



BANK FOR INTERNATIONAL SETTLEMENTS

Real Effective Exchange Rates

- The BIS methodology

Előd Takáts

Bank for International Settlements

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Overview

1. Motivation: measure of relative international prices
2. Bilateral nominal exchange rates
3. Bilateral real exchange rates
4. Real effective exchange rates (REER)
5. BIS REER
6. Conclusion



Bilateral nominal exchange rates

- Value of one currency as expressed in another currency
 - $1 \text{ CHF} = 0.97 \text{ USD}$
 - $1 \text{ EUR} = 1.24 \text{ USD}$
 - $1 \text{ EUR} = 1.20 \text{ CHF}$
- Useful for some comparison (eg price of vacation)
- But not for all (eg living standard comparison)



Bilateral real exchange rates

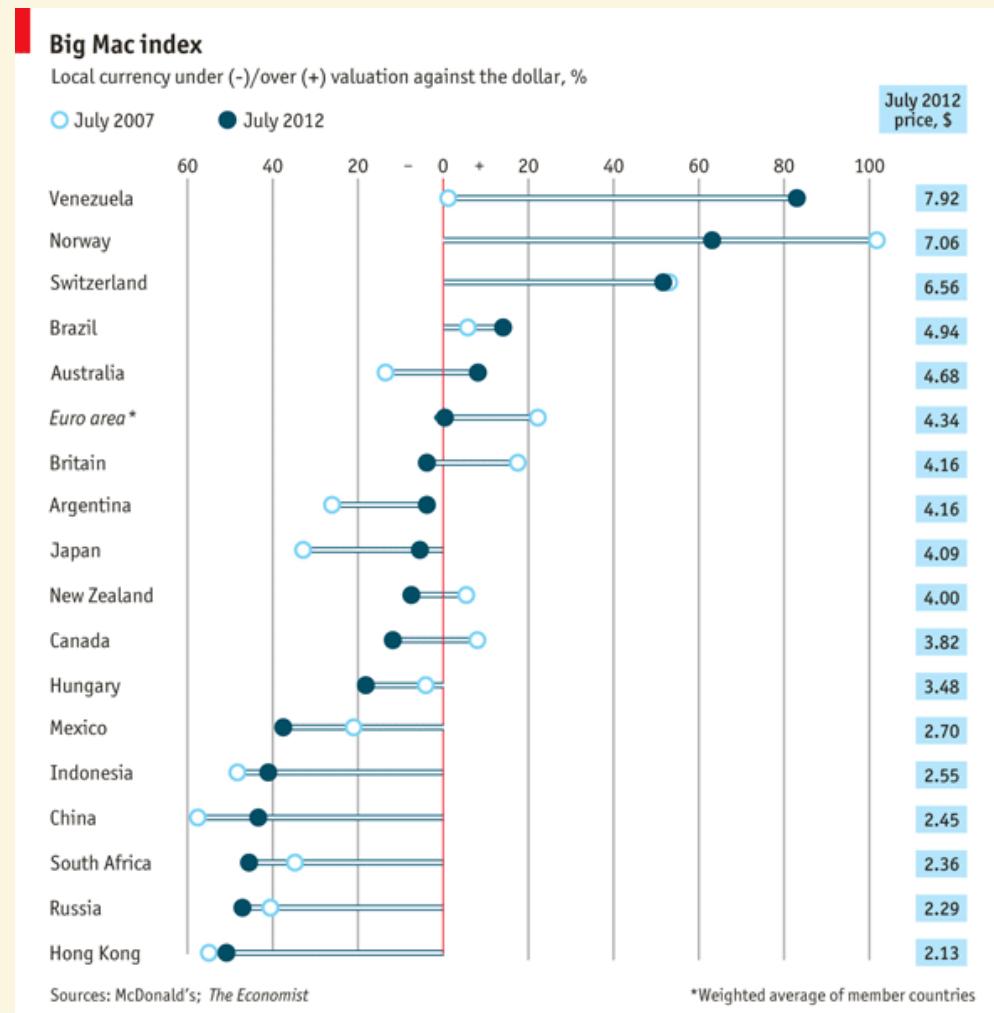
- Adjust nominal bilateral exchange rates with domestic and foreign prices:

$$\text{Real Exchange Rate} = \text{Nominal Exchange Rate} \times \frac{\text{Foreign Prices}}{\text{Domestic Prices}}$$

- Potential prices depending on measurement goal:
 - consumer prices
 - producer prices
 - export prices
 - GDP deflator
 - unit labor costs



Example: The Big Mac Index





Real Effective Exchange Rates

- Weighted average of bilateral real exchange rates with trading partners of a country.

$$REER_{\text{country } i} = \sum_{j=1}^N \text{trade weight (country j)} \times \text{Real Exchange Rate (country j)}$$

country j=1,2,...N are country i's trading partners, exchange rates in natural logarithms (geometric averages)

- Issues:
 - N: how many trading partners to involve?
 - Coverage vs data quality
 - Trading weights
 - ...

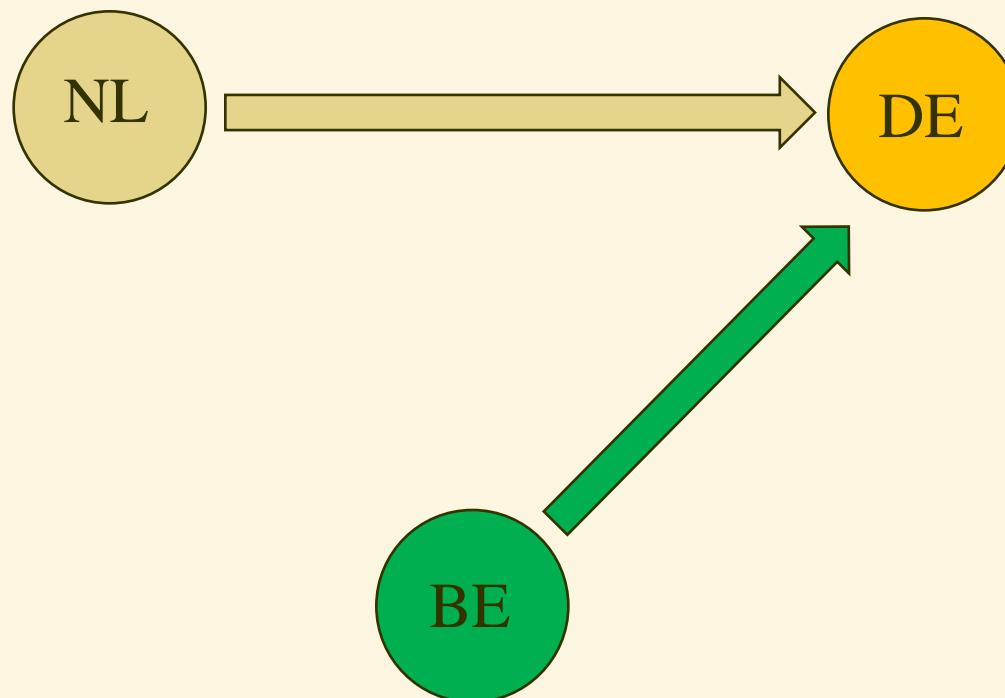


BIS REER

- Trade weights
 - Based on manufacturing trade flows (exports and imports)
 - Time varying weights: three year average, chain linked
 - (Euro area treated as whole)
 - Third market competition
 - Transshipment effects
- CPI based
- Coverage: 61 countries (broad index)
 - 27 countries (narrow index)

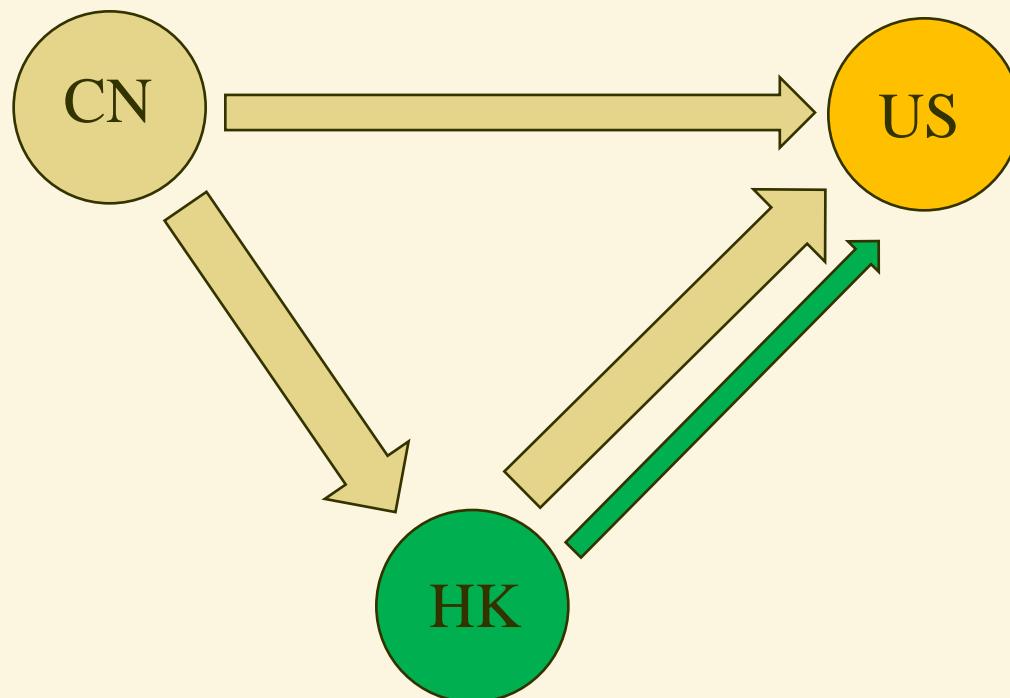


Third market competition



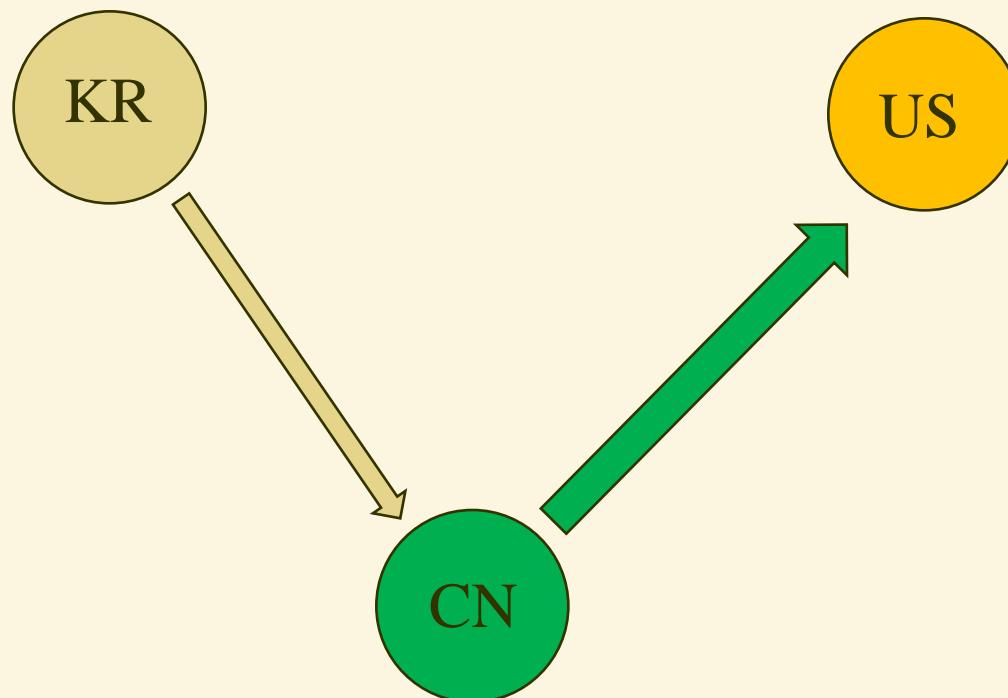


Transshipment



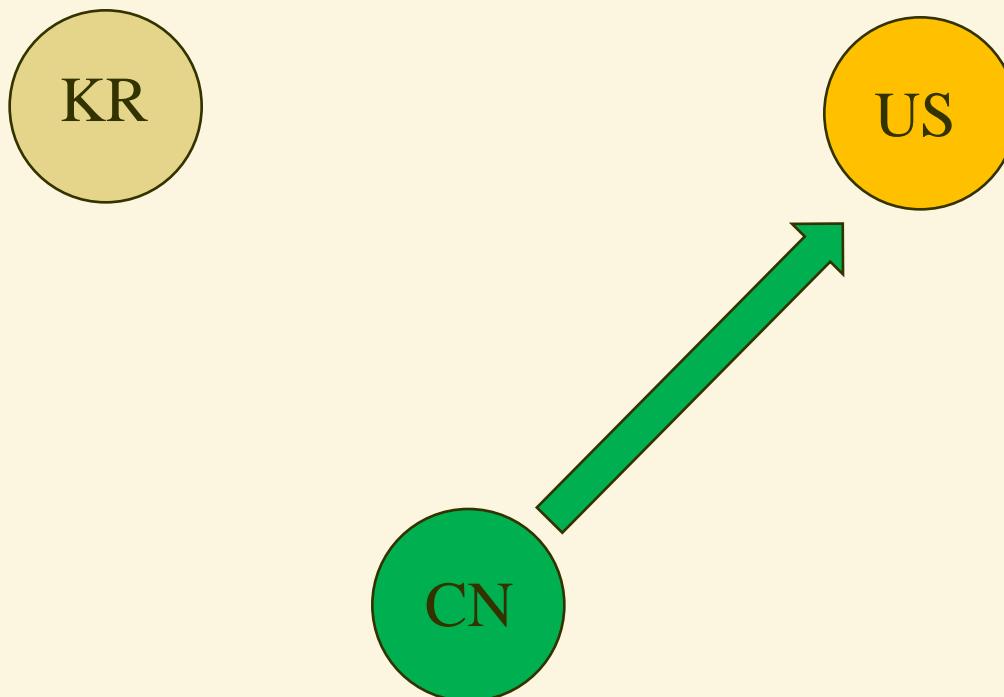


Vertical integration (1)





Vertical integration (2)





Factors that drive REER measurement

- Price/cost measure for real exchange rates
 - Trade off: fit and quality
- Coverage (N)
 - Trade off: coverage vs quality
- Trade weights
 - Inclusion of relevant trade
- ...



Conclusion

- REERs depend
 - Price/cost deflator
 - Coverage
 - Trade weights
 - ...
- There is no single “all purpose” REER
 - Difficult trade-offs such as fit vs quality
 - Awareness of statistical engine is crucial