

# The world economy in 2025

## Macro-Economic Projections and the Role of Asia

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# Motivation

- What we don't know about world trade at the 2025 horizon:
- Detailed composition of exports:
  - A given product exported by a given country to a given market
  - Large churning of exporters
  - Specialisation by product unpredictable

# Motivation

- Evidence on extensive and intensive margins of world trade at HS6 level
  - Intensive: increase in the value of existing trade flows
  - Extensive positive: value of new trade flows
  - Extensive negative: value of disappeared trade flows
- 200 countries trading in 5,000 products bilaterally
- Overwhelming proportion of zeros
- Restriction to cases where a country declares exporting a given product to at least one market

# Motivation

- Intra-EU excluded
- 75 million potential trade flows in 1994
  - 3.7 million non zeros
- 100 million potential trade flows in 2007
  - 5.5 million non zeros
- Corresponding to:
  - 3.3 million new flows...
  - 1.6 million destroyed flows...
  - ... over the period

# Motivation

- Conclusion
  - Huge uncertainty on detailed trade flows
  - But 90% of the increase in the value of world trade over the period is in the intensive margin (existing flows)
- Bottom line:
  - Detailed evidence can hardly be predicted
  - But the broad picture *can* be predicted
- Tools available to forecast the intensive margin

# Motivation

- What do we guess about world trade at the 2025 horizon?
  - New big players
  - Shift of gravity centre of the world economy toward Asia
  - Profound changes in demand patterns
  - Changes in relative prices mirroring demand patterns and scarcity issues

# Motivation

- Need to address these macroeconomic issues using a structured representation of the world economy
  - World economy split in regions
  - Economies split in sectors
  - Inter-sectoral relationships
  - Demography
  - Technical progress
  - Resource constraints
  - Behavioural patterns

# Methodology

- General equilibrium
  - All markets represented in a consistent way
  - Relations between integrated markets
  - Consistent representation of sectors and regional structures with trade relations
  - Microeconomic behaviour driving macroeconomic variables
  - Relative prices variations in response to structural changes driving microeconomic behaviour



# Methodology

- World level
  - Decisions made in the EU impact prices, demand, supply elsewhere
  - Demand for steel in China impacts profitability of car industry in Europe
  - Resources constraints are global (energy, other primary resources)
  - Markets are integrated

# Methodology

- Dynamics
  - Growth depends on:
    - Labour force
    - Investment and capital accumulation
    - Technical progress
    - Resource depletion
  - Economic agents adjust over time their behaviour to signals received

# Methodology

- Beyond terminology a key issue:
- *Exogenous*: provided to the model by external information (e.g. Russian population in 2025)
- *Endogeneous*: determined by the internal consistency of the model (e.g. price for steel in China in 2012)

# Implementation

- Based on simulations performed with Mirage
- By Yvan Decreux, Christophe Gouel, Hugo Valin
- Mirage:
  - Large scale CGE model of the CEPII
  - Also used by various international institutions and universities
  - Relies on GTAP data for economy, ILO data for population etc.

# Implementation

- Assumptions
  - 20 regions of the world eco with specific focus on emerging world
  - In each region, the economy is decomposed in 26 sectors
  - Energy prices derives from IEA model (scenario « Business as usual »)
  - All other prices adjust endogenously
  - Price drive demand and supply reactions
  - Invested capital is sticky
  - Imperfect competition in services and manufacturing
  - Perfect competition in agriculture

# Implementation

- *Demographic* projections
- ILO until 2020
- 2020-2025: use last 2020 growth rates
- Two notions of population:
  - Total population: important: dynamics of consumption
  - Economically active population: labour dynamics

# Implementation

- Projections of *economic growth*
- IMF: Medium term projections until 2013
- CEPII: Longer-term projections until 2050:
  - Based on Solow-type growth model
  - Labour and capital dynamics with accumulation and savings
  - Technological catch up
  - Education effect on productivity

# Results

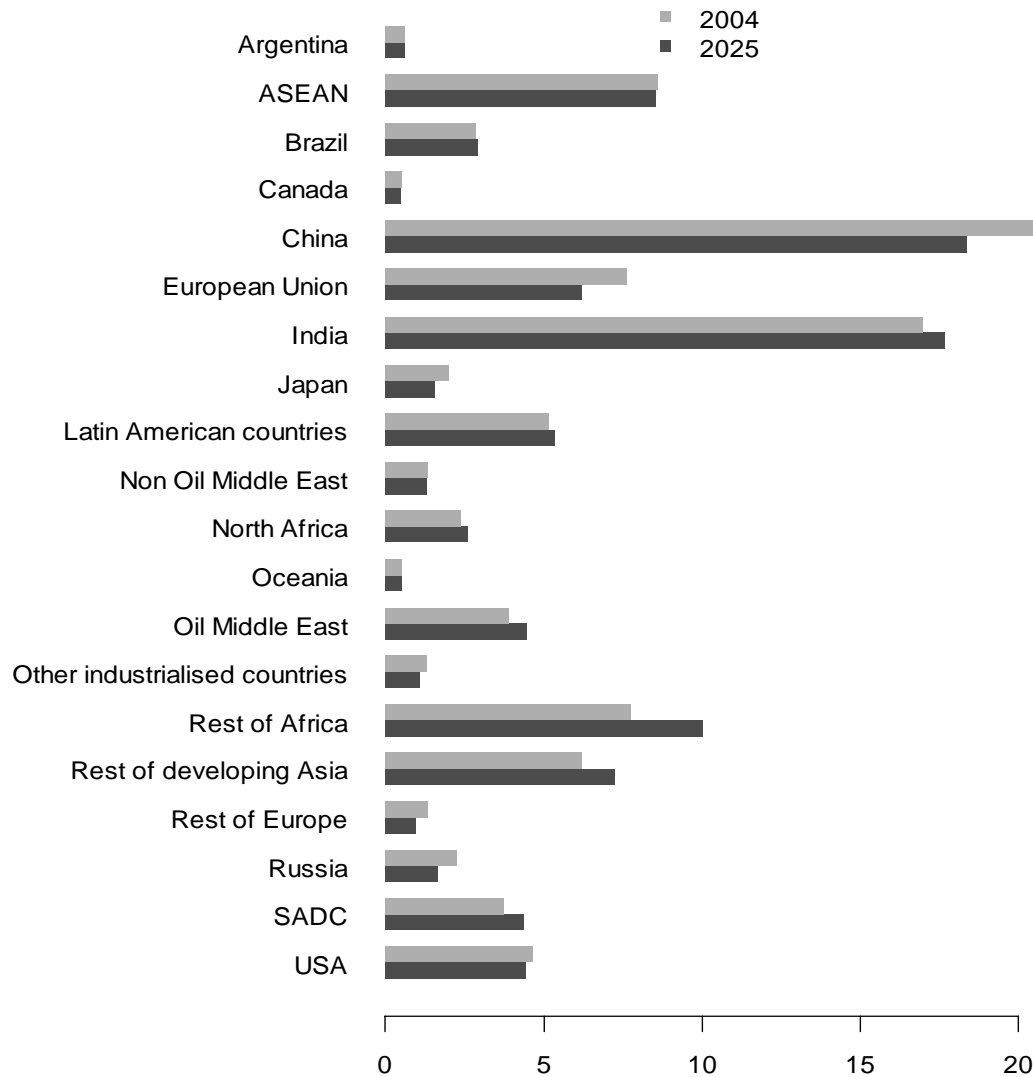
- We now detail forecasts for:
  - Demography and world population shares
  - Economic growth and world GDP shares
  - Total consumption and consumption patterns (mirrored by relative prices)
  - Trade and market shares



# Results

- Demography
- 1.5 billion extra inhabitants in 2025 (+23%)
  - 97% in developing countries
  - 95% in cities

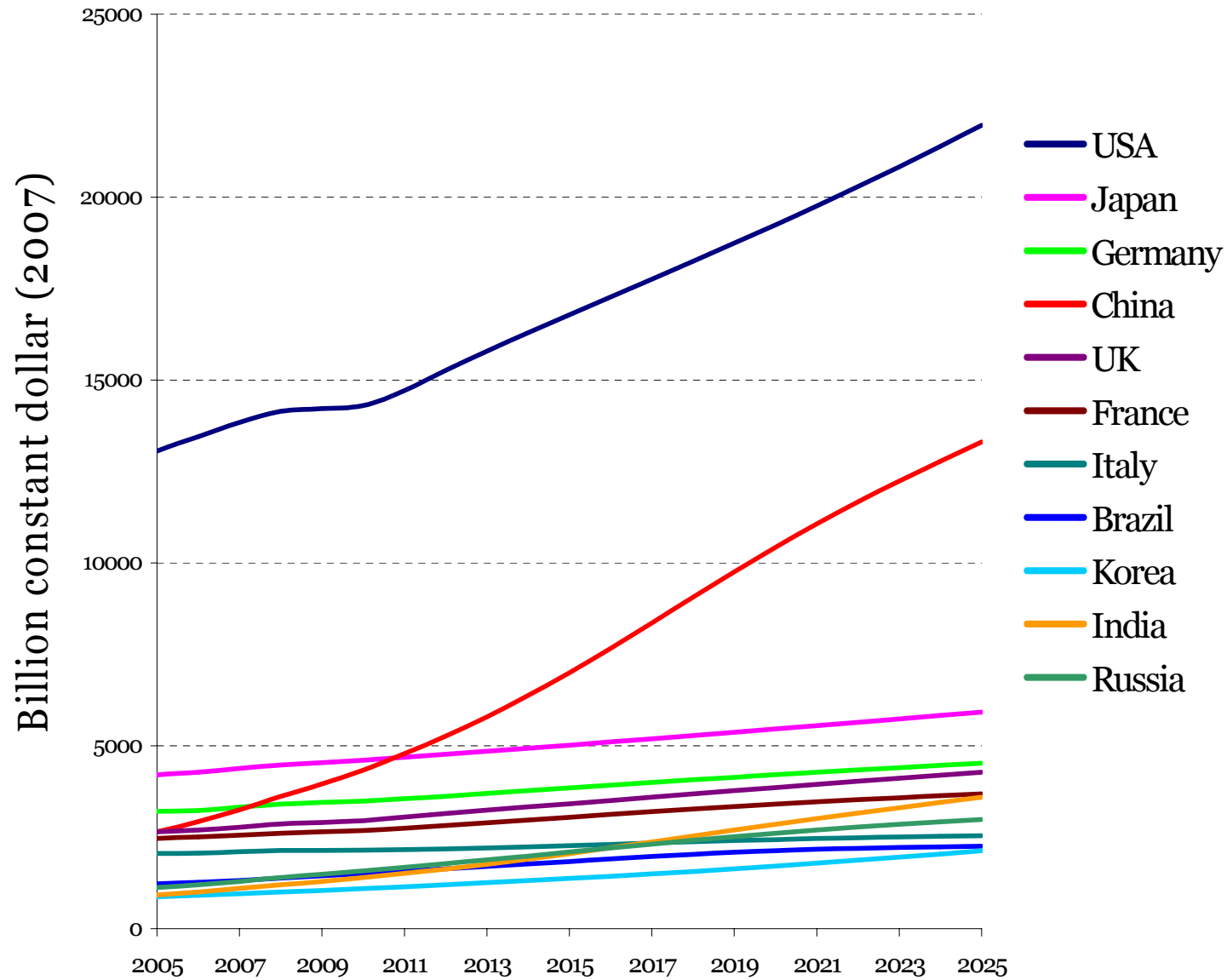
# Demography: Changes in world population shares



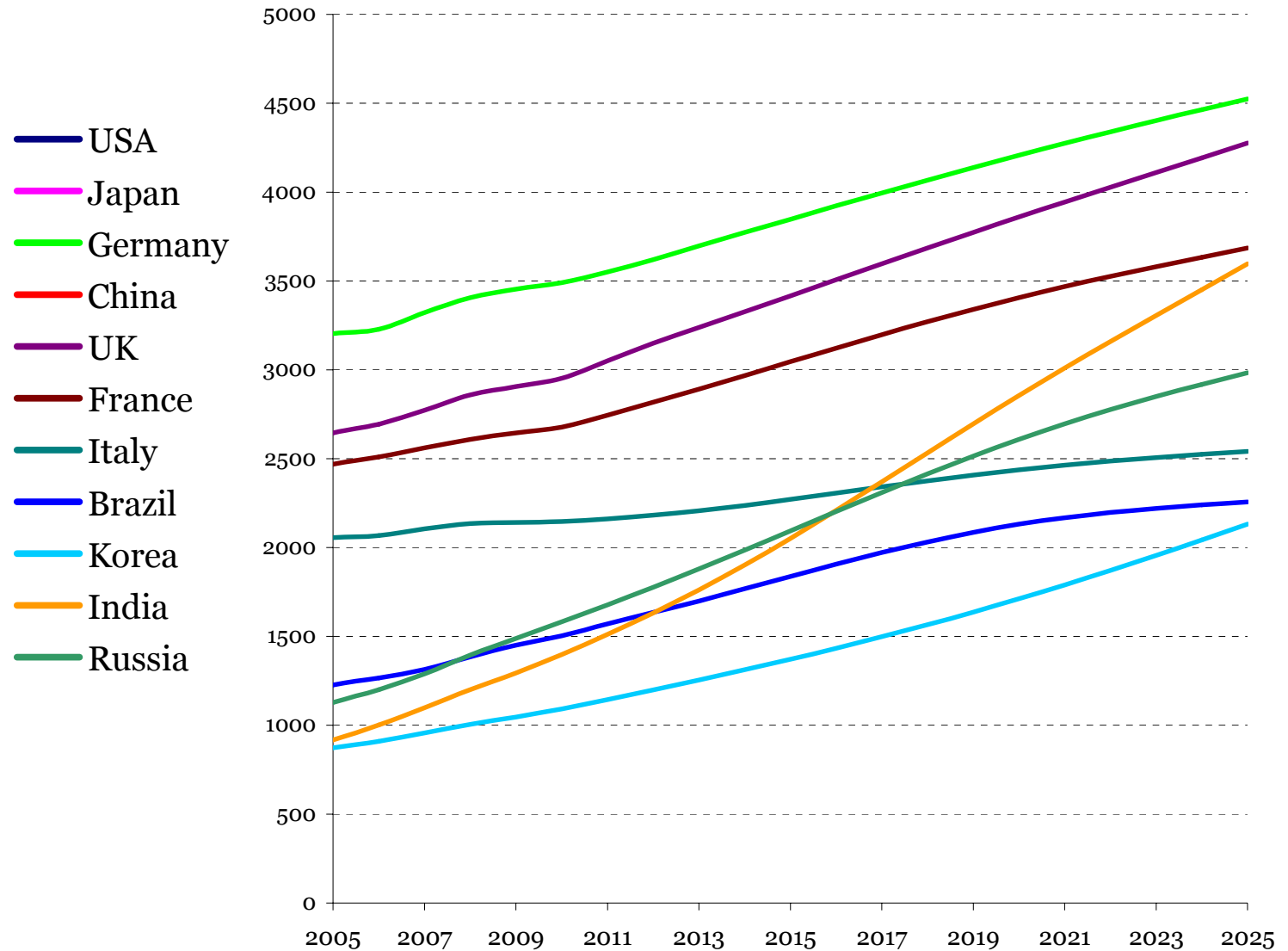
# Results

- Economic size
- World economy size should almost double
- +93 % for world GDP
- China:
  - Second largest (single) economy in 2025 behind USA
  - With a 2025 GDP equal to 2/3 of EU and 1/2 of US
  - With a 2025 GDP equal to the US one in 2000
- India
  - The sixth largest economy in 2025
  - Similar to France

# Economic size: GDPs



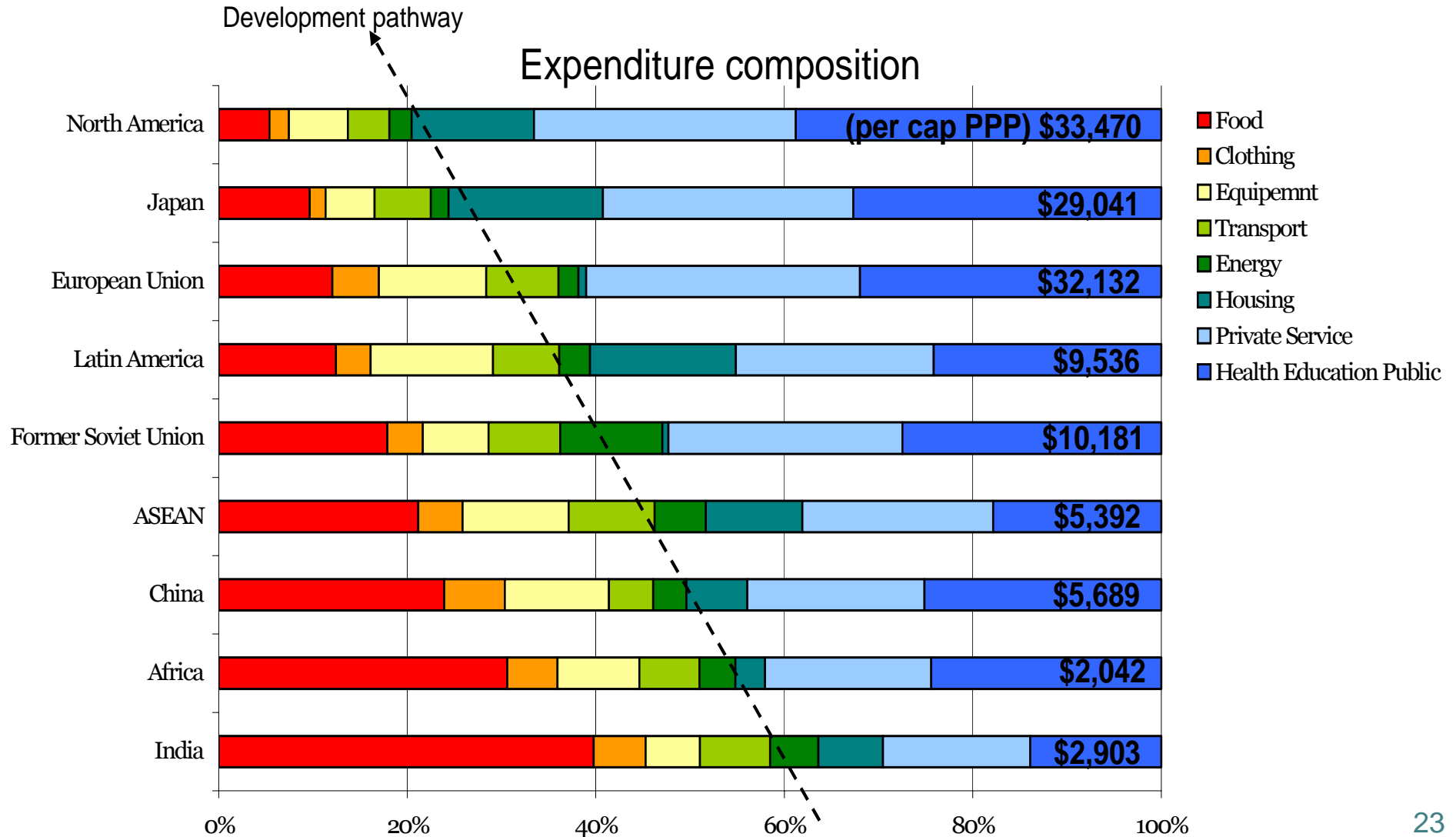
# Economic size: GDPs



# Changes in world consumption

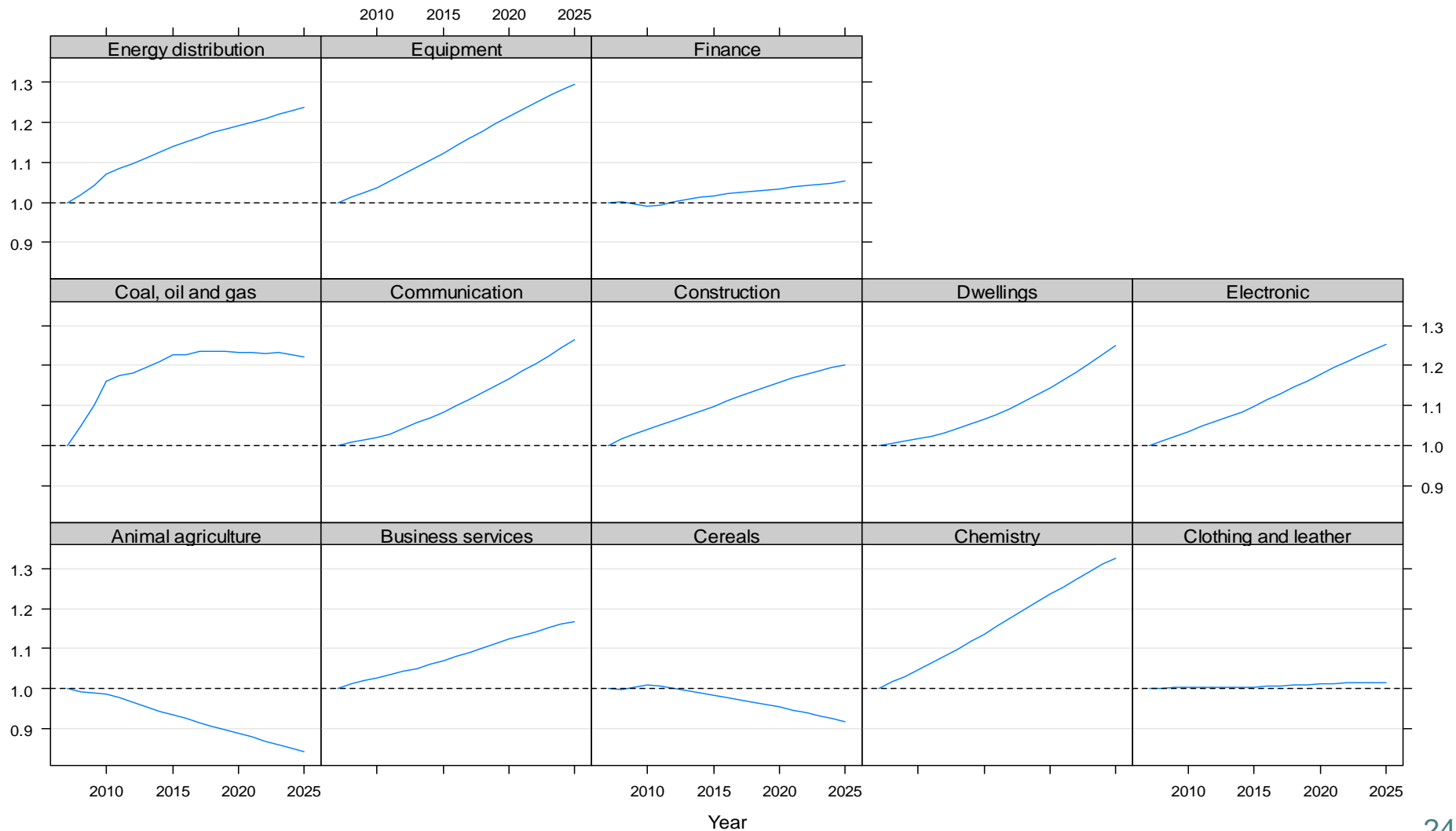
- Larger share of industry and services (world income increases)
- 2025 horizon: + 85% global consumption
- Patterns change
- Emerging countries boost demand for industrial goods and construction
- Goods with rising prices (scarcity) are less consumed
  - Energy (resource)
  - Fishing: fisheries exhausted, limits to farms
  - Forestry: deforestation
  - Agricultural goods: land use

# Changes in expenditure composition with income



# Change of sectoral consumption (1)

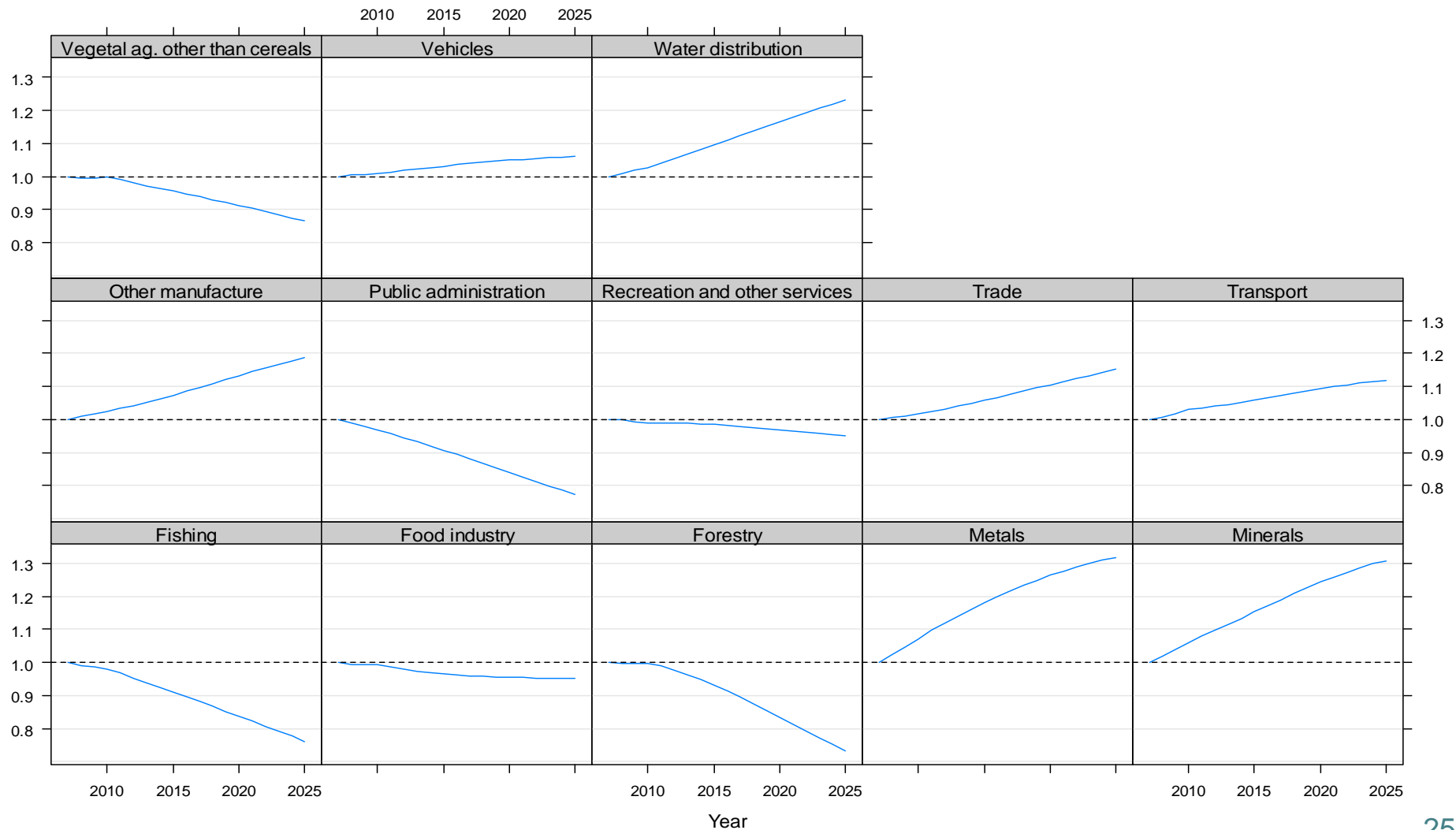
Index ratio to the aggregate consumption (2007=1)





# Change of sectoral consumption (2)

Index ratio to the aggregate consumption (2007=1)



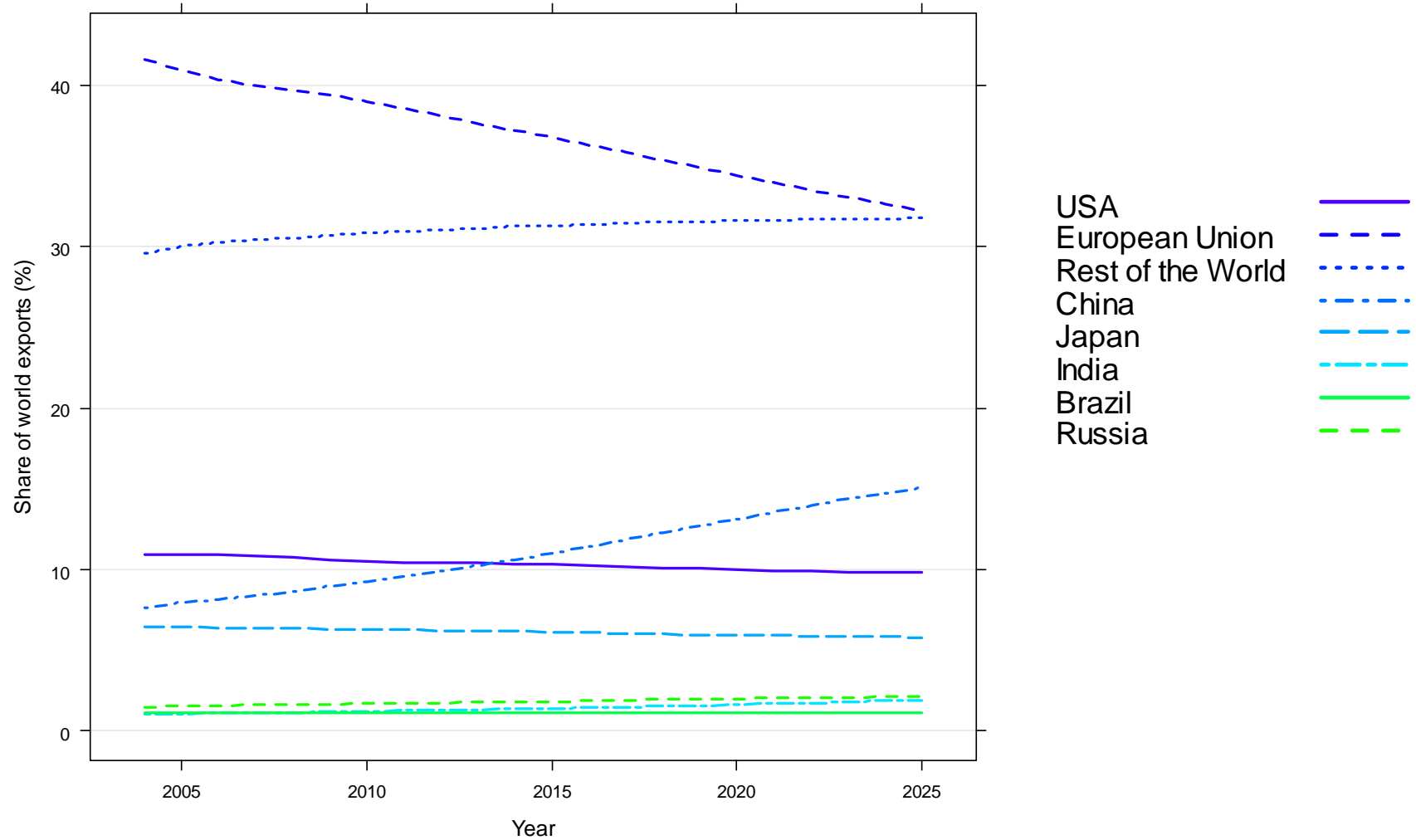
# Changes in world trade

- **Determinants:**
  - Changing demand patterns
  - Competitive advantage
  - Endowment in skilled labour
- **Factors of resilience**
  - Investment capacities to adjust world demand shifts
  - Distance to buoyant markets
  - Protection

# Changes in world trade

- Trade relations will be rebalanced
- The South will export 43% of the world merchandise in 2025 ...
- ... against 33% today.
- Asia and EU positions as world trade leaders will be inverted
- China will become the first (single) exporter in the world by 2012 and will account for 14% of world exports by 2025

# Change in world market shares



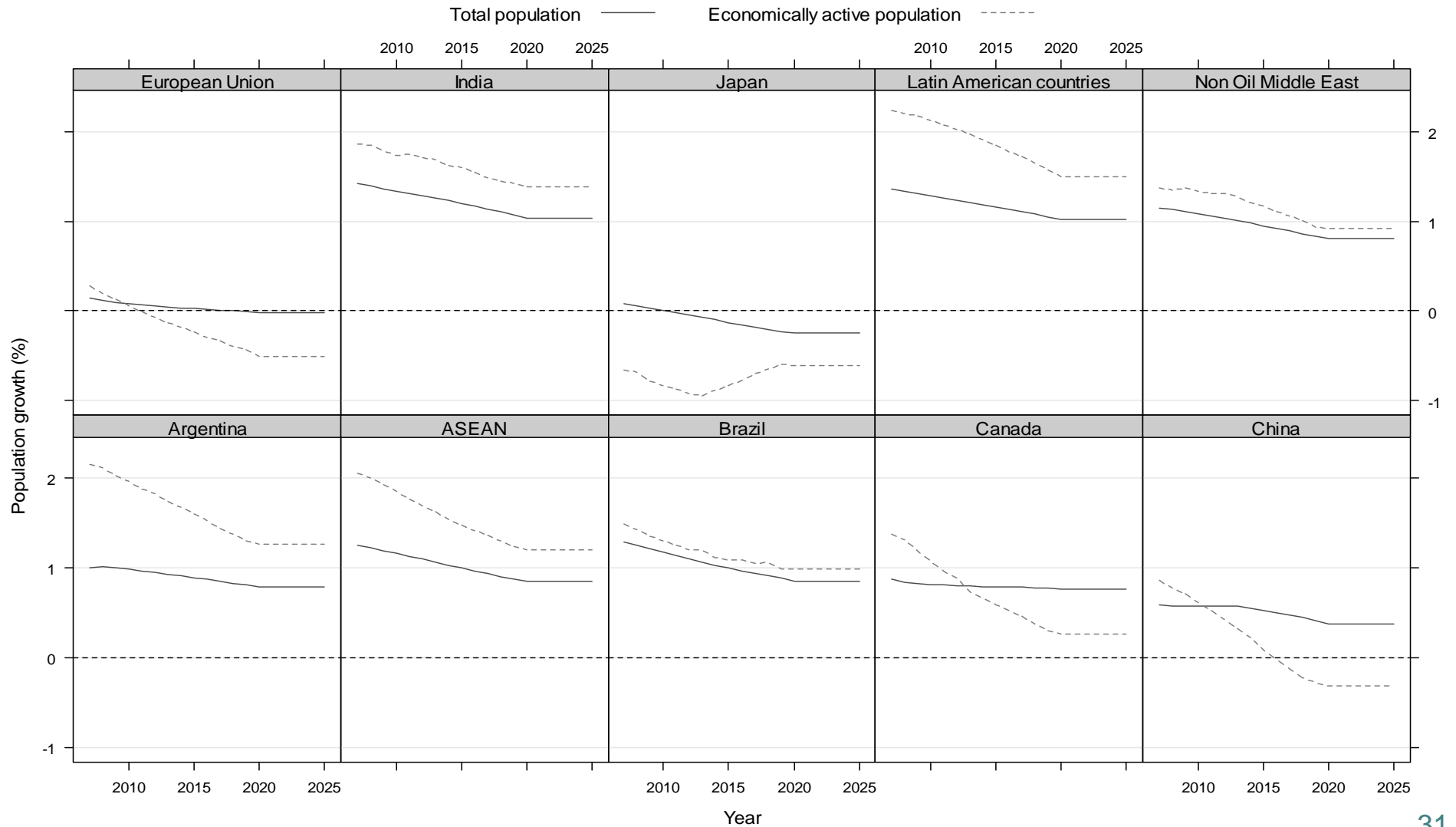
# Conclusion

- 2025
  - +23% population
  - +93% economic activity
- Depletion of resources and environment
  - Maritime resource
  - Forests
  - Land use
- Shift of the centre of the world economy toward Asia
  - Emergence of new economic players
  - Multipolar world
- Change in trade distribution

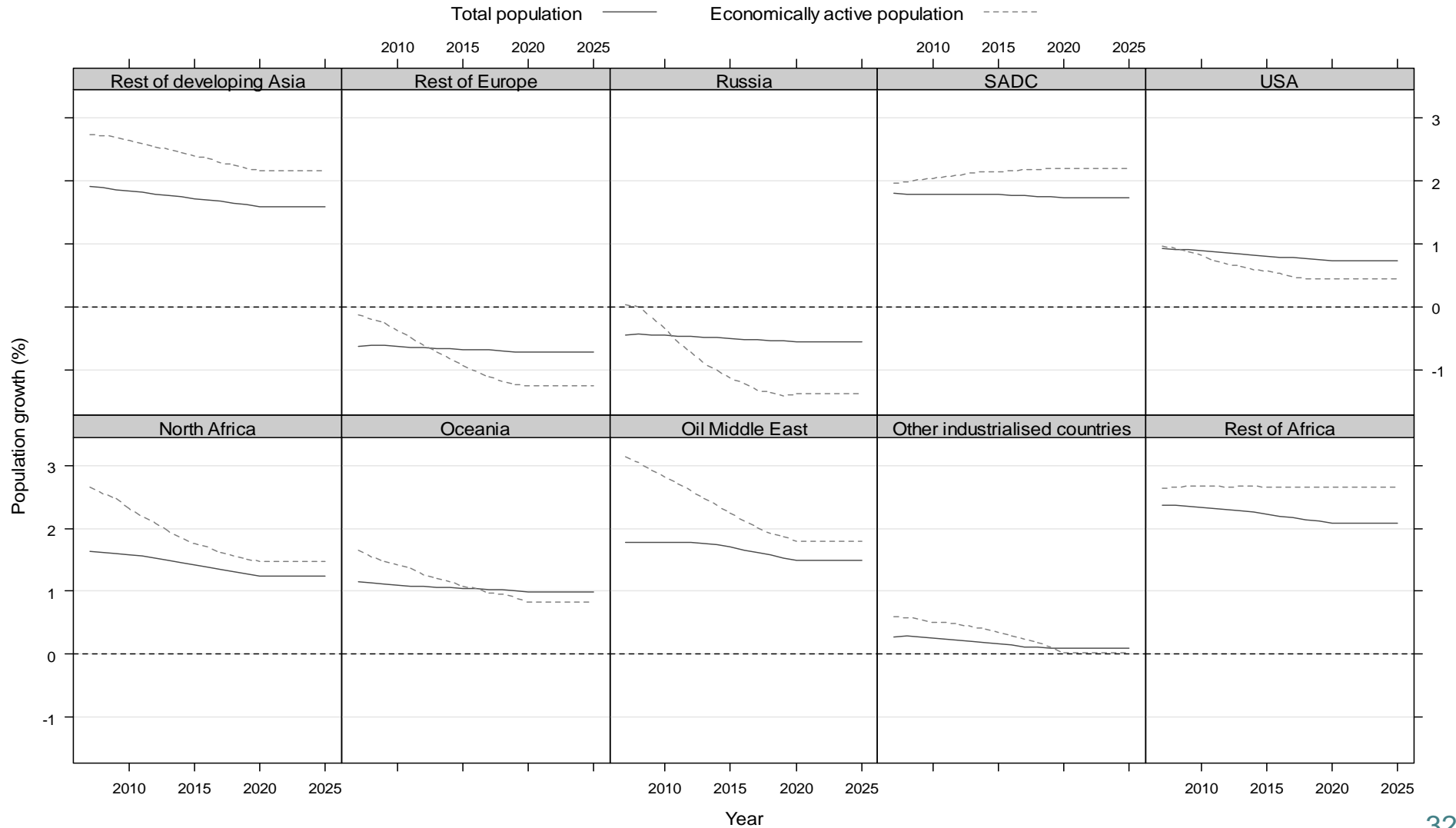
Thank you



# Demographic projections (1)

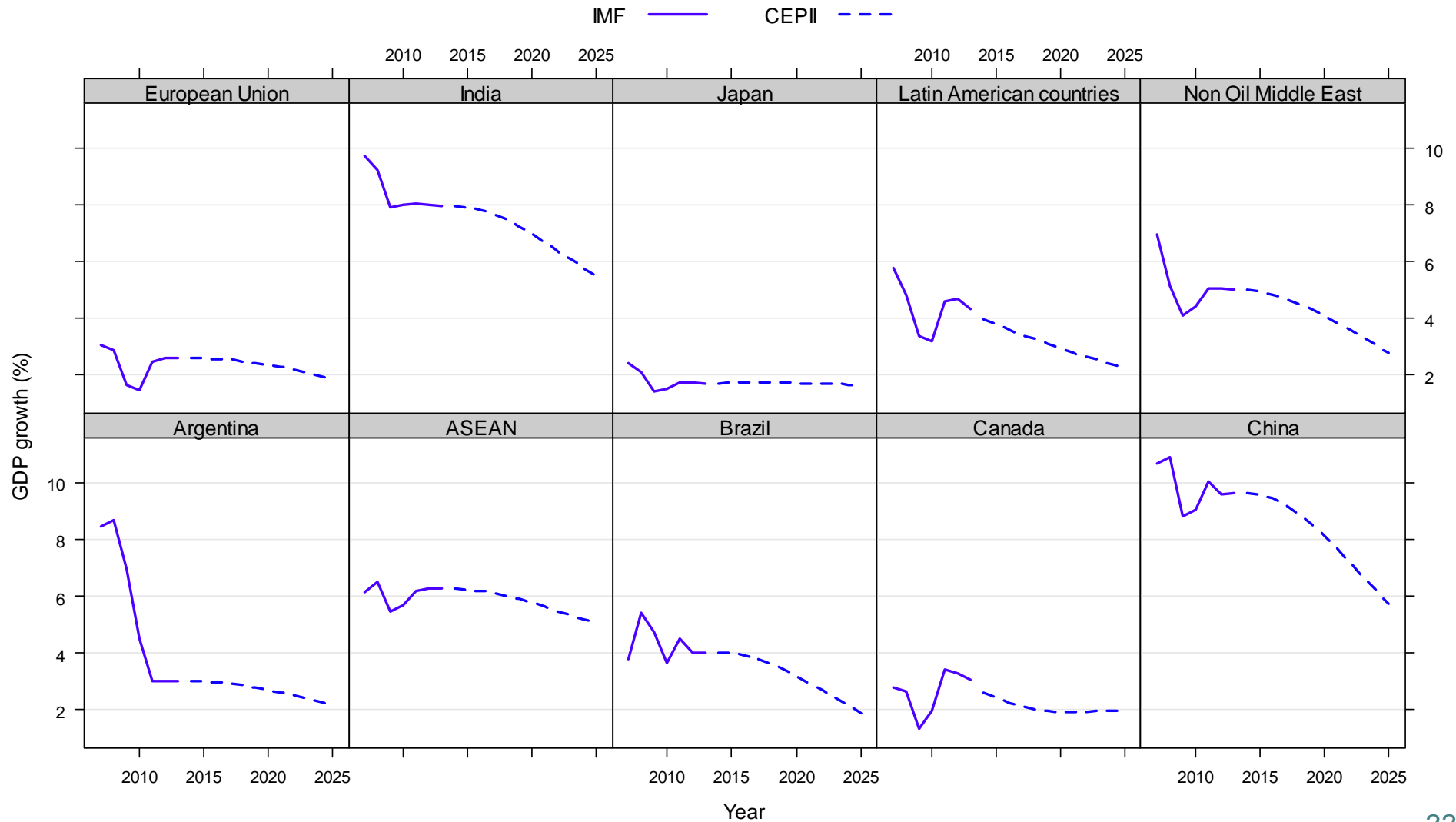


# Demographic projections (2)

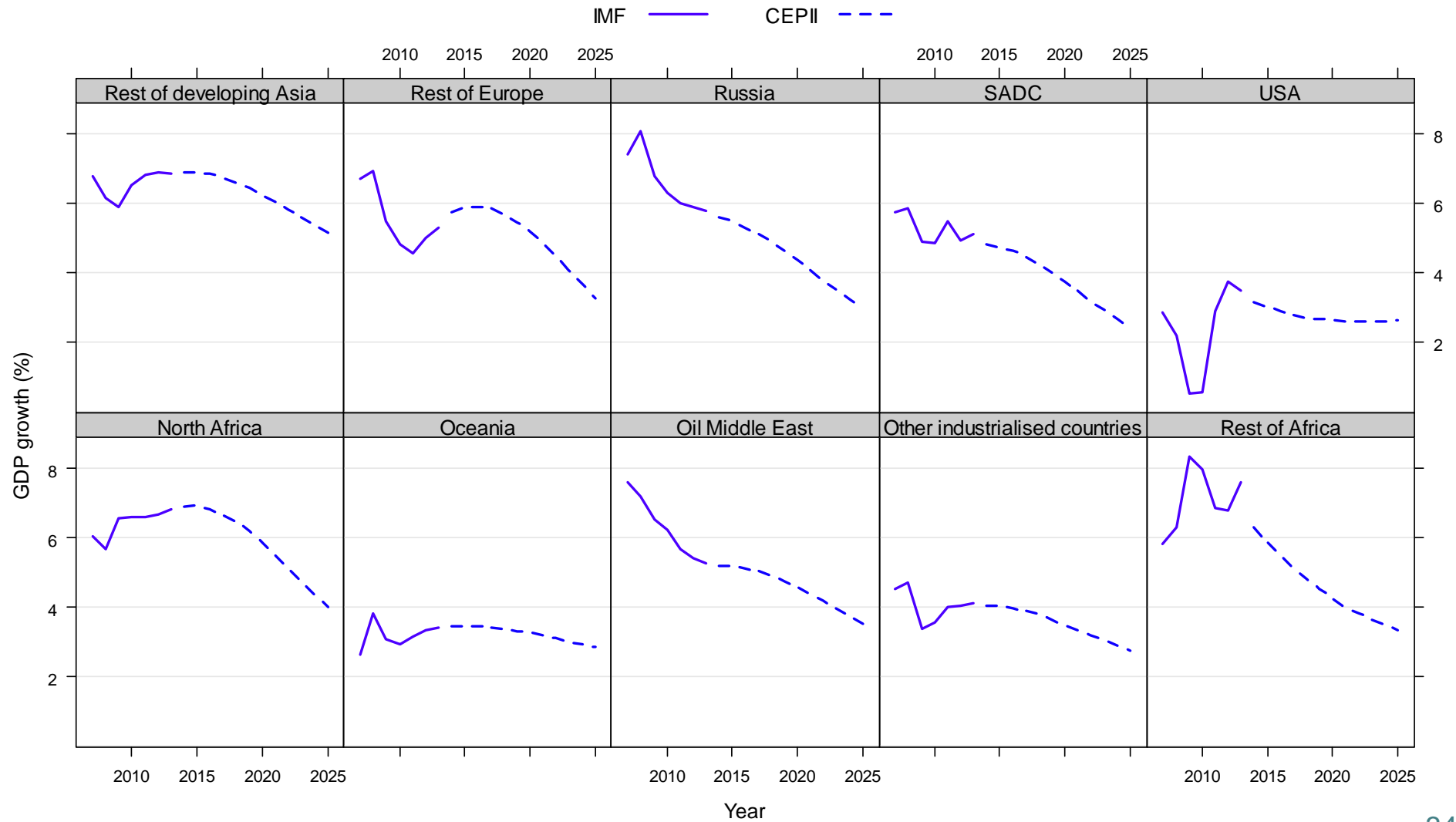




# GDP growth projections (1)

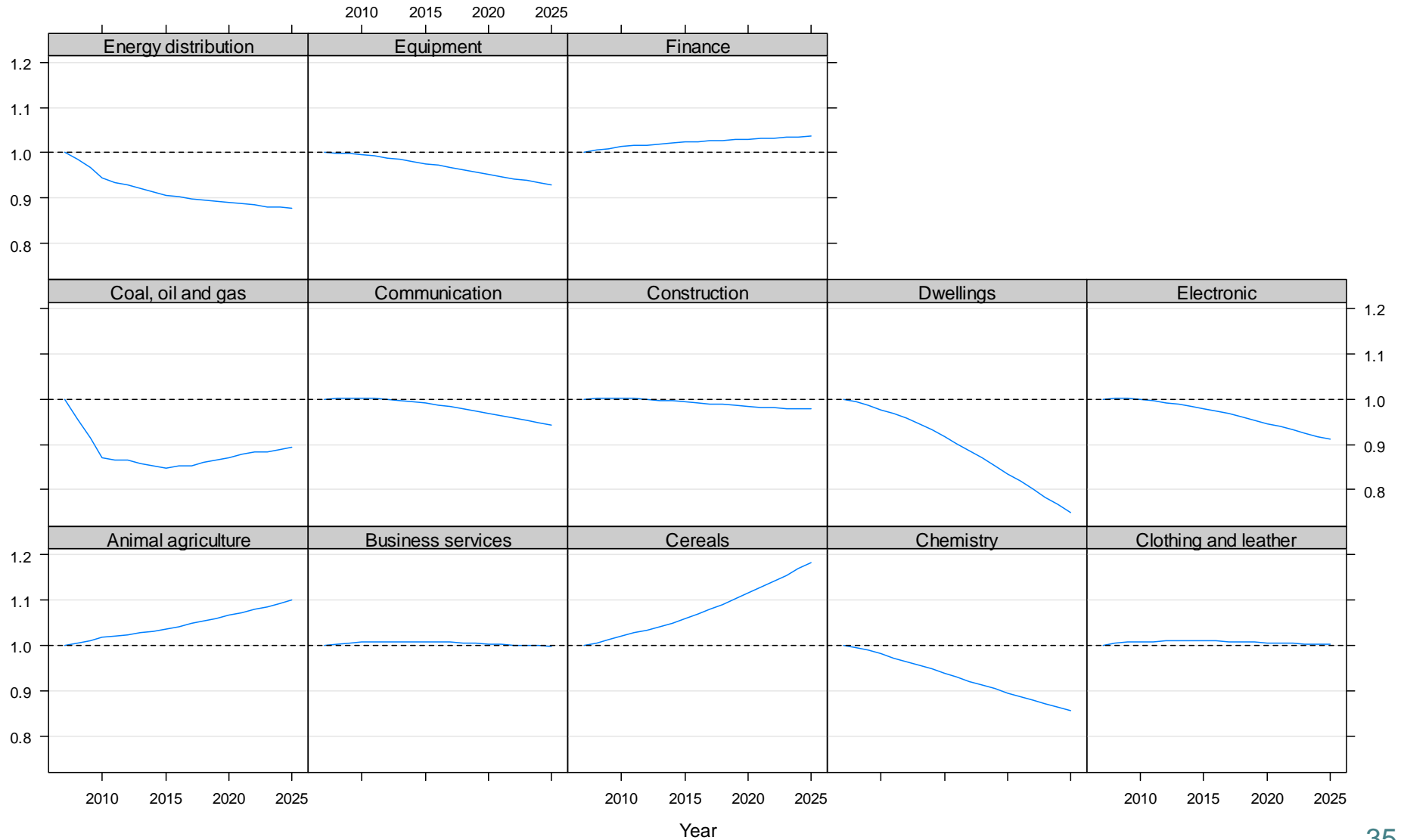


# GDP growth projections (2)



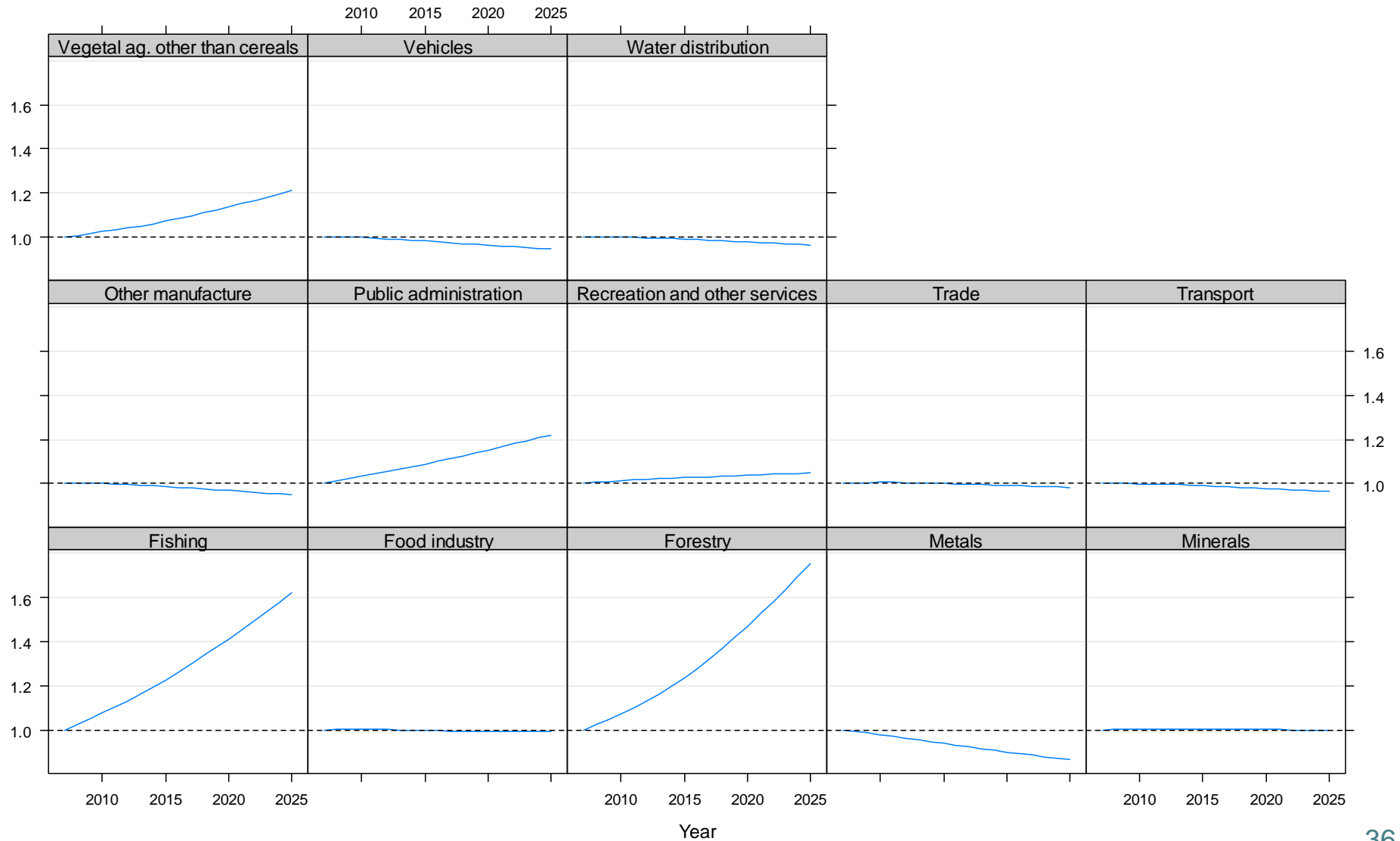
# Production price (1)

Index (2007=1)



# Production price (2)

Index (2007=1)



## 20 regions

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|    |                                |   |
|----|--------------------------------|---|
| 1  | EU27                           |   |
| 2  | USA                            |   |
| 3  | Canada                         |   |
| 4  | Japan                          |   |
| 5  | Oceania                        |   |
| 6  | Other Industrialised countries | Korea<br>Taiwan<br>Switzerland<br>Rest of EFTA                        |
| 7  | Brazil                         |   |
| 8  | Russia                         |   |
| 9  | India                          |   |
| 10 | China                          | China and Hong-Kong   |
| 11 | Rest of Europe                 | Albania<br>Belarus<br>Croatia<br>Moldova<br>Ukraine<br>Rest of Europe |

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- |           |                                |   |
|-----------|--------------------------------|---|
| <b>12</b> | <b>ASEAN</b>                   |   |
| <b>13</b> | <b>Rest of developing Asia</b> | <b>Bangladesh</b><br><b>Pakistan</b><br><b>Sri Lanka</b><br><i>Rest of East Asia</i><br><i>Rest of South Asia</i> |
| <b>14</b> | <b>Argentina</b>               |   |
| <b>15</b> | <b>Rest of LAC</b>             |   |
| <b>16</b> | <b>Oil Middle East</b>         | <b>Azerbaijan</b><br><b>Kazakhstan</b><br><b>Iran</b><br><b>Rest of Western Asia</b>                              |
| <b>17</b> | <b>Non Oil Middle East</b>     | <b>Armenia</b><br><b>Georgia</b><br><b>Kyrgyzstan</b><br><b>Turkey</b><br><b>Rest of Former Soviet Union</b>      |
| <b>18</b> | <b>North Africa</b>            | <b>Egypt</b><br><b>Morocco</b><br><b>Tunisia</b><br><b>Rest of North Africa</b>                                   |
| <b>19</b> | <b>SADC</b>                    |   |
| <b>20</b> | <b>Rest of Africa</b>          |   |