPP predicts RER close to 1 across all currencies
- PPP holds in the long run due to its strong hypothesis:
  - goods are perfect substitutes,
  - all goods can be traded internationally
  - transportation/trade barriers are negligible

THEORIES OF ER: LONG RUN

Explaining ER: **we start from D and S for national/foreign traded goods**

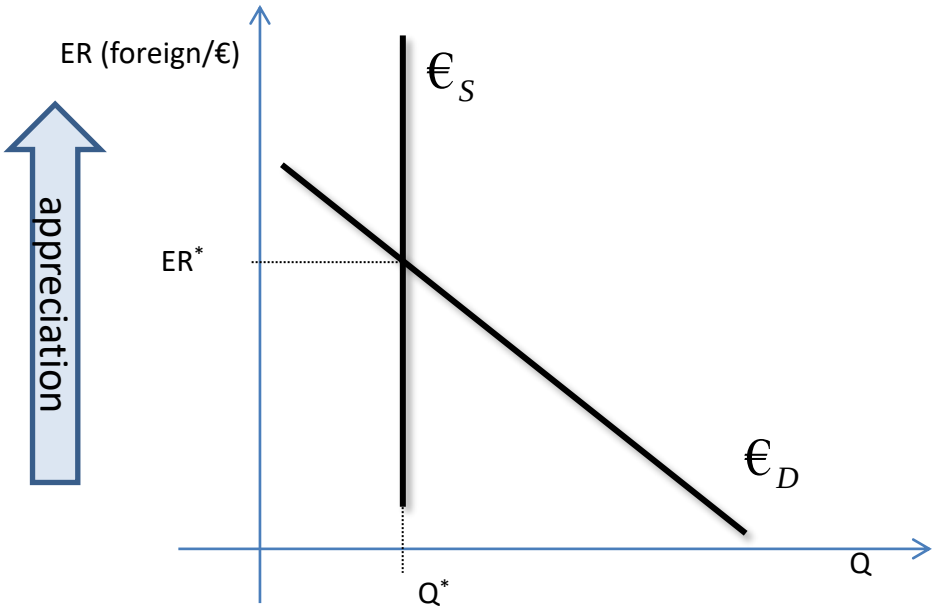
Main factors:

- **Relative price levels**: rising domestic inflation depreciates national currency
- **Trade barriers**: increasing trade barriers (tariffs/quotas) appreciates national currency
- **Demand's preferences**: increasing appetite for domestic goods appreciates national currency
- **Productivity**: greater productivity in internationally traded goods reduce their relative price and appreciates national currency

THEORIES OF ER: SHORT RUN

D and S again, but on assets in national and foreign currencies:

- Supply (domestic assets) can be considered given in the short run
- Demand decreases as currency appreciates (keeping future expected ER constant), since lower current ER with constant expected future ER means higher returns on national assets



Factors influencing demand:

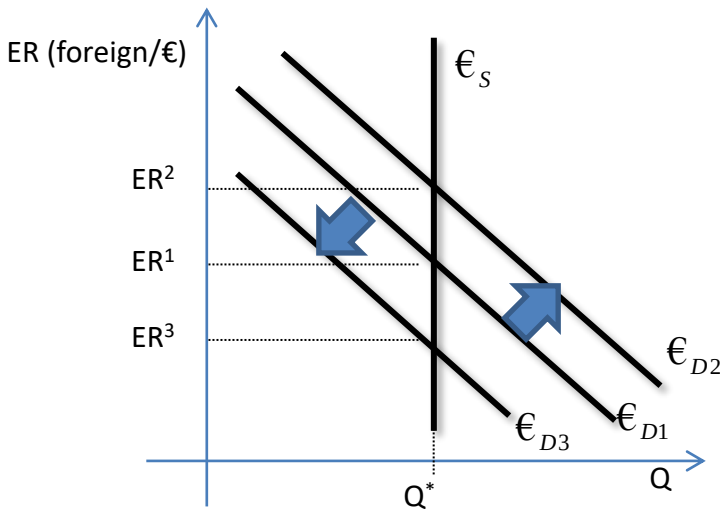
- **IR**: if national assets provide greater returns compared to foreign ones, demand increases and ER appreciate
- **Expected ER**: if the future expected ER increases (because of expected lower national price levels, higher trade barriers, lower foreign import, higher national export, higher national productivity), returns on national assets increase, demand increases and ER appreciate

THEORIES OF ER: SHORT RUN

Examples

Left D shifts:

- **– national IR**
- **+ foreign IR**
- **+ domestic prices**
- **– trade barriers**
- **+ import demand**
- **– export demand**
- **– productivity**

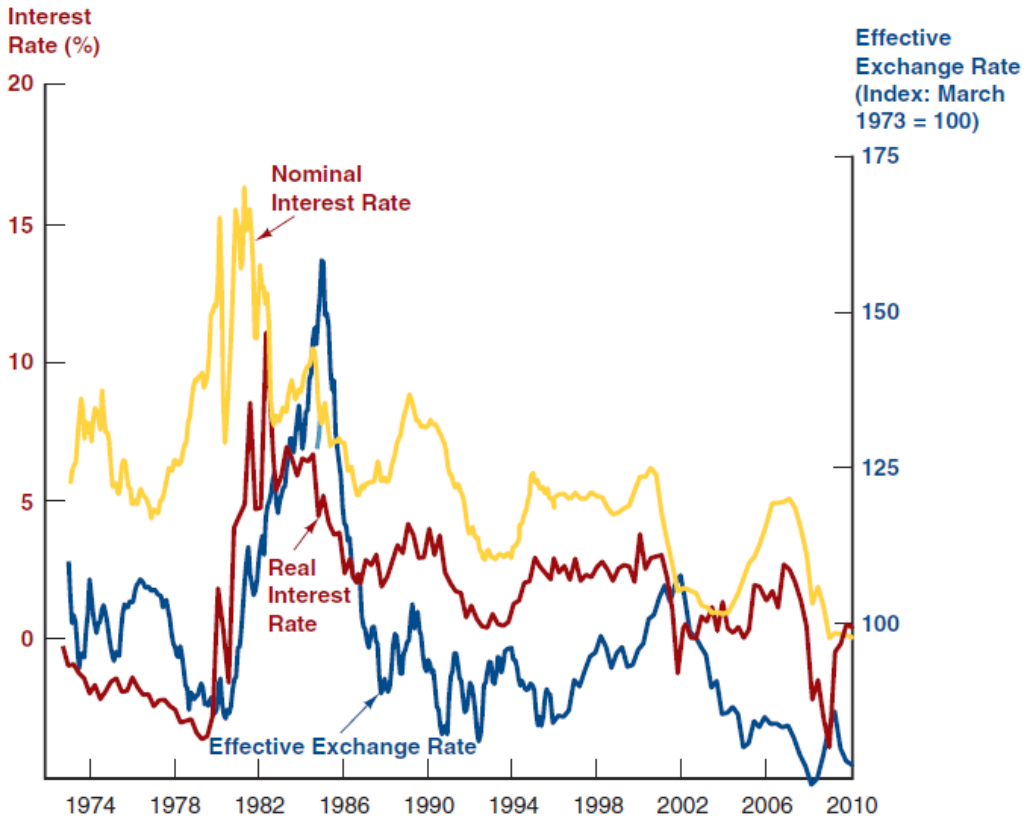


Right D shifts:

- **+ national IR**
- **– foreign IR**
- **– domestic prices**
- **+ trade barriers**
- **– import demand**
- **+ export demand**
- **+ productivity**

IR AND ER

- IR can change because of real IR or expected inflation changes: **different impact on ER**
- **if real IR increase, returns increase:** more demand of national assets, *appreciation*
- **if expected inflation, returns decrease:** less demand of national assets, *depreciation*



THE INTEREST PARITY CONDITION

- **Domestic assets earn i^D and foreign assets i^F** (no capital gains)
- Comparison requires **currency conversion**
- Imagine:
  - 1.1 $/€ is the spot ER, 1.15 is the future ER
  - John (US) has 1.1$, Maria (IT) has 1€
  - Italian returns are 2%, US returns are 5%

Therefore:

	JOHN in IT	JOHN in US	MARIA in US	MARIA in IT
Capital	1.1$	1.1$	1€	1€
Conversion	1€		1.1$	
Proceedings	1.02€	1.155$	1.155$	1.02€
Conversion	1.173$		1.004€	
Return	6.6%	5%	0.4%	2%

THE INTEREST PARITY CONDITION

- **Domestic assets earn i^D and foreign assets i^F** (no capital gains)
- Returns in foreign currency consider ER expectations (*proxy*):

$$R^D(F) = i^D + \frac{E^e_{t+1} - E_t}{E_t}$$

- Relative returns in foreign currency are the difference between D/F returns:

$$\text{Relative } R^D(F) = i^D - i^F + \frac{E^e_{t+1} - E_t}{E_t}$$

- Returns in domestic currency and relative returns in terms of domestic currency:

$$R^F(D) = i^F - \frac{E^e_{t+1} - E_t}{E_t} \rightarrow \text{Rel. } R^F(D) = i^D - \left(i^F - \frac{E^e_{t+1} - E_t}{E_t} \right) = i^D - i^F + \frac{E^e_{t+1} - E_t}{E_t} = \text{Rel. } R^D(F)$$

- If assets are substitutes, demand increases where returns are expected higher, so for a given amount of assets, expected returns should be equal (**interest parity condition**):

$$i^D = i^F - \frac{E^e_{t+1} - E_t}{E_t}$$

$$E_t = \frac{E^e_{t+1}}{i^F - i^D + 1}$$

Domestic currency appreciates ($\Delta^+ E_t$) if:

- expected appreciation
- increase in domestic IR, decrease in foreign IR

EXAMPLES

1. What happened to € and $ during the financial crisis (2007-2008)?

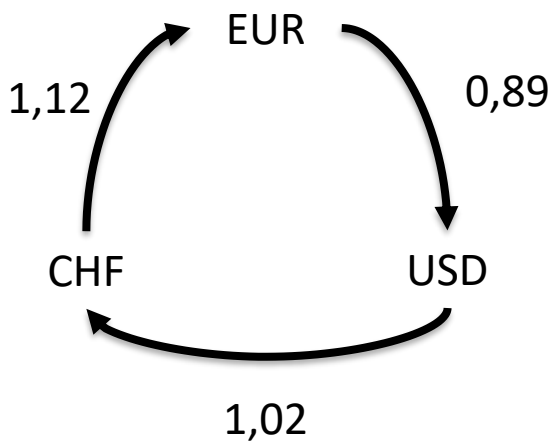
   Why is the Euro so “strong” despite the EU-crisis in 2011? Why is it weaker now?

EXAMPLES

2. On your trading desk you note the following:

- Your capital allowance for the day is 1.000.000 USD
- Three different banks are quoting 1,12 CHF/EUR, 0,89 EUR/USD, 1,02 USD/CHF

What can you do? What if many do?



Strategy A:

1) From USD to CHF: 980.392
2) From CHF to EUR: 875.350
3) From EUR to USD: 983.540

Performance: -1.6%

Strategy B:

1) From USD to EUR: 890.000
2) From EUR to CHF: 996.800
3) From CHF to USD: 1.016.736

Performance: +1.7%