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Global Growth Centres 2020

Challenges and choices for European policymakers



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Think Tank of Deutsche Bank Group

Deutsche Bank Research





DB Research: Deutsche Bank's Think Tank

- **Analyses** the economic, societal, political and technological environment of the DB group...
- ... with a **long-term** perspective and **interdisciplinary** scope...
- ... using a **broad spectrum** of concepts and tools...
- ...and following a **foresight approach**, knowing that all forecasts are conditional.
- Contributes to the **strategy and decision-making** of top management
- Intensively communicates with **peers**, plays an active role in **public debate** and **strengthens DB's brand**

Global Growth Centres 2020: Agenda

1. DBR's Foresight Model for Evaluating Long-term Growth

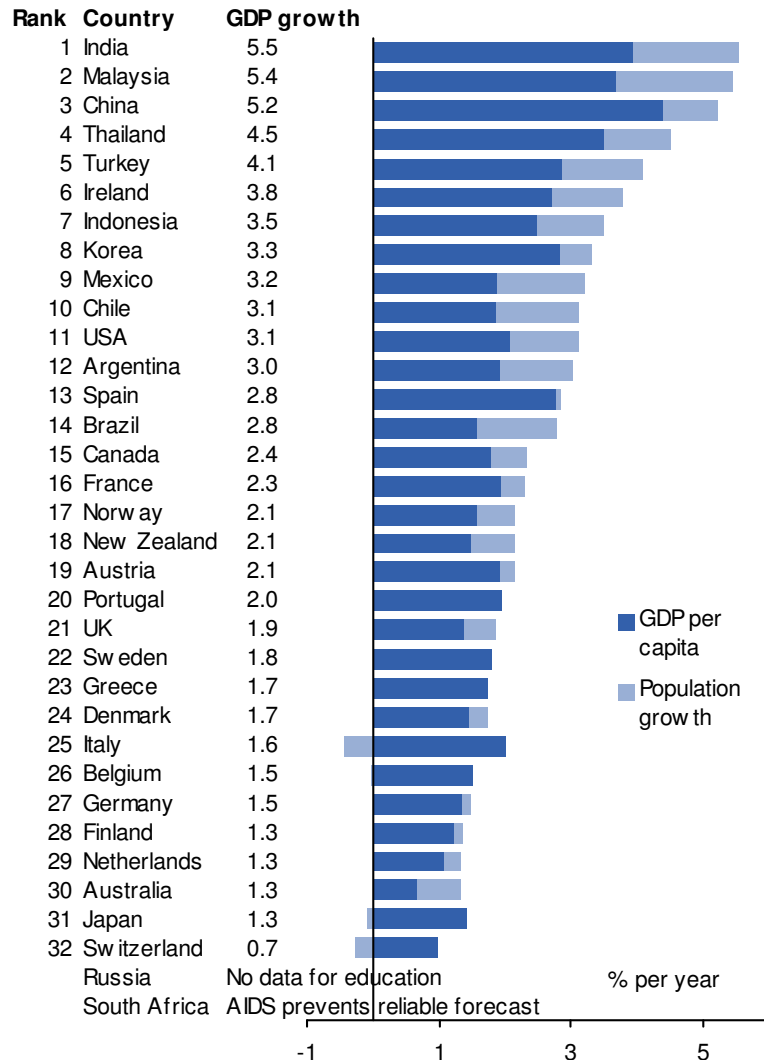
- Results: India, Malaysia and China the growth stars of 2006-20
- The four drivers: Population growth, investment, human capital, trade openness
- The trends that will shape future growth
- Significant heterogeneity in GDP growth across Europe

2. Challenges and choices for European policymakers

- *Formel-G's* point forecasts need not materialize
- Focus on education, labour market, technology, trade etc.
- Country-specific strengths and weaknesses

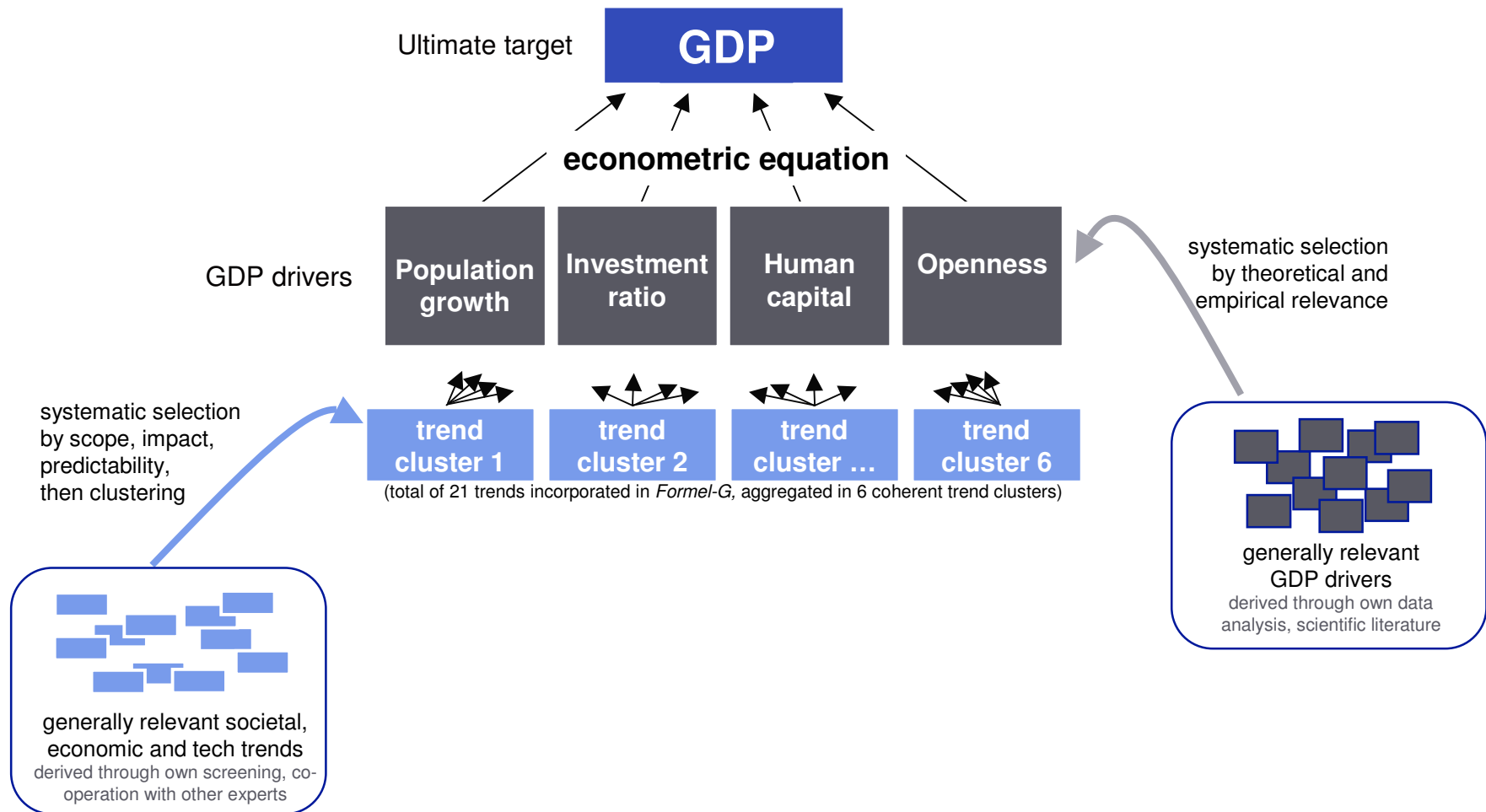
Deutsche Bank Research's growth ranking

Formel-G: Ranking of GDP growth 2006-20



- Deutsche Bank Research's *Formel-G* "Foresight Model for Evaluating Long-term Growth"
- Asian economies lead the growth ranking: India, Malaysia and China
- Within the EU-15 range from 1.3% (Netherlands) to 3.8% (Ireland) average annual GDP growth in 2006-20

Formel-G: Foresight Model for Evaluating Long-term Growth



Generate GDP forecasts until 2020 with *Formel-G*

- **First stage: Extrapolation.** Past development determines future course of each driver (exception: population growth, which uses UN data)
- **Second stage: Cross-check.** Correct extreme developments systematically (only required for investment ratio and human capital)
- **Third stage: Trend analysis.** The reliability of the forecasts is increased by modelling structural breaks and assessing a broad range of information (applied to all four drivers)

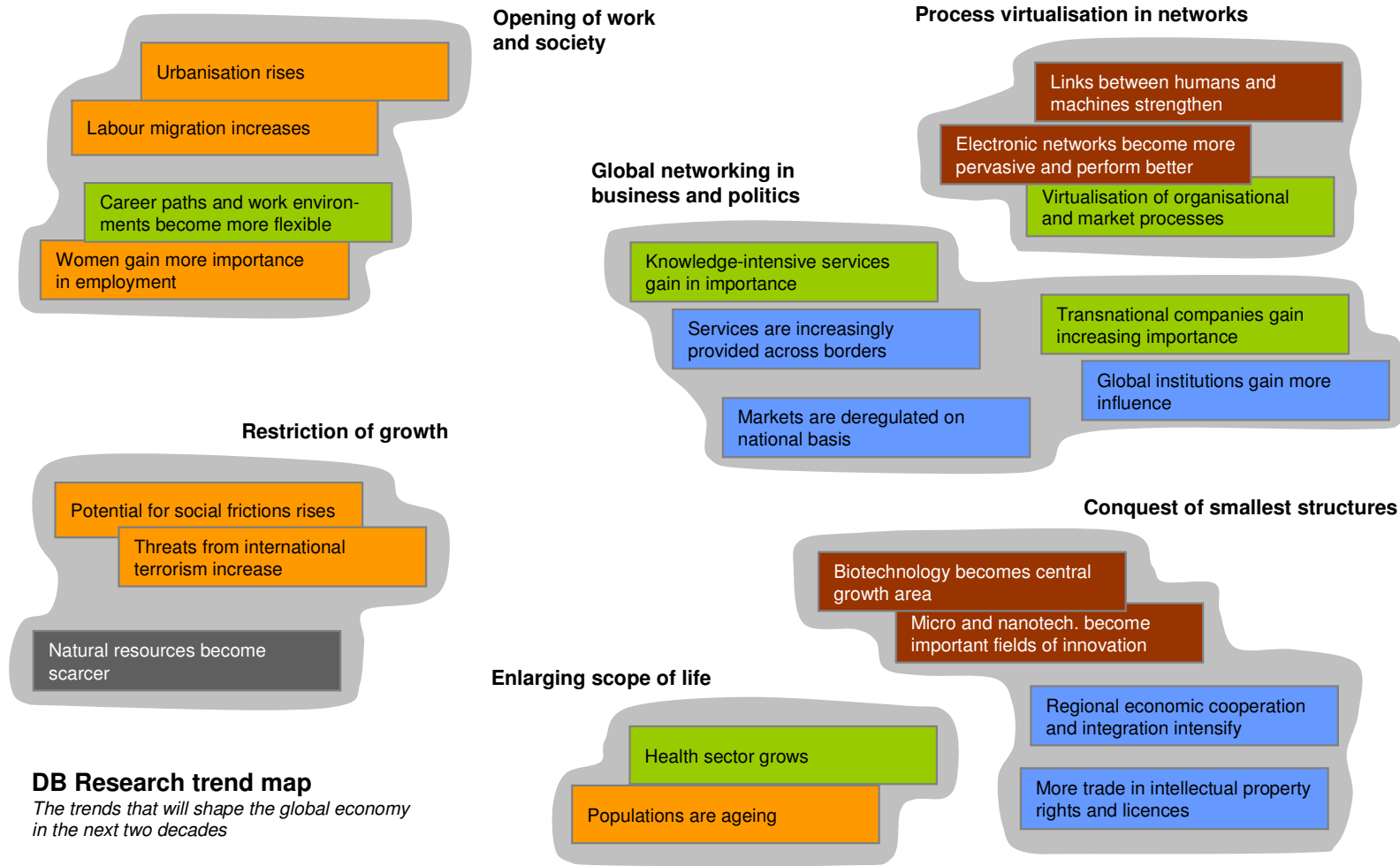


Calculate GDP forecasts using the econometric equation

Selecting the trends that will shape future growth

- Basis: **40 DBR trends** from the five categories
„The individual and society“,
„Institutions and political environment“,
„Organisational forms and markets“,
„Innovation and technology“ and
„Natural resources“
- Likely to be significant for future economic growth => **21 trends**.
But too many possible links to the drivers
- Therefore we assessed the reciprocal effects among all 21 trends in
a cross-impact matrix. The result is **6 consistent clusters**

Deutsche Bank Research's trend map

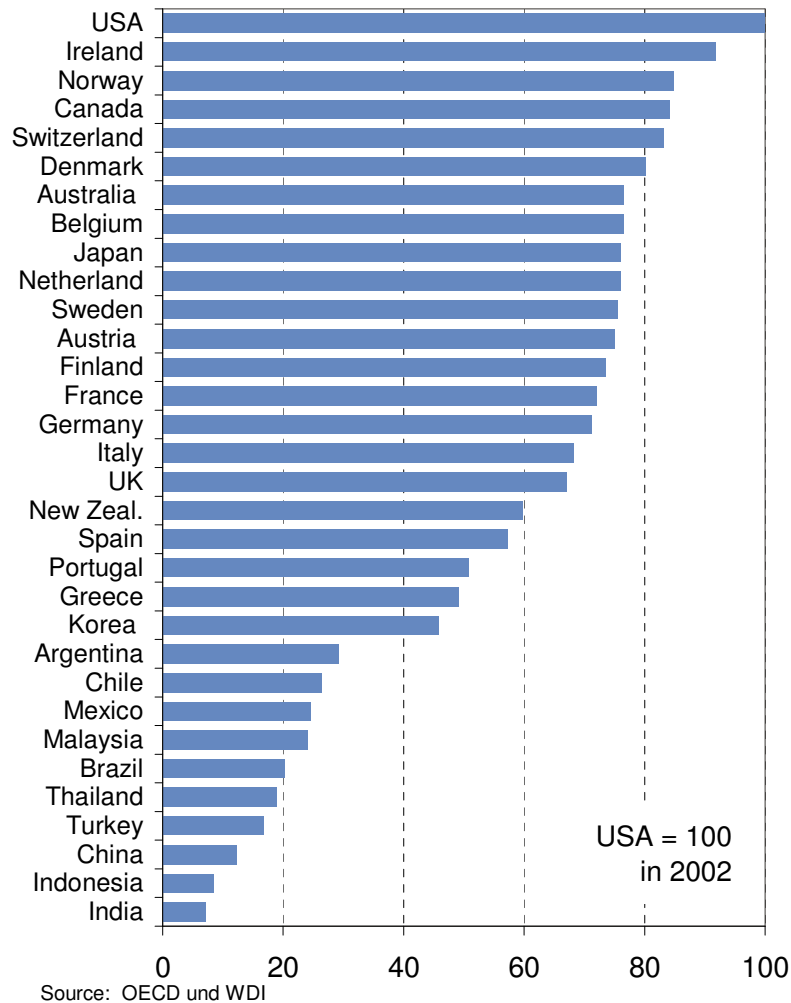


DB Research trend map
The trends that will shape the global economy in the next two decades

- The individual and society
- Organisational forms and markets
- Institutions and political environment
- Innovation and technology
- Natural resources
- Trend cluster

Driver: Level of GDP per capita?

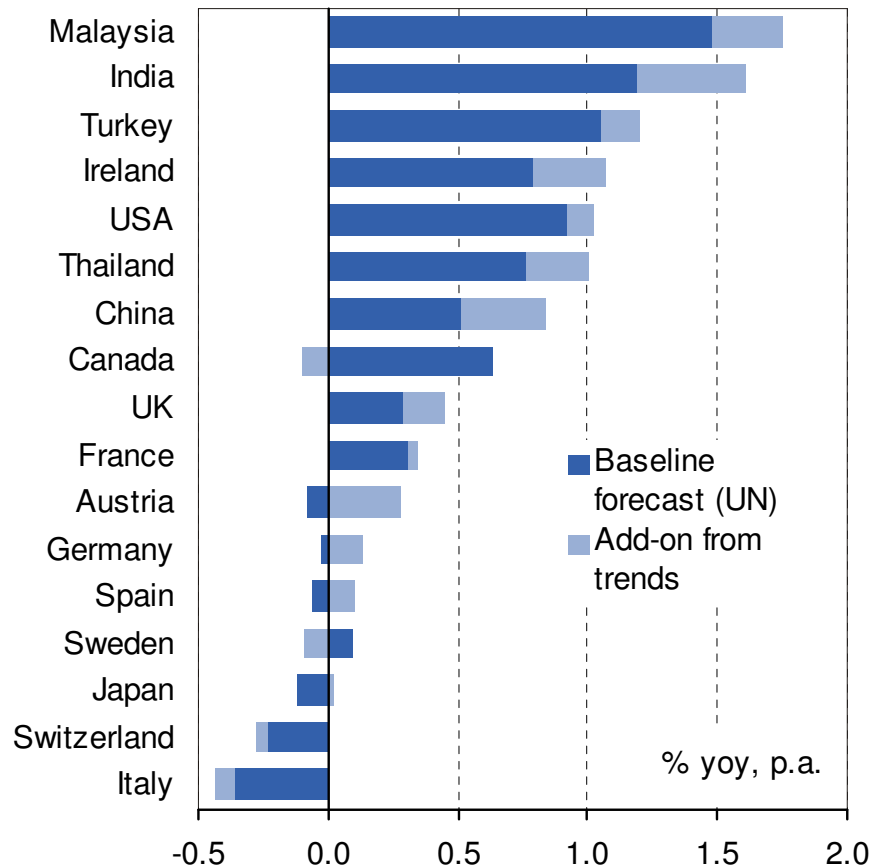
Real GDP per capita in PPP



- Conventional **wisdom**: „poor countries grow more strongly than rich ones“
- But **no empirical evidence** for assumption of absolute convergence. Will not use that idea
- Growth centres exist among **rich** and **poor** countries
- => There is **no automatism!** Growth requires „hard“ work

Population growth shows wide range of changes

Population growth 2006-2020

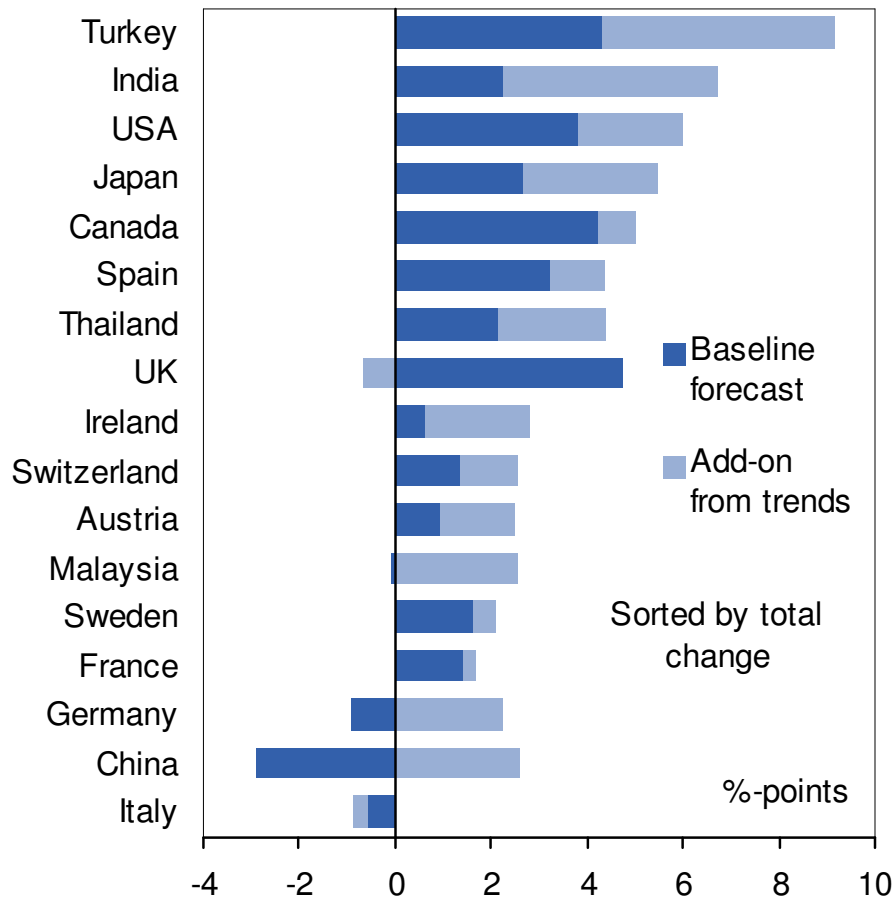


Sources: UN, Deutsche Bank Research

- Quantity of labour supply
- More people allow for higher levels of GDP overall
- Not really relevant for the individual (GDP per capita)
- Endogenous growth theories with scale effects refuted in reality
- Rapid growth in India and USA (partly immigration)
- Shrinking population in Italy, Switzerland and Japan

Investment rates to decline from high level in China

Investment ratio: Change 2005-20

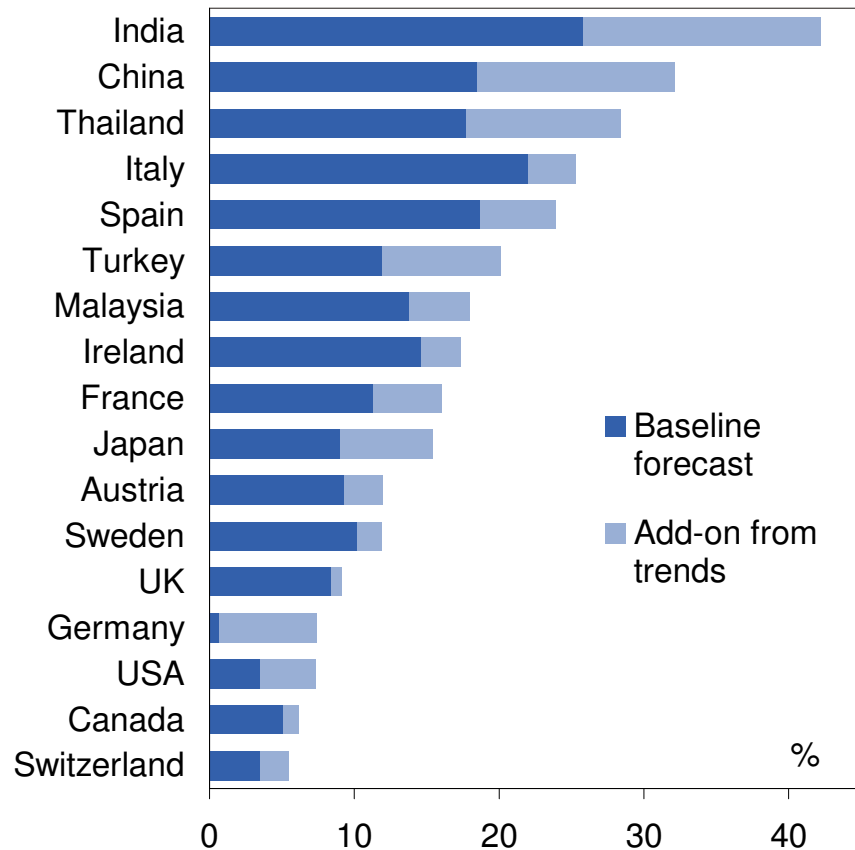


Source: Deutsche Bank Research

- Accumulation of physical capital boosts productivity of labour
- But: historical experience shows long-term ceiling of investment ratio around 30% of GDP
- India to see increases from low level; China downward adjustment
- Spain and UK witness solid upward momentum

Rising human capital is a key reason for Asia's growth

Years of education: Change 2005-20



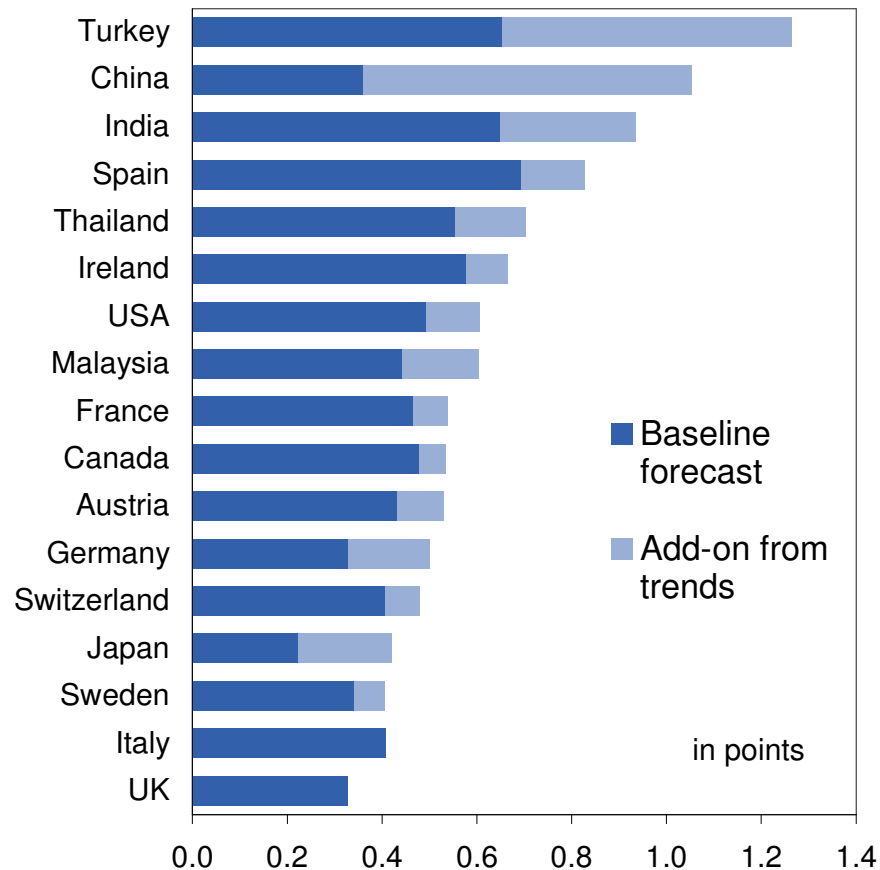
Source: Deutsche Bank Research

- **Quality of labour input:**
Ability to generate and apply new knowledge
- **Growth of human capital** relevant for per-capita GDP growth (not: level of human capital)
- India and China see rapid growth from low levels
- Baseline shows near stagnation in Germany

Our measure: average years of education of the population aged 25 to 64 (OECD)

Trade opening is second reason for Asian success

Openness: Total change 2005-20



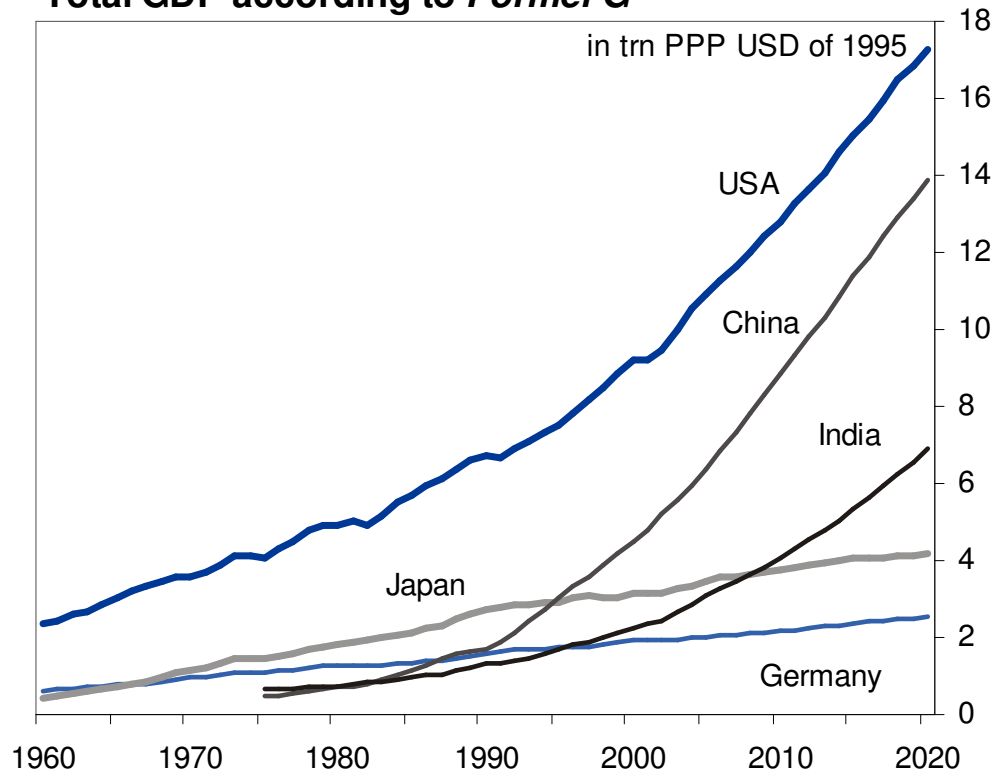
Source: Deutsche Bank Research

- Exchanging goods and ideas with other countries **promotes learning**
- Increasing competitive pressure **boosts efficiency** of domestic companies
- **Change** in openness leads to **change** in GDP
- Rapid opening in China and India is crucial for their strong GDP growth

Our measure: Foreign trade in % of GDP corrected for population and price differences

Centre of economic gravity moves to Asia

Total GDP according to *Formel-G*

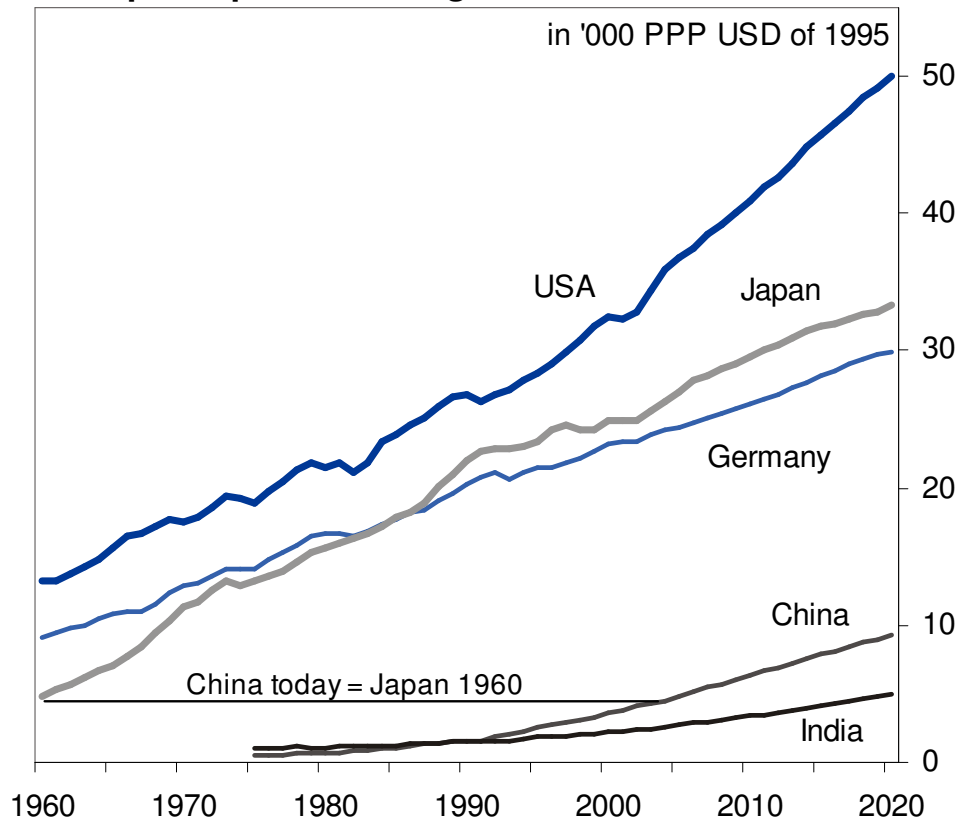


Source: Deutsche Bank Research

- China will close in on US GDP level by 2020 in PPP terms
- India to become third-largest economy around 2010, surpassing Japan
- Germany and Japan in relative decline

Still very low level of per-capita GDP in China and India

GDP per capita according to *Formel-G*

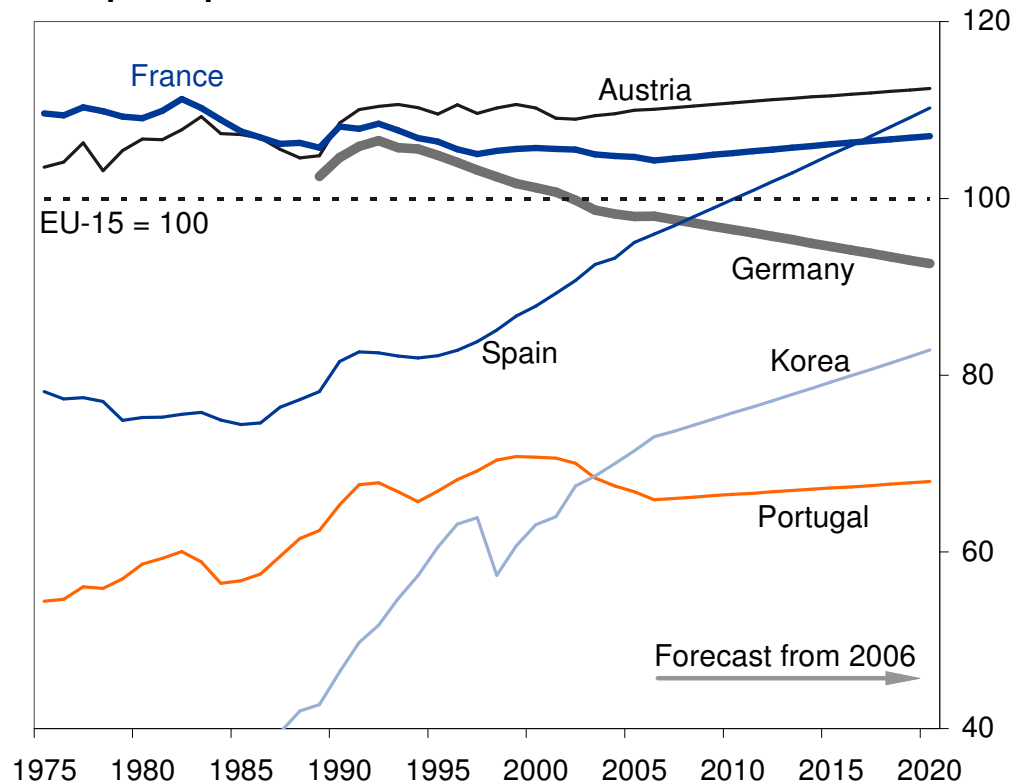


Source: Deutsche Bank Research

- China's level of GDP per capita is today roughly equal to that of Japan in 1960 – before Japan really started to conquer the global markets
- DBR's analysis suggests:
 - China and India will continue to narrow the gap
 - They will produce ever more sophisticated products

Major differences in income paths across the EU-15

GDP per capita in PPP



Sources: Groningen Growth and Development Centre, DBR

- There is no common EU path. Heterogeneity rules
- Austria and France keep pulling away from the EU-15 average
- Spain is rapidly closing the gap to Germany and will soon be ahead
- Portugal underlines that success is not guaranteed



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Formel-G's point forecasts need not materialise

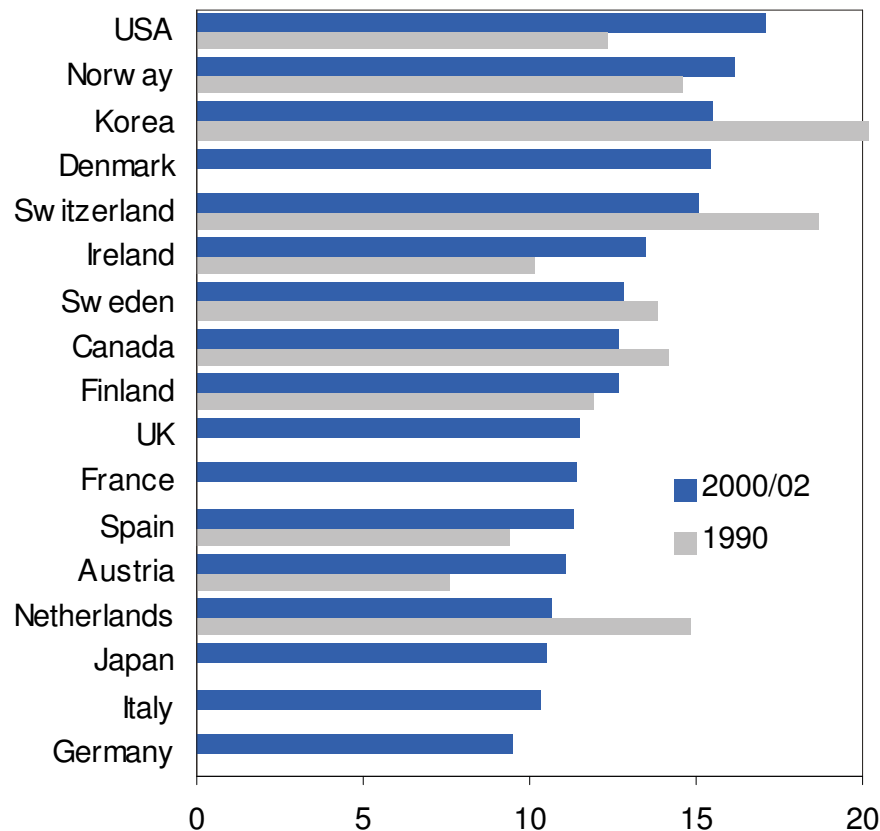
Societies have many opportunities to act. Examples:

- Governments can give priority to **education**
- Utilisation of available **labour input** can be changed
- Integration of **older workers** can be increased
- **Women** can gain more importance in employment
- Countries can take advantage of **globalisation**
- Output of the **innovation system** can be boosted
- Vulnerability to rising **energy prices** can be reduced

Governments can give priority to education

Different shares of education spending

Public education spending as % of all public spending



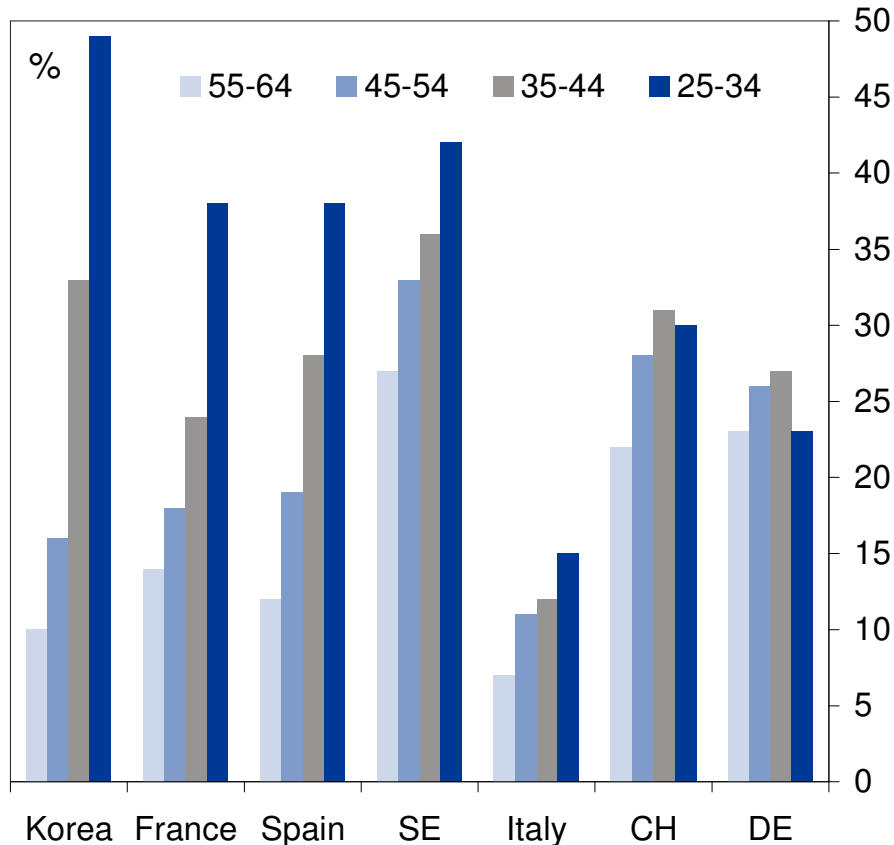
Source: UN Human Development Indicators

- Government spending in Denmark, Sweden and Switzerland focuses on education
- Education ranks low on the list of government priorities in Germany and Italy
- Share in education spending has risen strongly in USA, Austria and Ireland since 1990
- Money is not everything: The structure of education systems matters; plus private initiative

Past decisions determine trajectories of skill levels

Population that has attained tertiary education

in % by age group in 2004, sorted by change old -> young



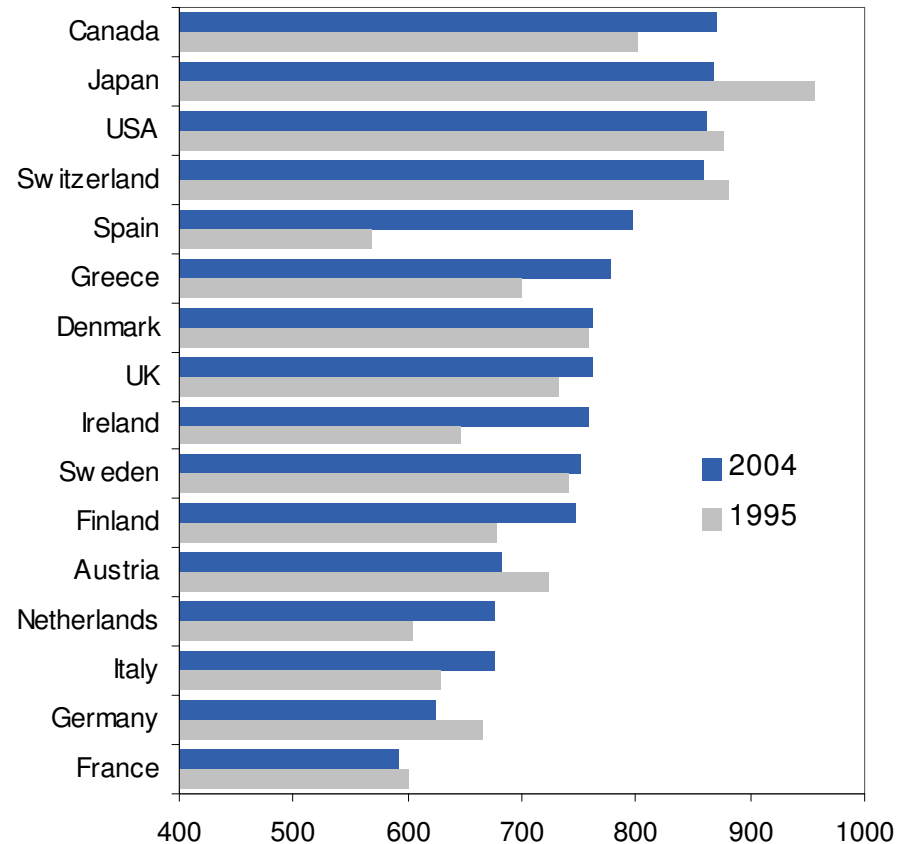
Source: OECD Education at a Glance 2006

- In France and Spain new entrants into labour force are much better educated than old workers
- Stagnation in Germany (and the USA)
- Changes to education policy today will affect the economy with a long lag

Utilisation of available labour input can be changed

Large differences in hours worked

Hours worked per person of the total population



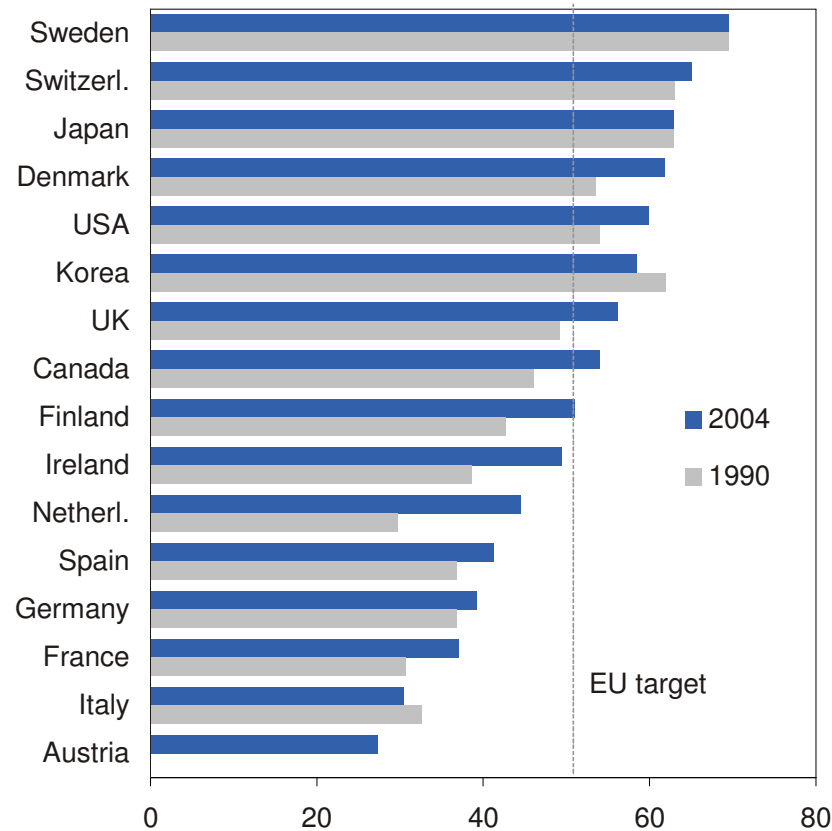
Sources: Groningen Growth and Development Centre, own calculations

- Hours worked per capita affected by participation rates, unemployment and workweeks
- Level of hours worked much higher in Japan and USA than in Europe
- Decline of hours in Germany and France continues to date
- Strong increase in hours in Netherlands and Spain over past 10 years

Integration of older workers can be increased

Different use of older people's potential

Employment rate of 55 to 64 year-olds in %



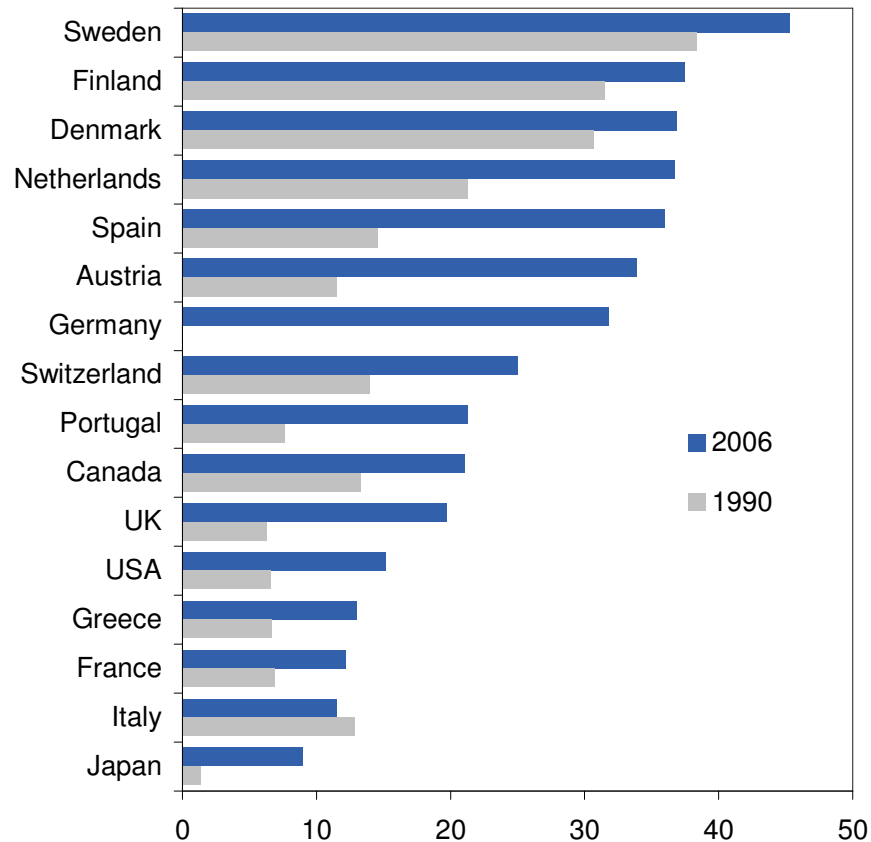
Source: OECD

- Employment rates of 55-64 year-olds range from 30% (Austria) to 70% (Sweden) in the EU
- Sweden, Switzerland, Denmark and UK with high rates
- Austria, Italy, France and Germany with low rates
- Lisbon target of 50% needs to be raised over time

Women can gain more importance in employment

More women in parliamentary seats

Share of women in parliament in percent



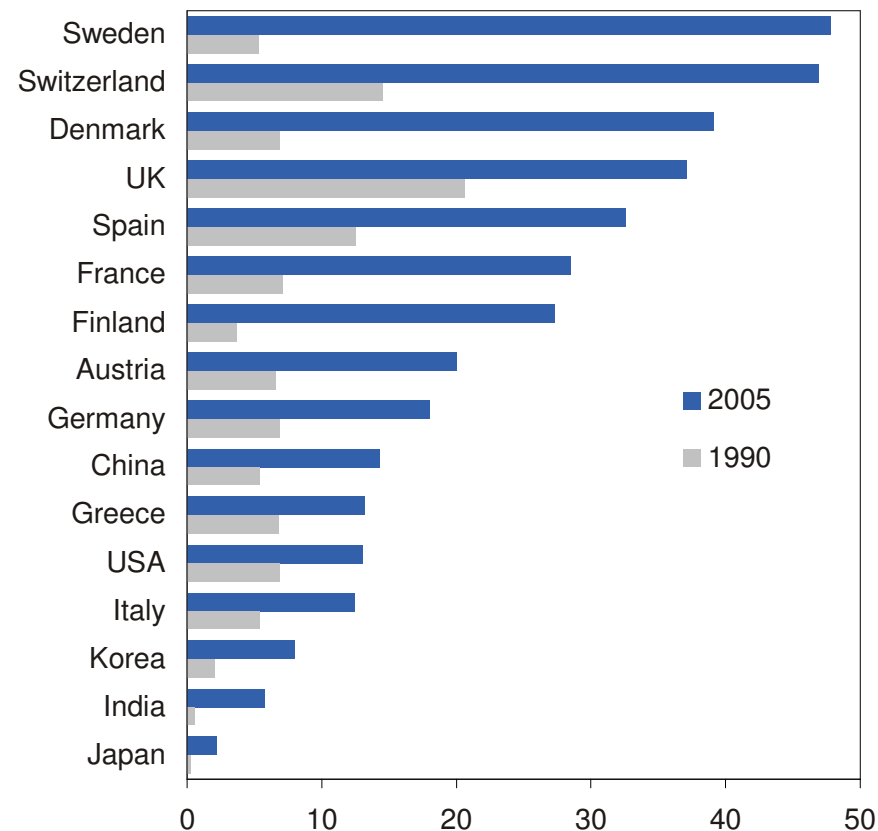
Source: United Nations Millenium Inidcators

- Nordic countries are leaders in integrating women
- Japan and Italy are laggards
- Rapid progress since 1990 in Austria and Spain
- Little progress in Italy (down) and France

Countries can take advantage of globalisation

Huge increases in FDI investment

Inward foreign direct investment, % of GDP



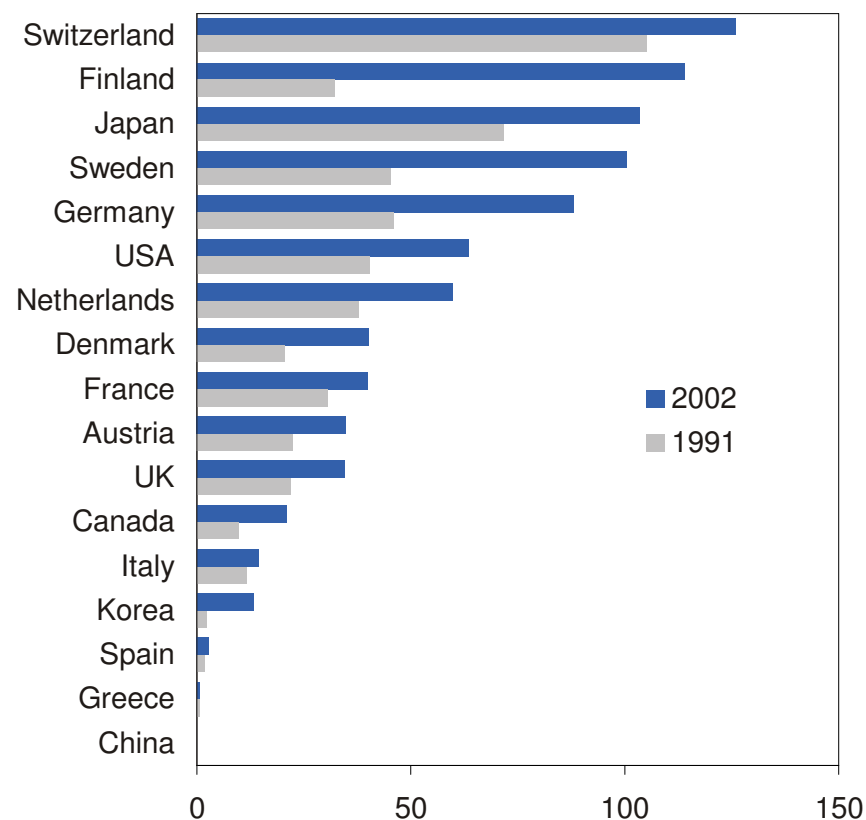
Source: UNCTAD

- Inward foreign direct investment indicates how much influence foreigners have in the domestic economy
- Small countries tend to have higher FDI levels in % of GDP
- Large increases in past 15 years in Sweden, Spain and France
- Japan and Italy are laggards

Output of the innovation system can be boosted

Large differences in patenting activity

Triadic patent families per million population



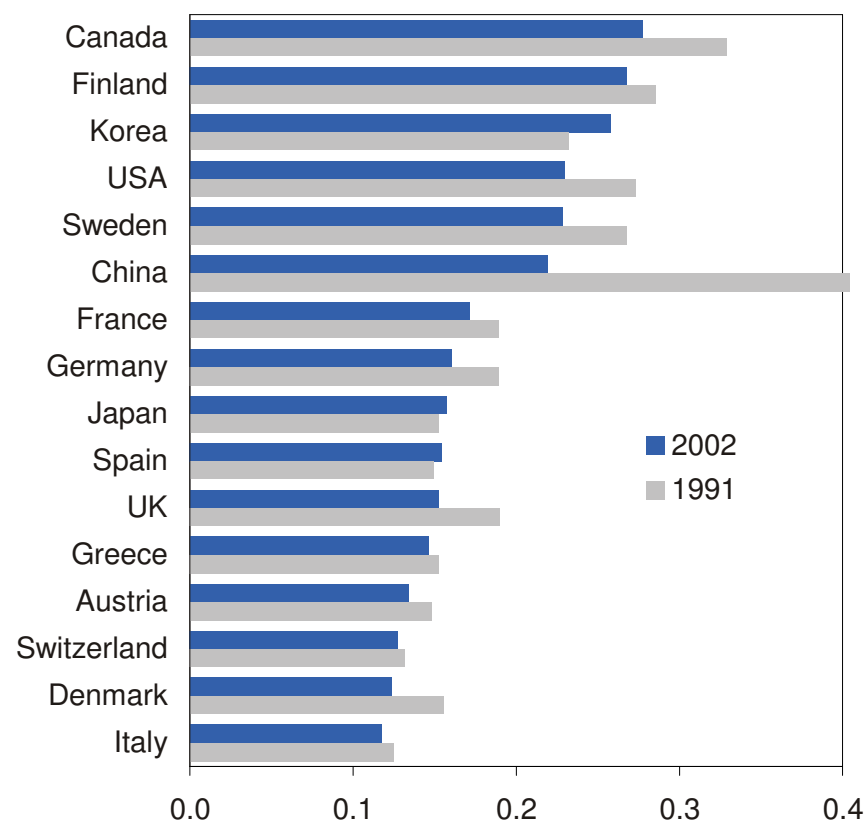
Source: OECD Compendium of Patents Statistics

- Patent activity is very strong in Switzerland, Finland, Japan, Sweden, Germany
- Large improvements in the 1990s in Finland, Sweden and Germany
- Laggards are Italy and Spain
- China is currently imitating, not innovating

Vulnerability to rising energy prices can be reduced

Energy intensity of GDP has fallen

Energy use per PPP GDP (kg of oil equivalent per 2000 PPP \$)



Source: World Development Indicators

- Energy intensity down: On average, less energy is used today per unit of GDP than in 1991 (Nordic countries obviously at a disadvantage)
- Largest improvements in 1990s in China, Canada, USA, Sweden and UK
- Korea, Spain and Japan went against the general trend



Summary: Pressure and scope for action

- The **rise of India and China** (and other emerging markets) puts considerable adjustment pressure on EU economies
- Significant amount of **heterogeneity across the EU-15** in terms of outcomes, levels, changes, strengths and weaknesses. Policy recommendations have to be country-specific
- There is plenty of room for societies/policymakers to **affect their country's future**. Fields of action include: Education, labour markets, openness, innovation etc.



DBR Megatopic “Global growth centres”

- Introductory study „Global growth centres 2020“
- Follow-up studies on the drivers of growth
„Human capital is the key to growth“ and “Opening economies succeed“
- Follow-up studies on the trend clusters
„Live long and prosper“ on cluster “Enlarging scope of life”
- Going beyond *Formel-G*: *„Measures of well-being”*
- Country studies with scenario analysis
already published: „Turkey 2020“, „India rising“, “Mexico: Tequila sunrise”, “Brazil: O pais do futuro”, “Japan 2020 – decline in trend growth”. Under preparation: Spain, Russia, Germany

Available at www.dbresearch.com or .de
Megatopic „Global growth centres“



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