FINANCIAL MARKETS AND INSTITUTIONS
A.Y. 2023/24
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A8. FOREX

- 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**

- Usually quotes are in **units of domestic per foreign currency:**
  - appreciation represents a fall in this exchange rate
  - (f.i. in EU, from 0.93 €/$ to 0.90 €/$)
- Easier: **units of foreign per domestic currency:**
  - appreciation represents an increase in this exchange rate
  - (f.i. in EU, from 1.08 $/€ to 1.11 $/€)

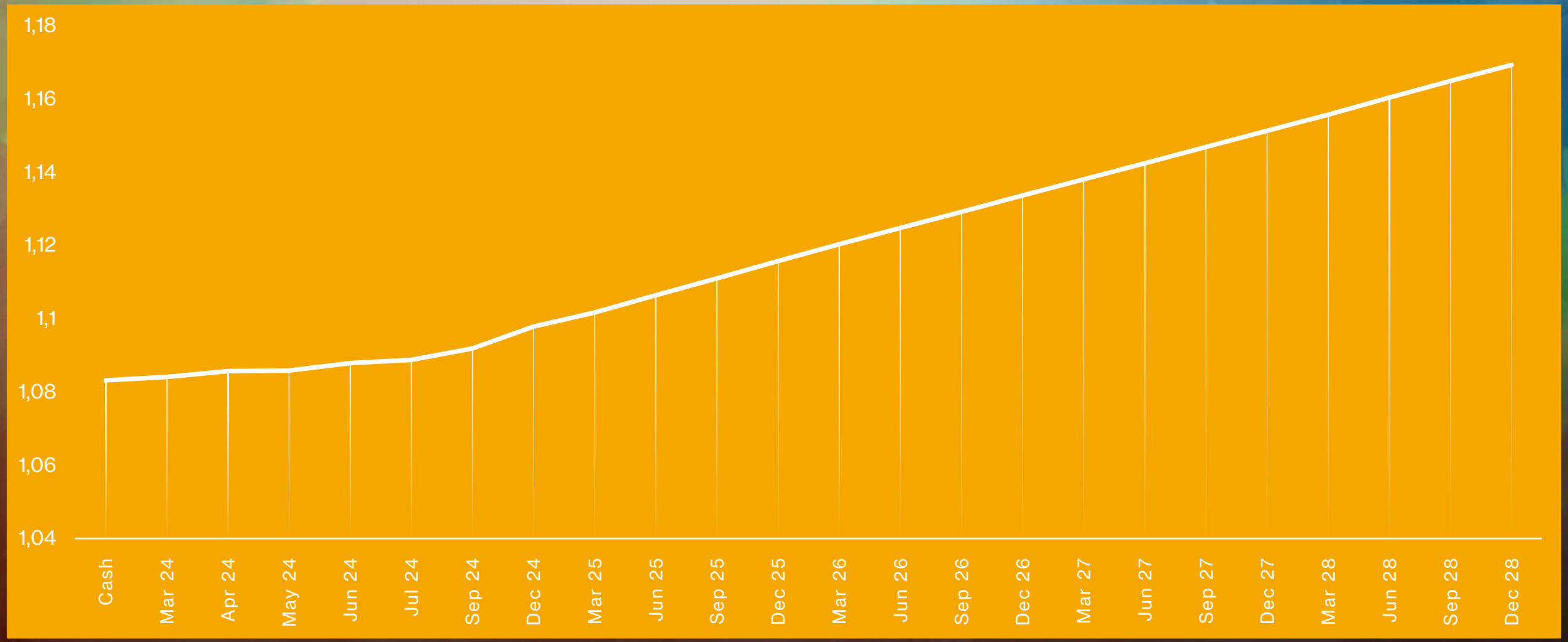
OANDA, 26/02/24

Majors Pairs

	Bid	Ask		Bid	Ask
EUR/USD	▲ 1.0834^{9}	1.0836^{3}	EUR/GBP	– 0.8548^{7}	0.8550^{1}
USD/EUR	▼ 0.9228^{2}	0.9229^{4}	GBP/EUR	– 1.1695^{8}	1.1697^{7}
GBP/USD	▲ 1.2673^{3}	1.2675^{1}	EUR/CHF	▲ 0.9539^{0}	0.9540^{4}
USD/GBP	▼ 0.7889^{5}	0.7890^{6}	CHF/EUR	▼ 1.0481^{7}	1.0483^{3}
USD/CAD	▼ 1.3520^{4}	1.3522^{1}	AUD/USD	▲ 0.6550^{2}	0.6551^{3}
CAD/USD	▲ 0.7395^{3}	0.7396^{2}	USD/AUD	▼ 1.5264^{1}	1.5266^{7}
USD/CHF	– 0.8803^{4}	0.8804^{9}	EUR/JPY	▼ 163.07^{7}	163.09^{2}
CHF/USD	– 1.1357^{3}	1.1359^{2}	JPY/EUR	▲ 0.0061^{3}	0.0061^{3}
USD/JPY	▼ 150.50^{1}	150.51^{9}	GBP/JPY	▲ 190.74^{7}	190.77^{2}
JPY/USD	▲ 0.0066^{4}	0.0066^{4}	JPY/GBP	▼ 0.0052^{4}	0.0052^{4}

EXAMPLES

Futures, 26/02/24



EXAMPLES

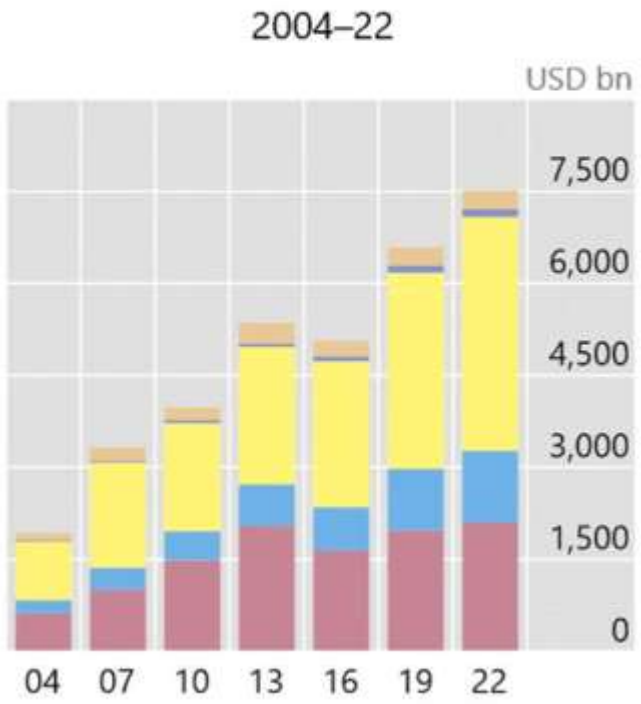
PURPOSE AND FEATURES

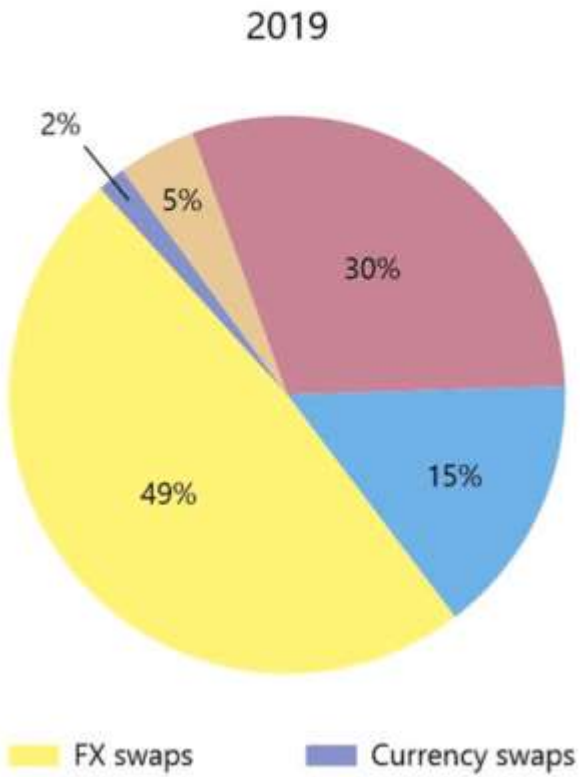
- **ERs affect economy:**
  - appreciation makes **own goods more expensive** and **foreign good cheaper** if prices are constant (depreciation the opposite)
  - economic and financial integration makes this **relevant for the overall economy, not just for importers/exporters**
  - ER are (at least partially) **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

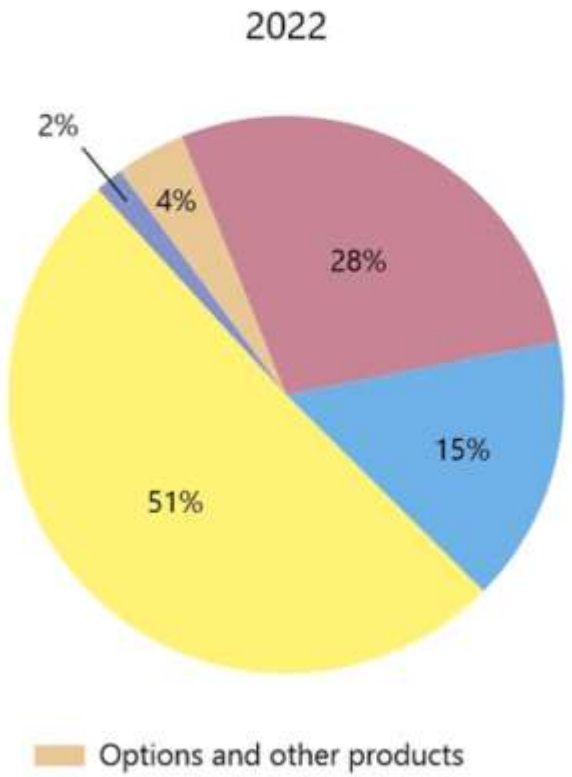
BIS

Foreign exchange market turnover by instrument[1]

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







EXAMPLES

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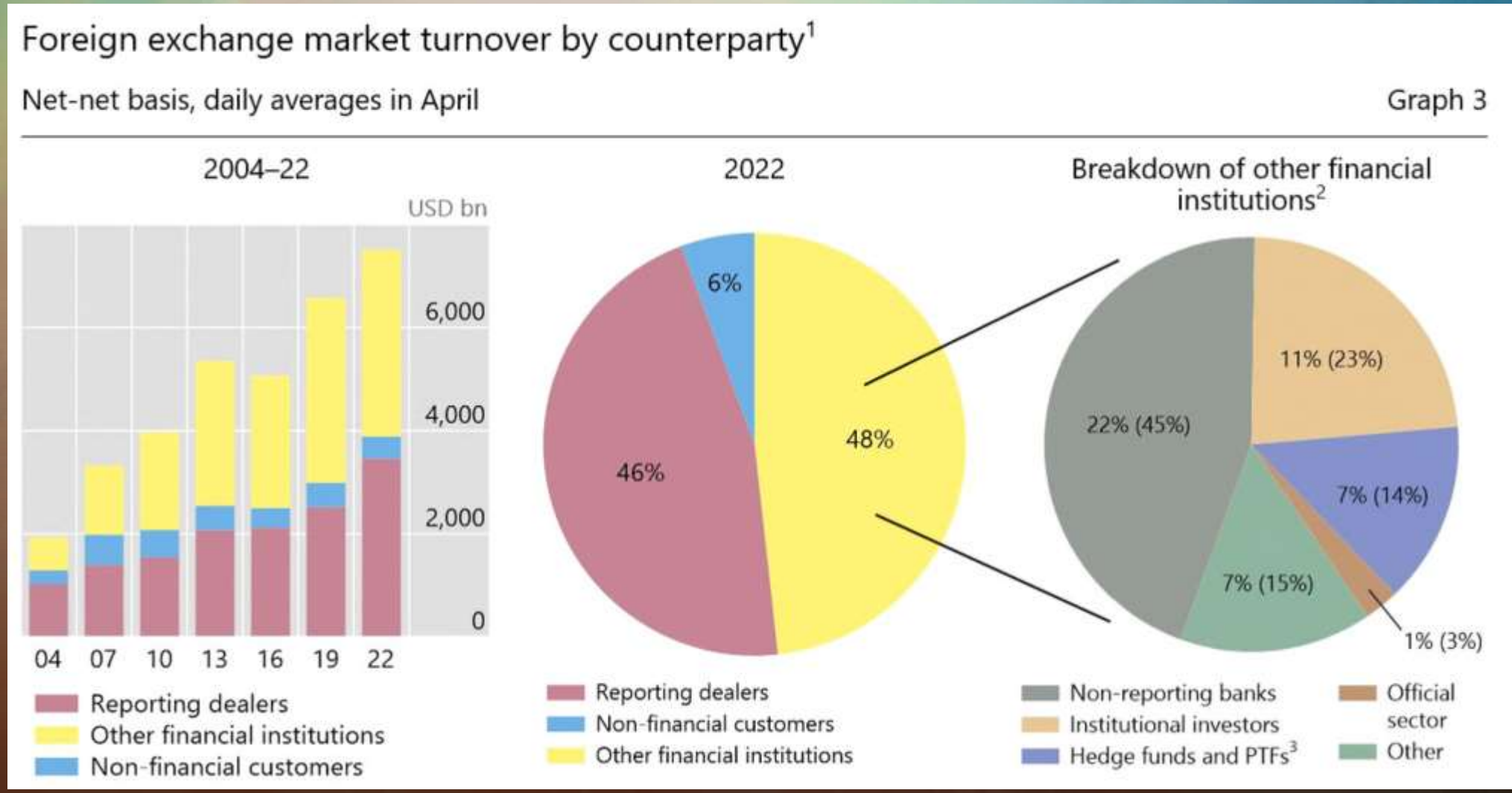


EXAMPLES

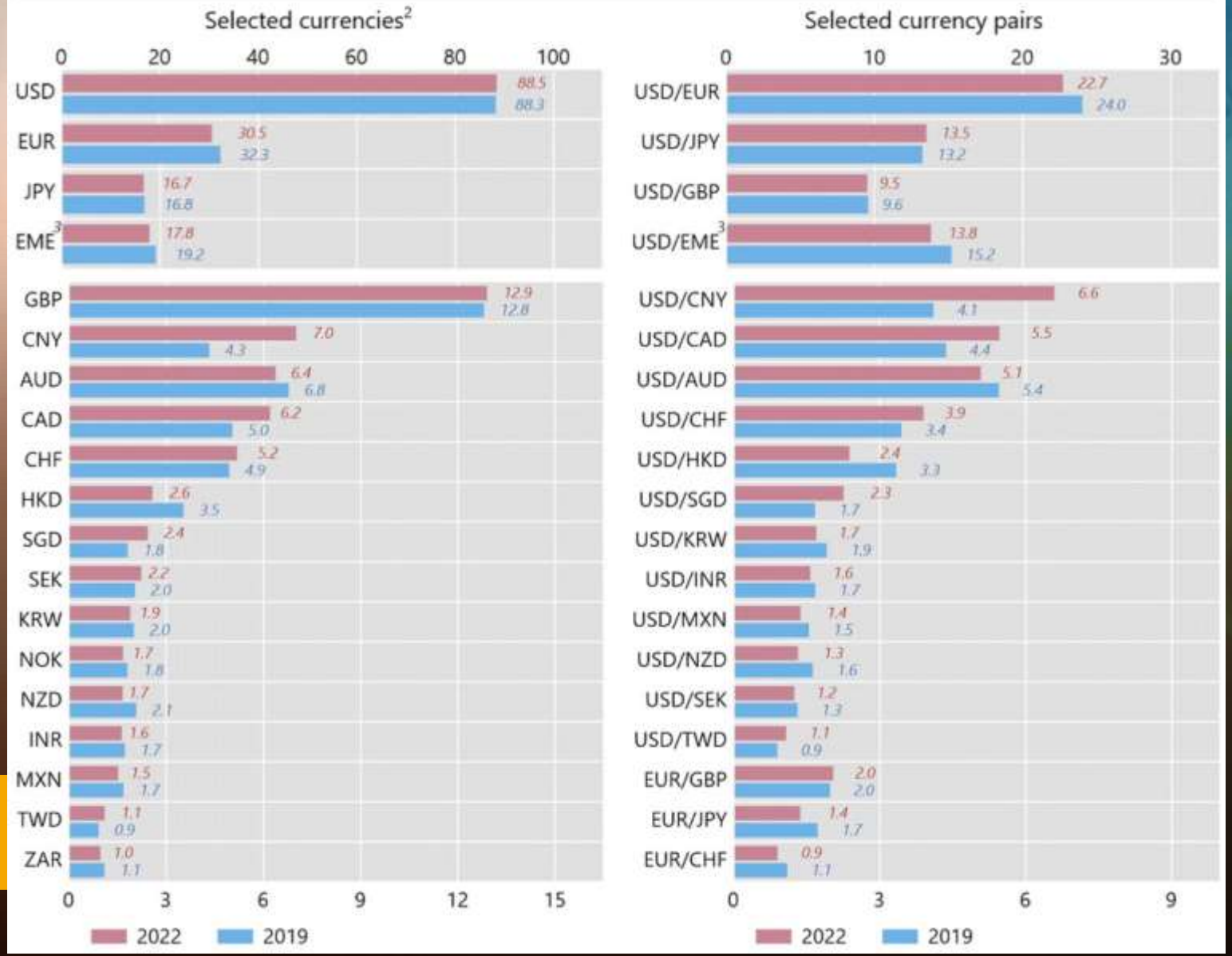
BIS

EXAMPLES

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

Net-net basis, daily averages in April, as a percentage of total turnover

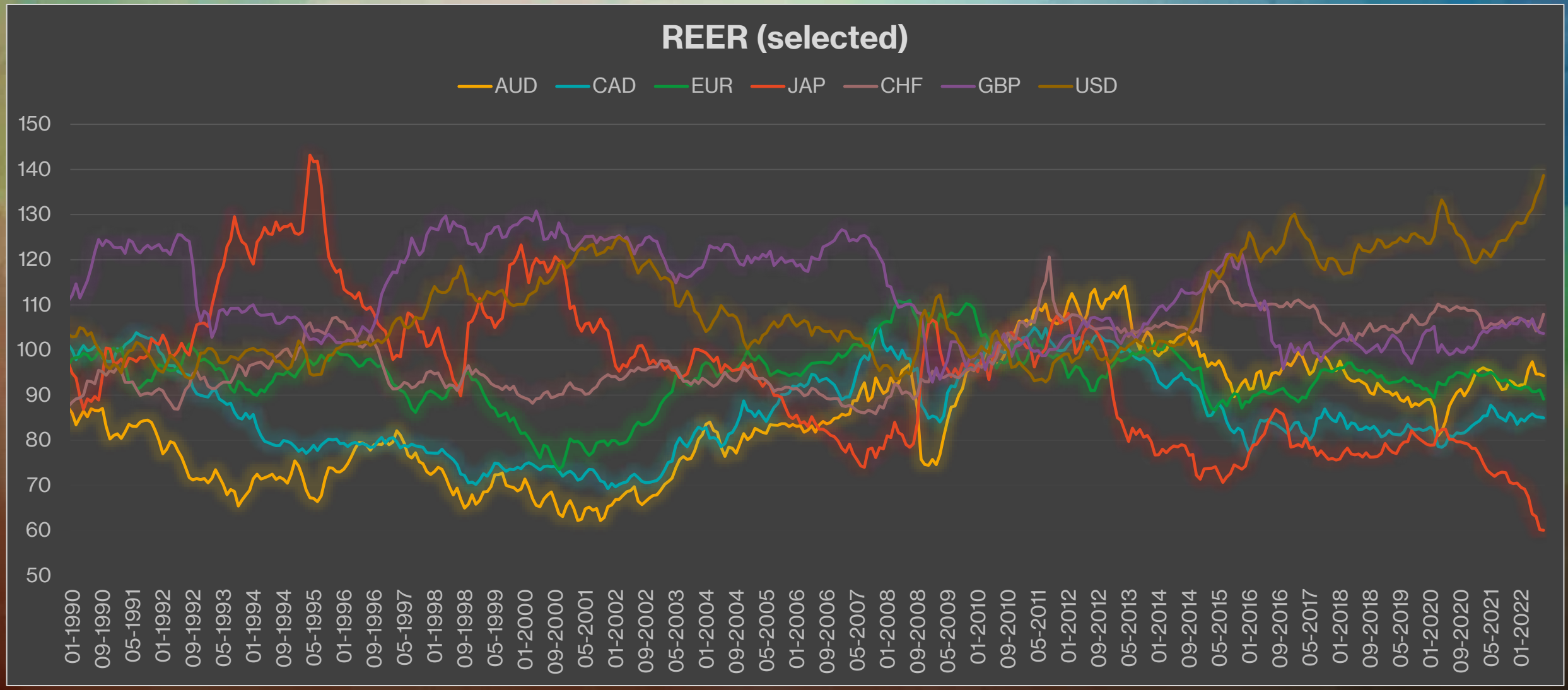
Graph 4



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


REER (selected)
AUD
CAD
EUR
JAP
CHF
GBP
USD
150
140
130
120
110
100
90
80
70
60
50
01-1990
09-1990
05-1991
01-1992
09-1992
05-1993
01-1994
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01-2016
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05-2017
01-2018
09-2018
05-2019
01-2020
09-2020
05-2021
01-2022

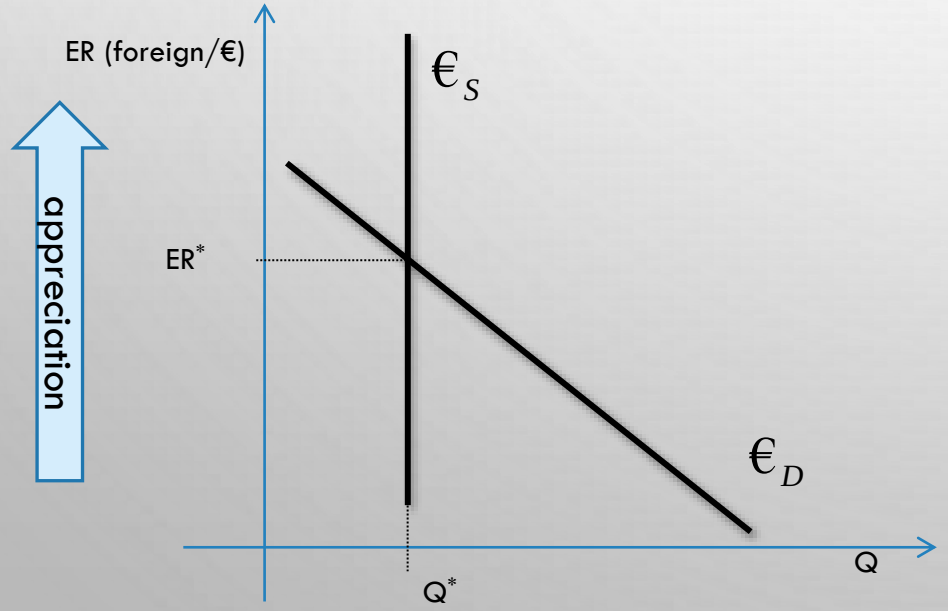
EXAMPLES

THEORIES OF ER: FROM LONG TO SHORT RUN

Long run: **D and S for national/foreign traded goods** affected by:

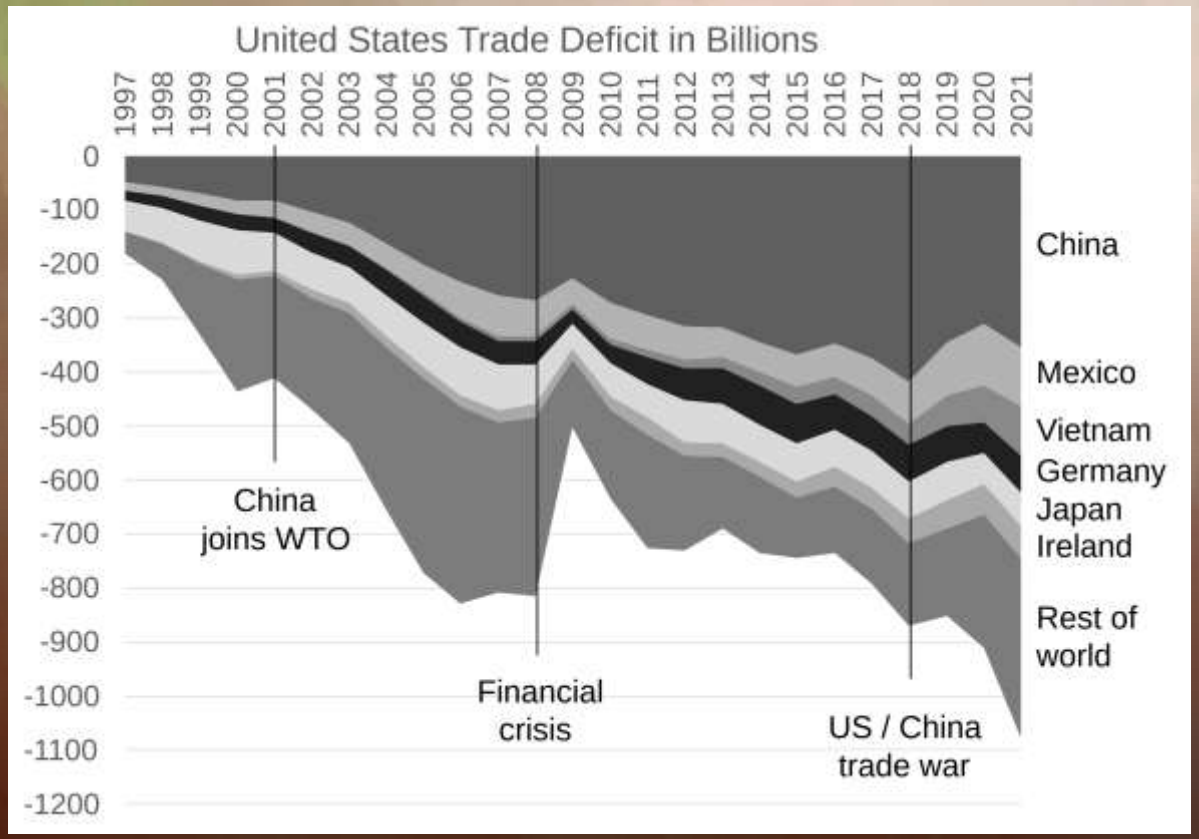
- **Relative price levels**: rising domestic inflation depreciates national currency
- **Trade barriers**: increasing trade barriers (tariffs/quotas) appreciates national currency
- **Demand's preferences**: increasing appetite for domestic goods appreciates national currency
- **Productivity**: greater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

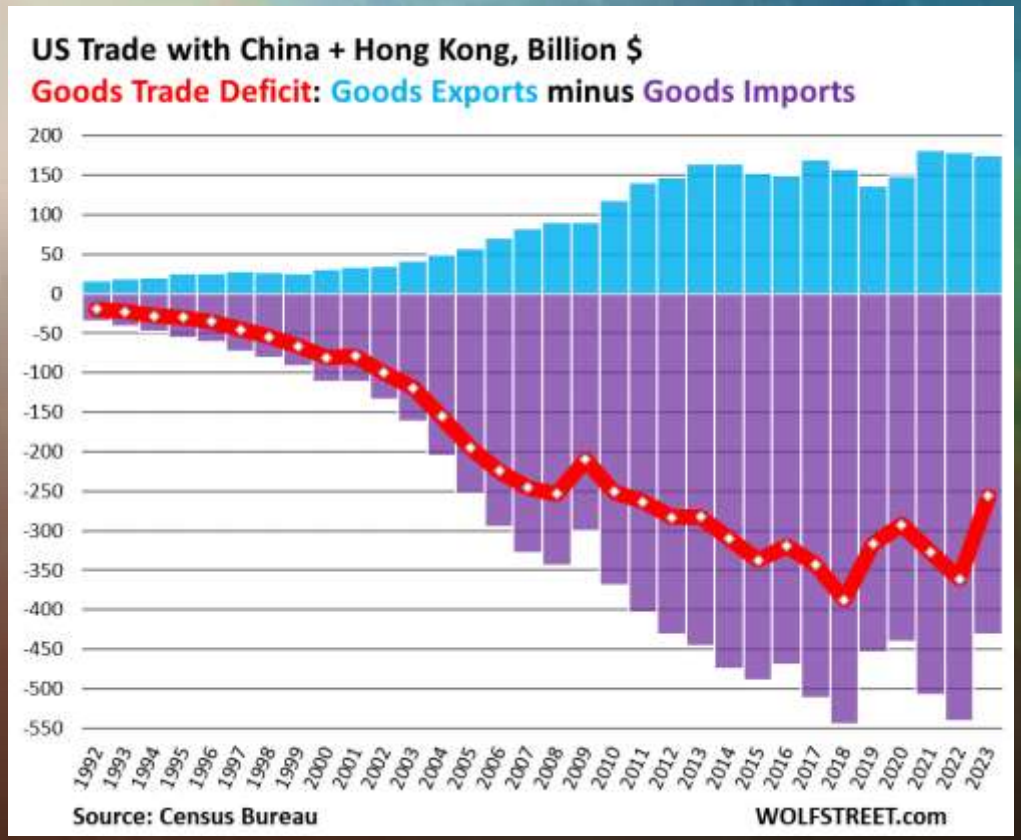
Short run → focus on assets denominated in national/foreign currency, but the supply is **fixed**: demand *down* as currency appreciates (keeping future expected ER constant): lower current ER with constant expected future ER means higher returns on national assets



Factors influencing demand:

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


United States Trade Deficit in Billions
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
-1100
-1200
China
Mexico
Vietnam
Germany
Japan
Ireland
Rest of world
China joins WTO
Financial crisis
US / China trade war


US Trade with China + Hong Kong, Billion $
Goods Trade Deficit: Goods Exports minus Goods Imports
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500
-550
1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Source: Census Bureau
WOLFSTREET.com

EXAMPLES

IR VS ER AND THE INTEREST PARITY CONDITION

IR change because of real IR or expected inflation → **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*

Domestic assets earn i^D and foreign assets i^F
(no capital gains): comparison requires **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%

	JOHN		MARIA	
	in IT	in US	in US	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%

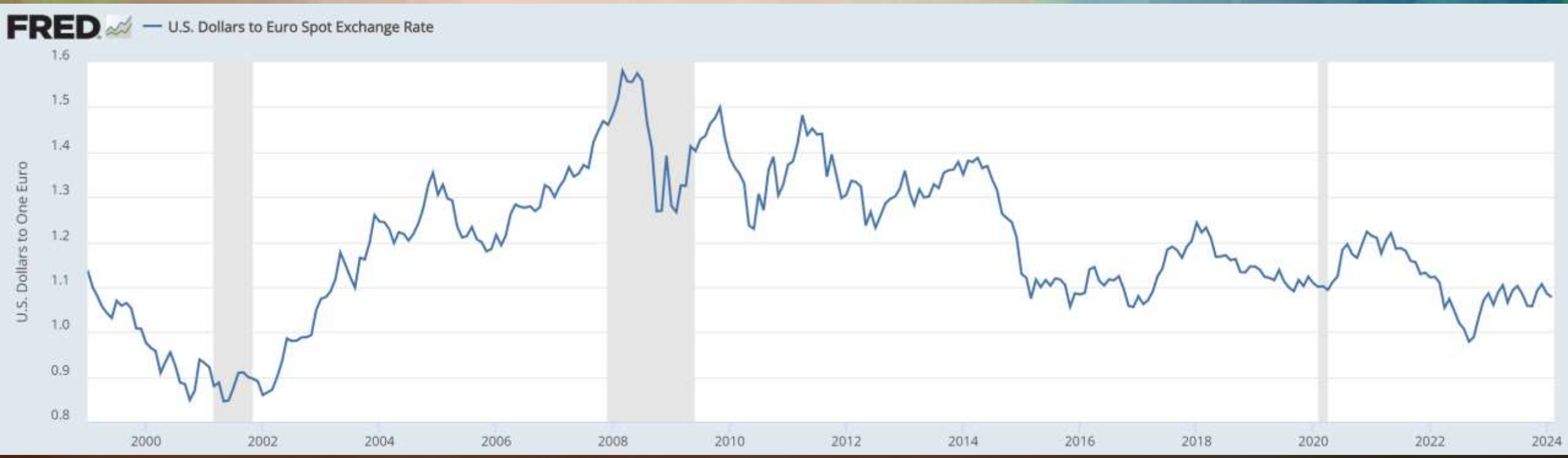
- Returns in F currency consider ER expectations, while comparison includes them relatively to F return
- Returns in D currency and relative returns in terms of D currency get to the same result
- Demand increases where returns are exp. higher, so expected returns should be equal (**interest parity condition**): domestic currency appreciates ($\Delta+E_t$) if we expect appreciation or $\Delta+ i^D$ or $\Delta- i^F$

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

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

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

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

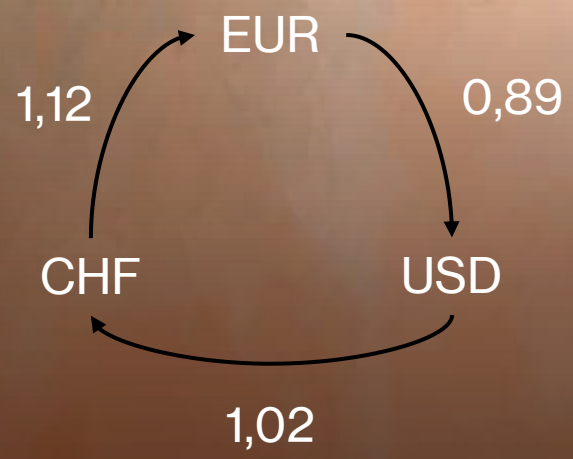

FRED
U.S. Dollars to Euro Spot Exchange Rate
U.S. Dollars to One Euro
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024

EXAMPLES

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%

However, remember that bid-ask spreads exist, reducing the change for profitable carry trades...

... unless we include more volatile and less traded currencies or crypto (but you other risks: liquidity, geopolitical, ...)

EXAMPLES

Turkey's lira plunges after Erdogan fires central bank head

Hong Kong / Istanbul / London (CNN Business) Turkey could be on the cusp of another currency crisis after President Recep Tayyip Erdogan...

Turkey's Erdogan Fires Central Bank Officials, Fueling Economic Uncertainty

ISTANBUL—Turkey's economy slid further into turmoil on Thursday after President Recep Tayyip Erdogan fired three top officials at the...

Erdogan fires statistics agency chief amid inflation spike

The president has drawn criticism for his repeated overhaul of the country's economic team, including replacing three central bank governors in...

Erdogan fires deputy governor of Turkey's central bank

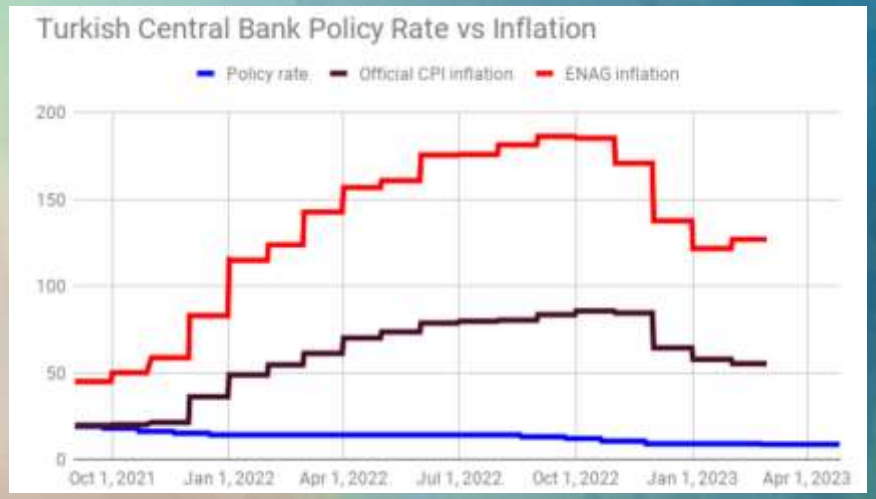
Turkey's president has fired one of the deputy governors at the country's central bank, the third senior official to be dismissed in two...

Turkey Pauses Interest Rate Cuts After Surge in Inflation

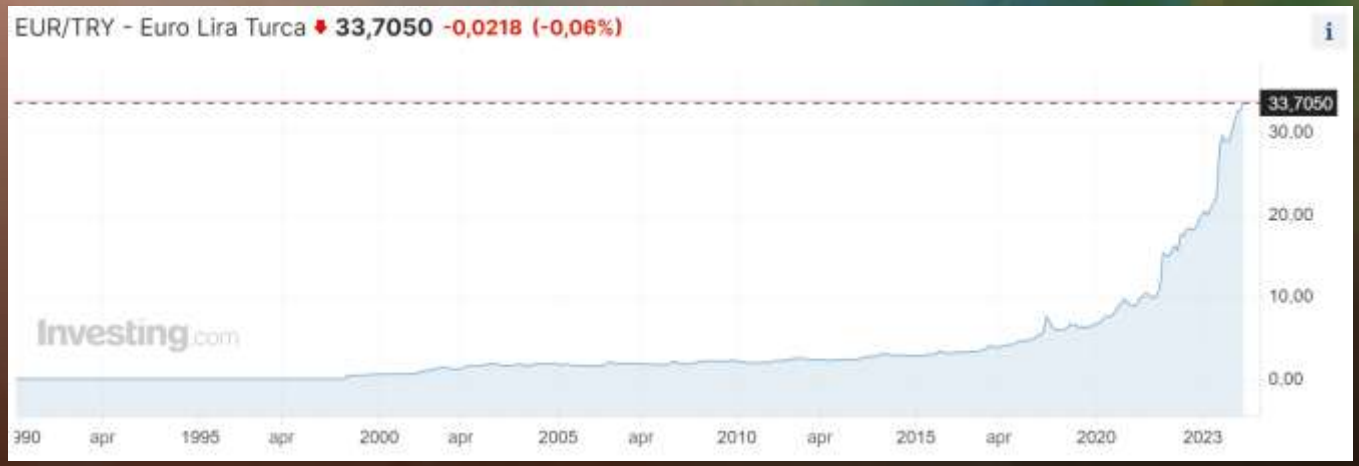
Central bank held key rate at 14%, in line with forecasts · Erdogan signals more gradual easing in 2022 as economy adjusts.

Inflation in Turkey is getting out of control

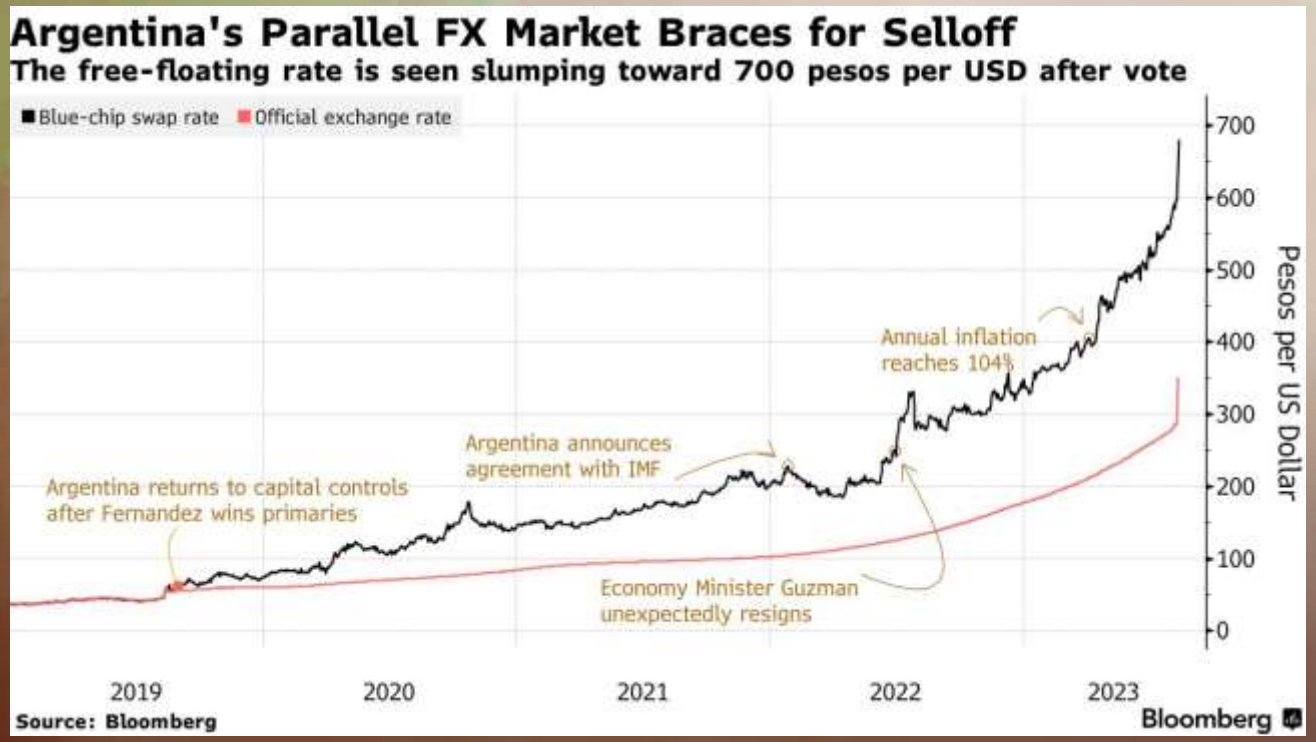
Erdogan had reacted to the unwelcome news as he often does: he fires the staff. Since 2019, he has replaced 3 central bank governors, 2 finance ministers...

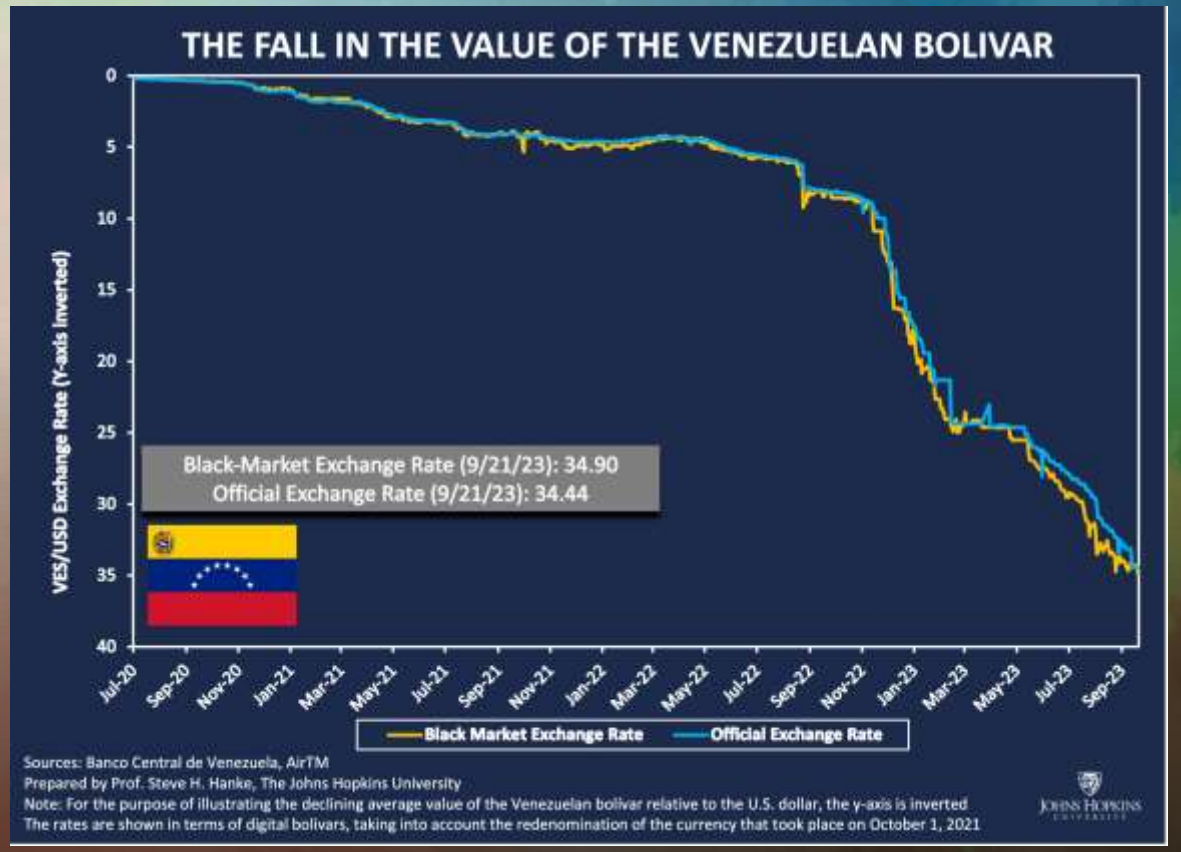


Turkey's new central bank chief assures that work to combat inflation will press on



EXAMPLES


Argentina's Parallel FX Market Braces for Selloff
The free-floating rate is seen slumping toward 700 pesos per USD after vote
Blue-chip swap rate
Official exchange rate
Argentina returns to capital controls after Fernandez wins primaries
Argentina announces agreement with IMF
Annual inflation reaches 104%
Economy Minister Guzman unexpectedly resigns
Pesos per US Dollar
2019
2020
2021
2022
2023
Source: Bloomberg
Bloomberg


THE FALL IN THE VALUE OF THE VENEZUELAN BOLIVAR
VES/USD Exchange Rate (Y-axis inverted)
Black-Market Exchange Rate (9/21/23): 34.90
Official Exchange Rate (9/21/23): 34.44
Black Market Exchange Rate
Official Exchange Rate
Sources: Banco Central de Venezuela, AirTM
Prepared by Prof. Steve H. Hanke, The Johns Hopkins University
Note: For the purpose of illustrating the declining average value of the Venezuelan bolivar relative to the U.S. dollar, the y-axis is inverted
The rates are shown in terms of digital bolivars, taking into account the redenomination of the currency that took place on October 1, 2021

EXAMPLES

Vai su **wooclap.com** e usa il codice **FMAI23**

You survived 50% of this course: tell me the first thought that describes your experience so far.

Clicca sullo schermo di proiezione per avviare la domanda

wooclap

100 %

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