Les grandes tendances de l'économie mondiale à l'horizon 2050

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Motivation

- At constant growth rate China would be 20 times larger at the 2050 horizon: impact on demand for natural resources, environment depletion, international competition, financial flows…
- But: ageing of population (labour force). Change in savings rate and capital accumulation. Convergence of TFP. Rebalancing of current account.
- => long term horizon growth model

  Energy plus a bundle of (accumulative) capital and labour, two types of technical progress. National idiosyncrasies taken into account. Estimation (1980-2008) and projection (2013-50).

What we do

- Project GDP for 145 countries
- Production function
- Estimations on past data of functional forms for savings, TFP,…
- Projection of production factors (K, female lab. force, energy cons°)
- Projection of technological trajectories (TFP, energy efficiency)
- See Fouré, Benassy-Quéré and Fontagné (2010), CEPII Working Paper 2010-27, forthcoming update

Estimations

- How *K* is determined:
  Perpetual inventory
  I and constant depreciation
- *I* depend on S but function of financial openness
- S function of demographics (ageing) and income:
  Savings rate = lagged growth of GDP per cap, age structure, interaction of age structure and growth

- Energy efficiency
  - Driven by innovation and therefore represented with a U shaped catch-up model *à la* Nelson-Phelps
- TFP growth
  - Catch-up function (*à la* Nelson-Phelps) of H, and H interacted with lagged distance to the technological frontier
- H growth (education): share of skilled labour force
  - (regional) function of the distance to the educational frontier (best practice observed every five years)- female participation modelled (secondary and tertiary educ°)

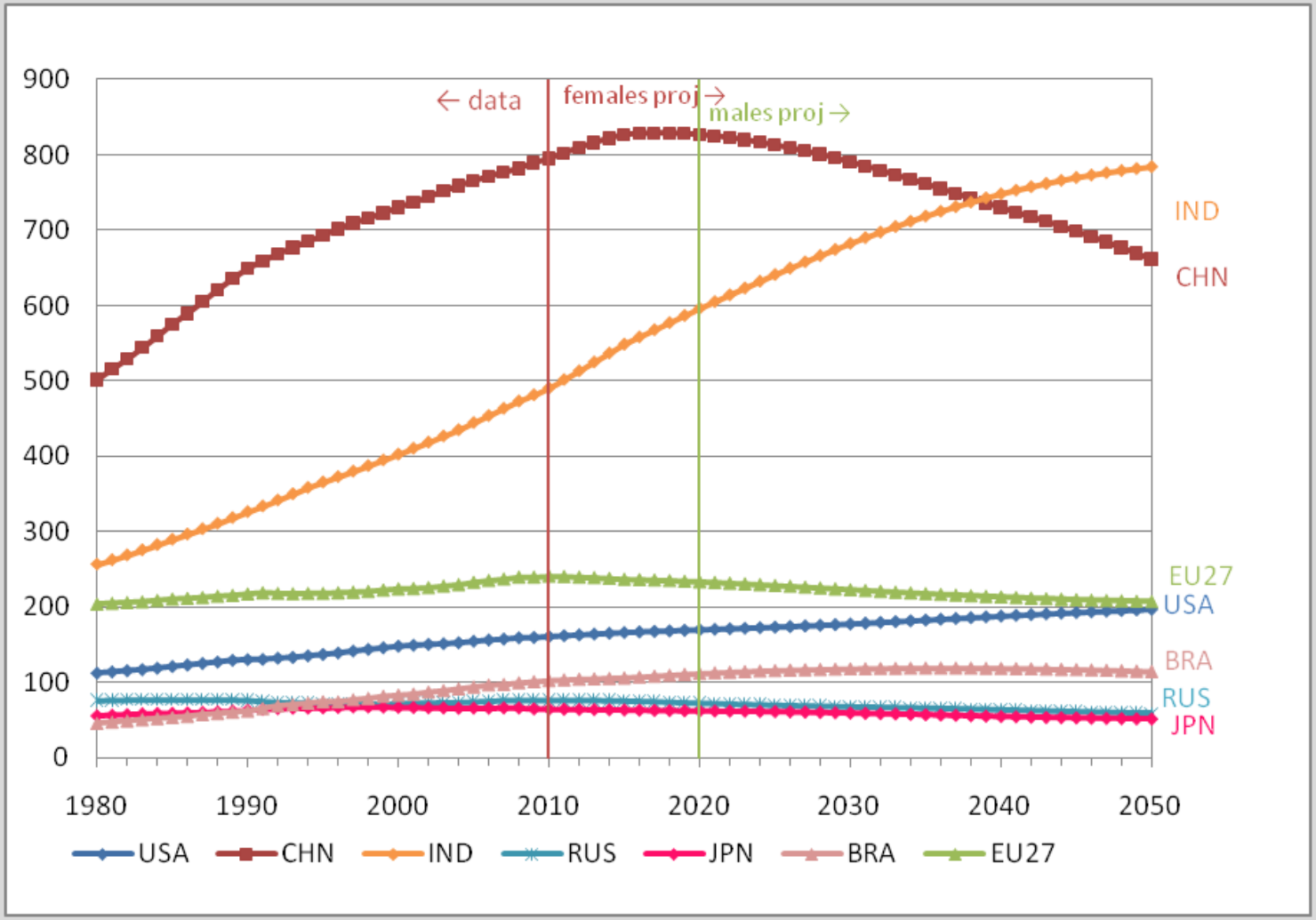
Data

- Real GDP in constant dollars for 2005, S, I and energy consumption from WDI.
- Real GDPs in 2005 USD are then recovered for 1960-2009, based on real GDP growth rates taken from IMF, UN and WB.
- Labour force (1980-2009) is taken from the ILO.
- H from the *new* Barro Lee 2010 dataset (1960-2010) V1.2.
- Energy production (1980-2009) and average annual oil prices in 2005 USD (1980-2009) from the American Energy Information Agency (EIA).

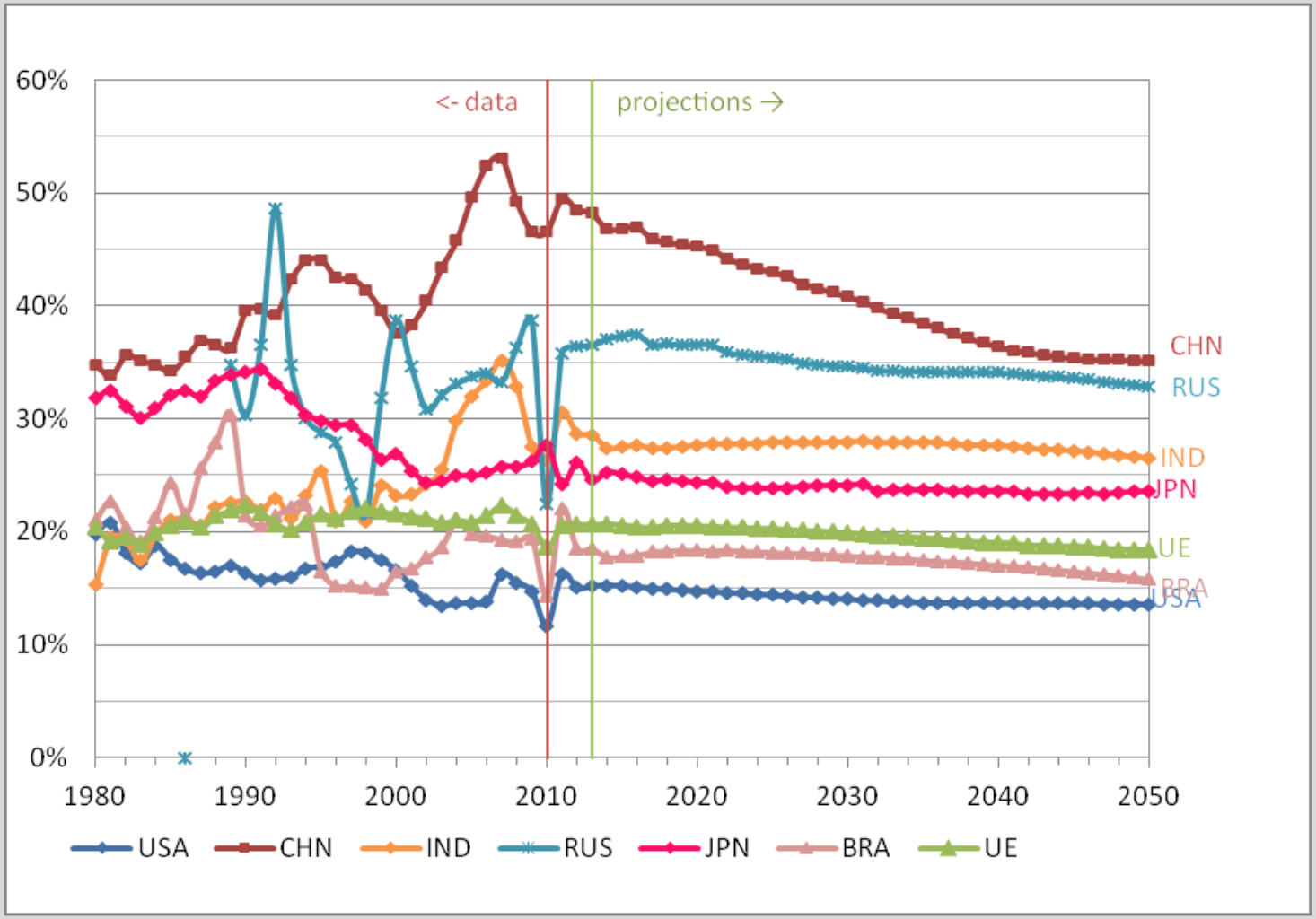
Projection

- L : UN projections and ILO
  - Adjusted for female participation
- H projected based on initial Barro-Lee values
  - Primary, secondary, tertiary, age groups
- TFP, energy efficiency, K projected
- P_E taken from (EIA) for (2008-2035).
  - Constant growth rate (in real terms) over 2036-2050.

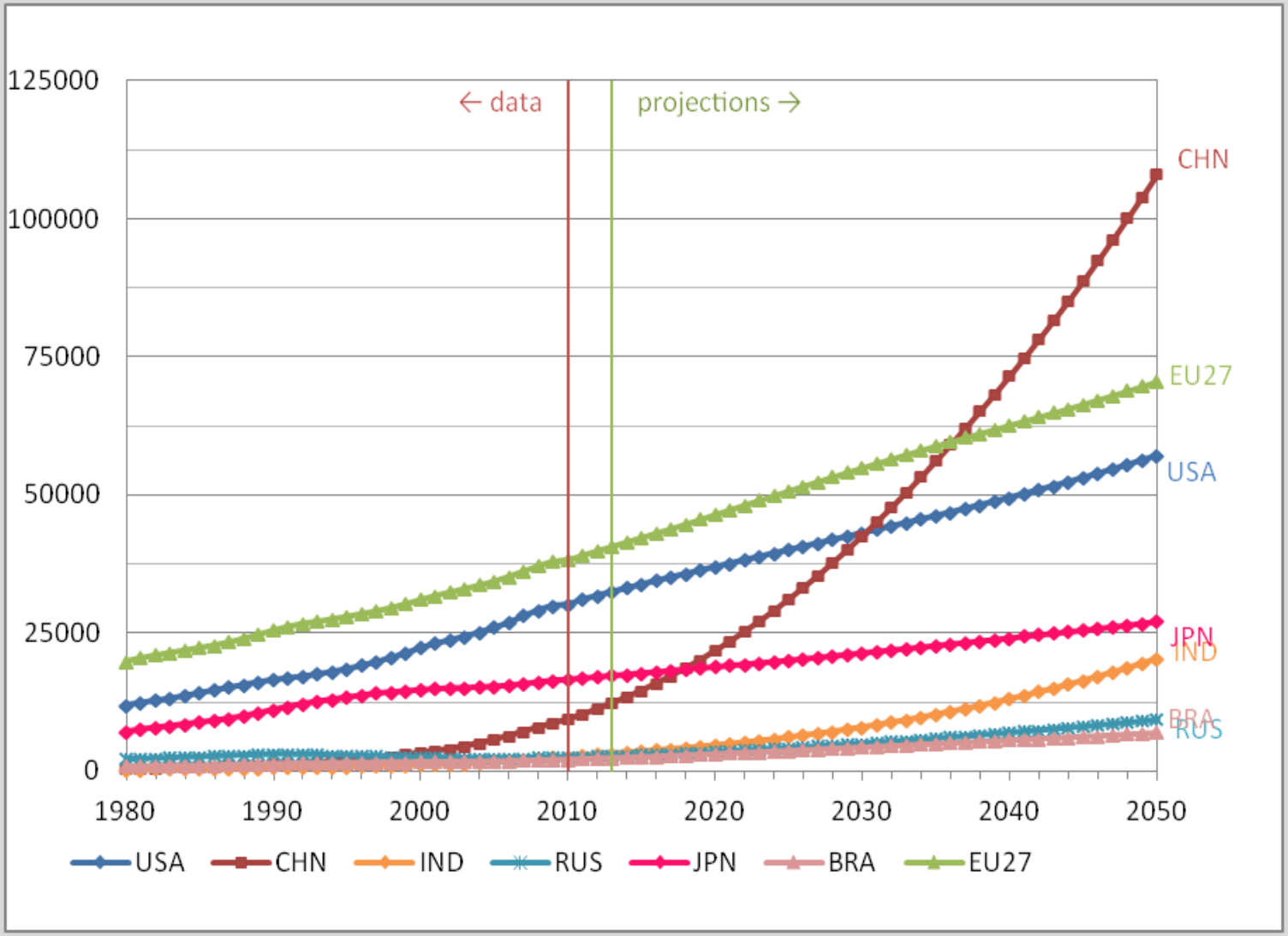
Labour force (million)



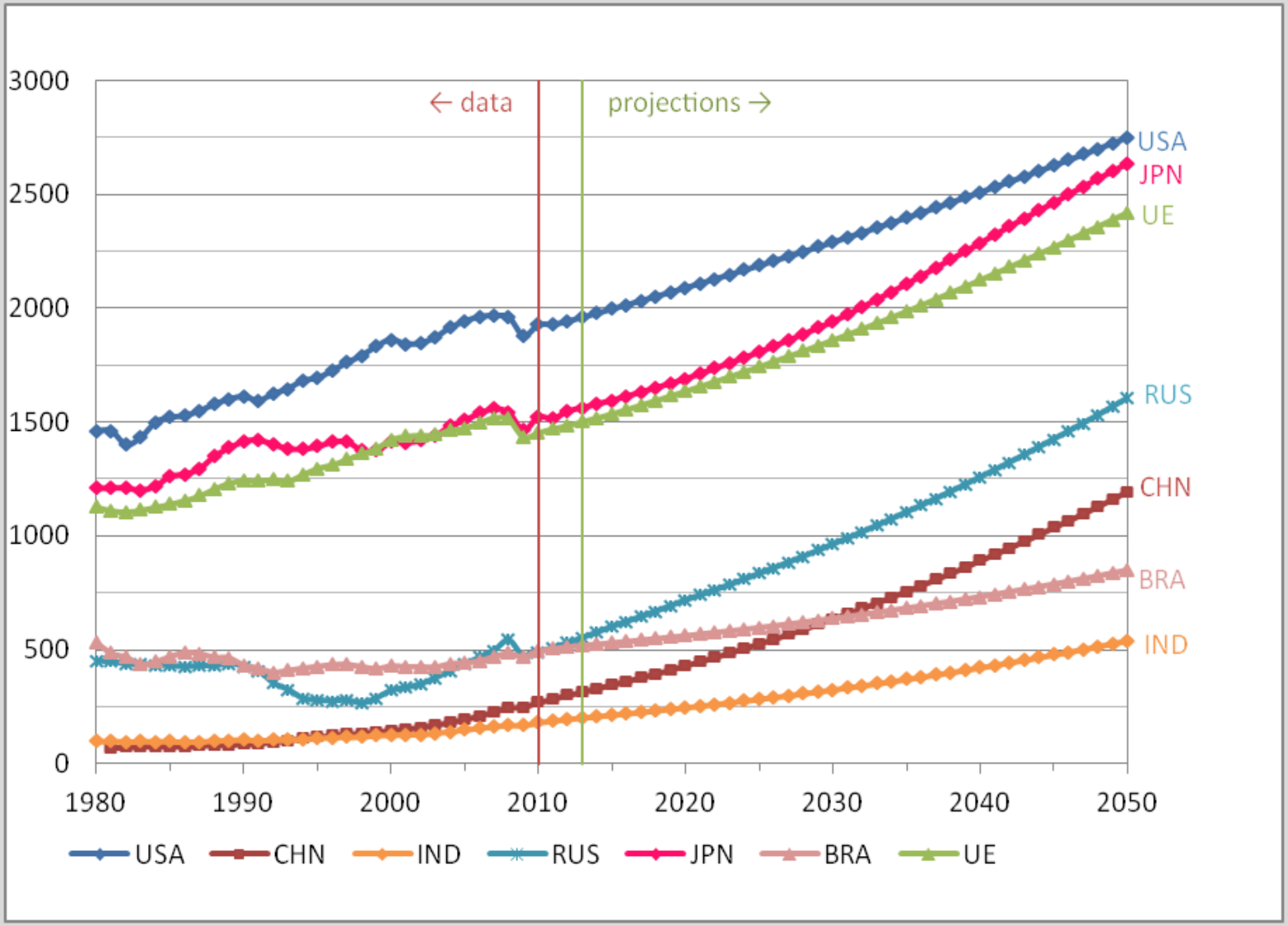
Savings rate



Capital stock



TFP


3000
2500
2000
1500
1000
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0
← data
projections →
USA
JPN
UE
RUS
CHN
BRA
IND
1980
1990
2000
2010
2020
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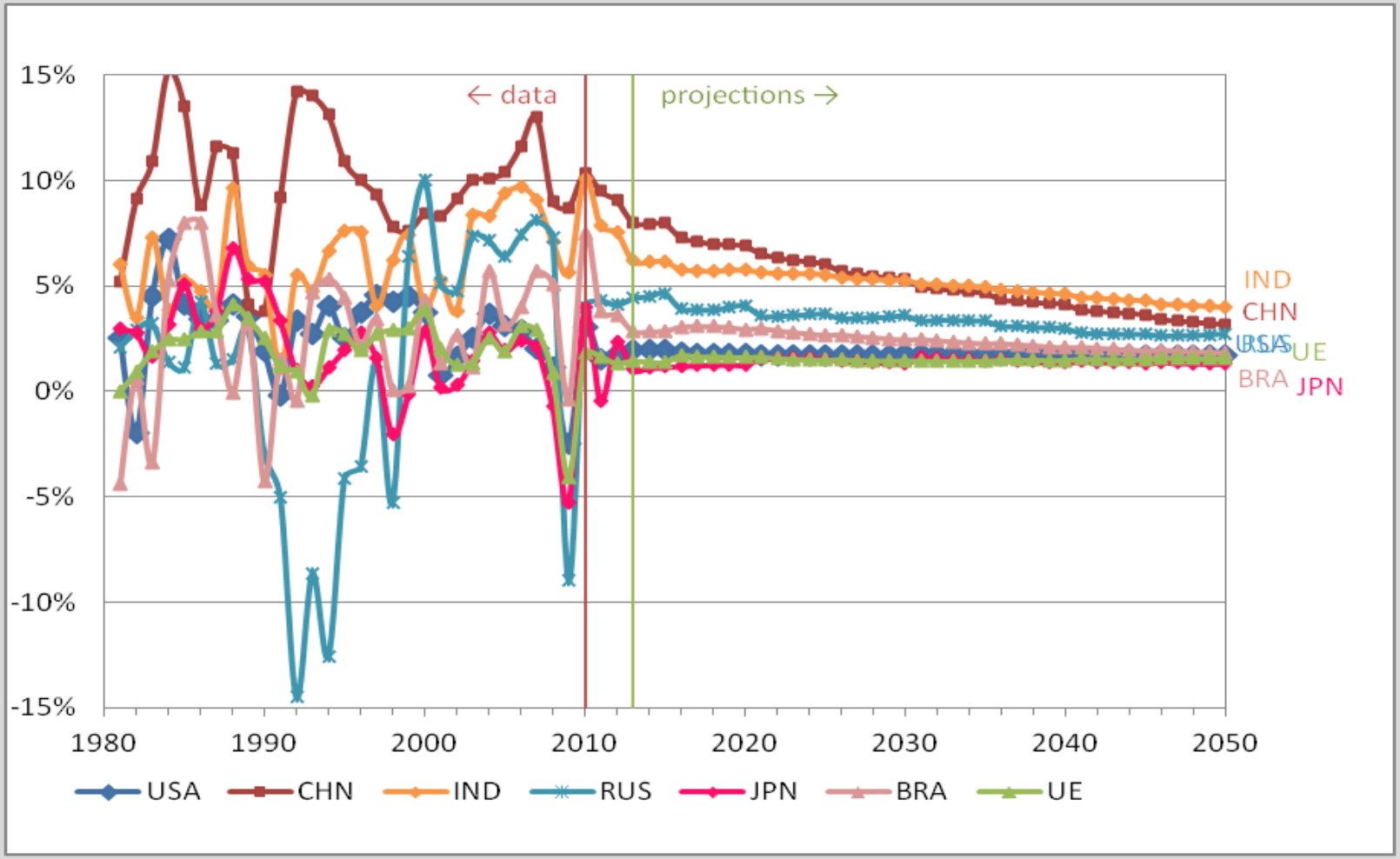
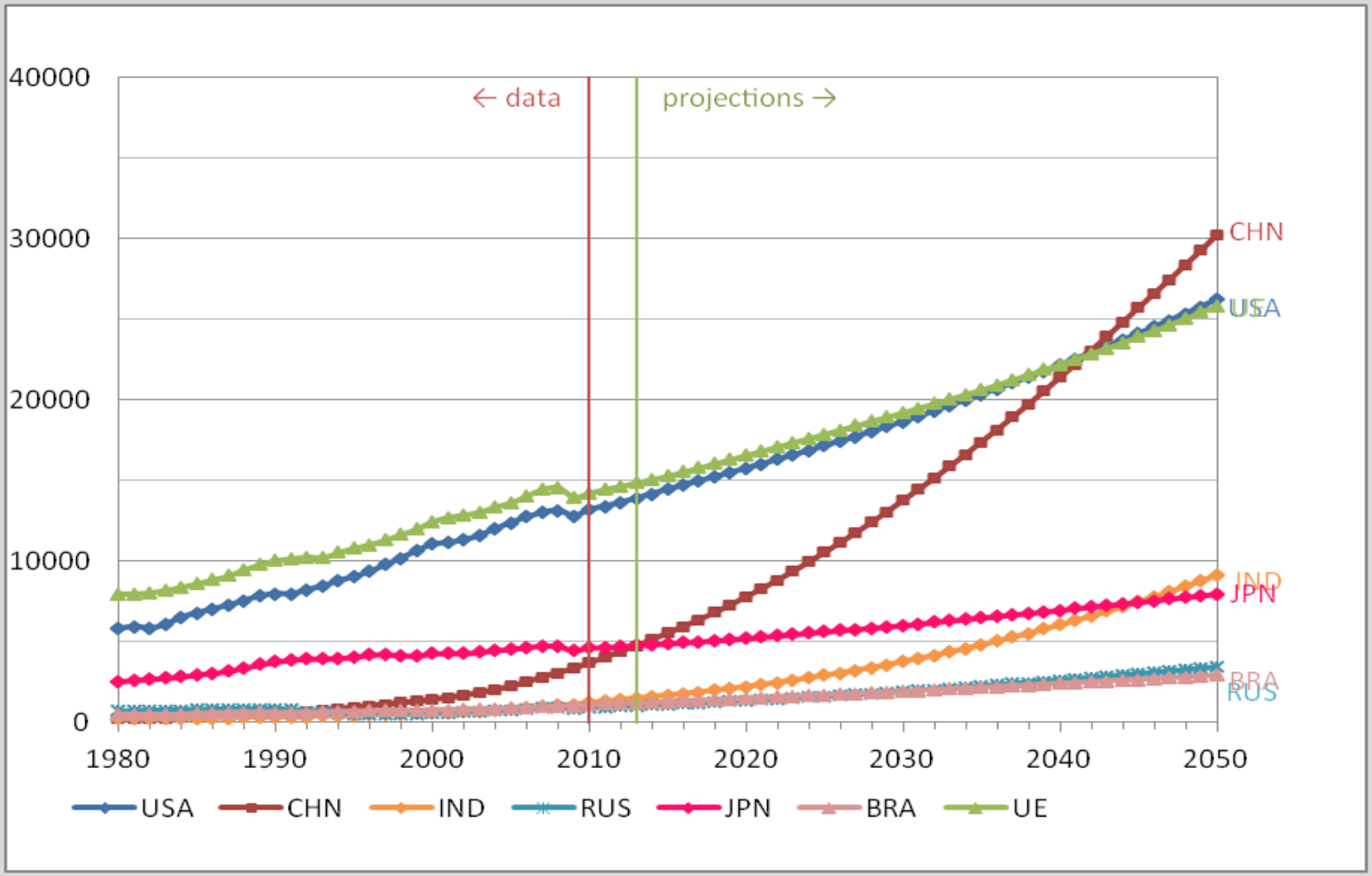
2040
2050
USA
CHN
IND
RUS
JPN
BRA
UE

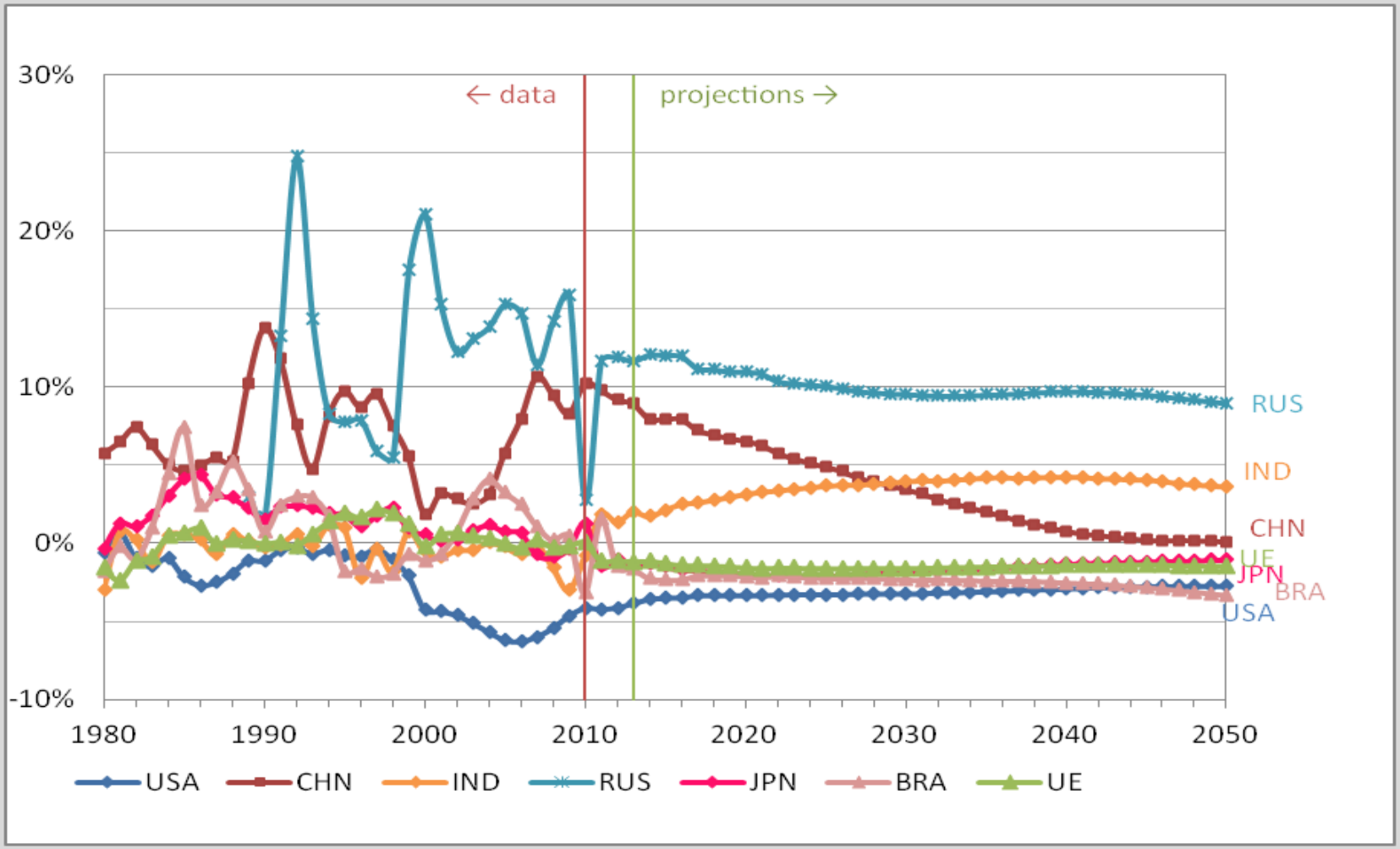
GDP growth rate (volume)



GDP levels (billion 2005 USD)



Current account



- THANK YOU