



CEPREMAP



WORLD GROWTH AND INTERNATIONAL CAPITAL FLOWS IN THE XXIst CENTURY

**A prospective analysis with the INGENUE 2 model
*by the INGENUE TEAM***

Michel AGLIETTA and Vladimir BORGY (Cepii),
Jean CHATEAU (Ocde), Michel JUILLARD (Cepremap),
Jacques LE CACHEUX, Gilles LE GARREC, Vincent TOUZÉ (Ofce)

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OUTLINE

- The paradox of world saving in the early years of the XXIth century
- The conjecture of a world growth regime: demographic trends and technological catching-up
- The baseline scenario: the pattern of net financial flows and assets
- A faster catching-up in China and India
- How to get from here to there?

THE PARADOX OF WORLD SAVING

Emerging market economies and Japan finance
the debt-induced consumer spree in the US

(Net financial saving in % of GDP)

Countries or regions	Average 1990-99	Average 2000-03	2004
Advanced Economies:	-0.5	-0.4	-1.3
United States	-2.4	-3.2	-6.0
Euro Zone	+0.4	+0.4	+0.7
Japan	+2.3	+2.5	+3.7
Emerging Economies:	-1.9	+1.7	+2.3
China	+1.8	+2.0	+4.1
Other Asia	-1.2	+1.8	+2.7
Latin America	-2.6	-2.0	+1.2
Ceecs	-2.7	-4.3	-4.7

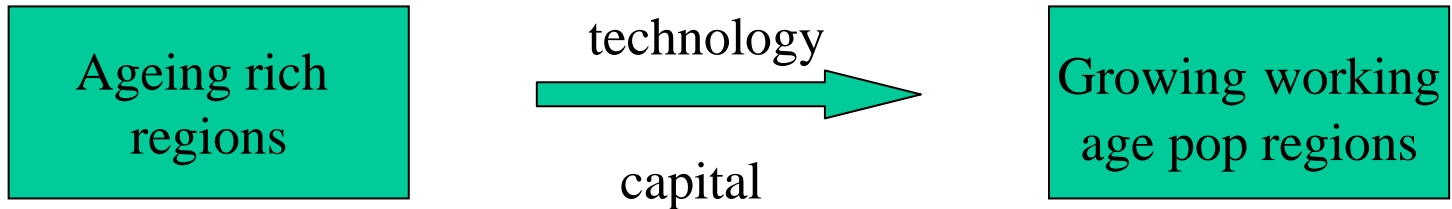
THE PARADOX OF WORLD SAVING

A massive misallocation of world saving unsustainable in the long run

- The so-called saving glut reveals *weak productive investment* as an aftermath of the Asian and subsequent crises: breakdown in domestic demand trends, huge real depreciation of exchange rates, chronic over capacities of supply.
- The prolonged balance sheet recession in Japan has come to a near end without reviving domestic demand yet.
- And unprecedented slump in US household saving is generating the debt counterpart of a \$3.2 trillion reserve accumulation.

THE CONJECTURE OF A WORLD GROWTH REGIME

- A world growth regime transferring resources between regions:

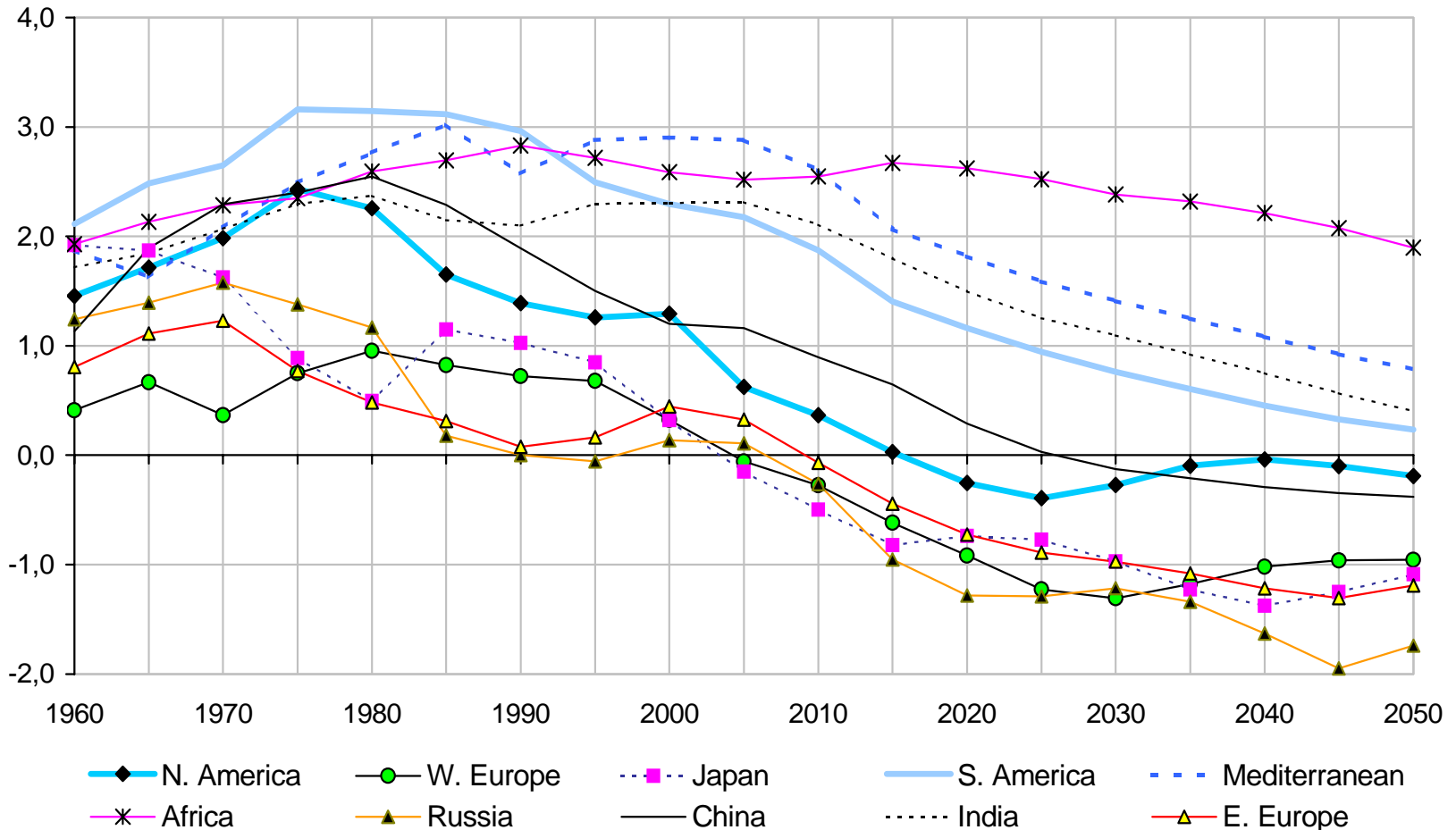


- Households in rich regions have incentives to export their saving to faster growth regions with higher capital yields

DEMOGRAPHIC TRENDS

Working age population is split between growing and declining regions

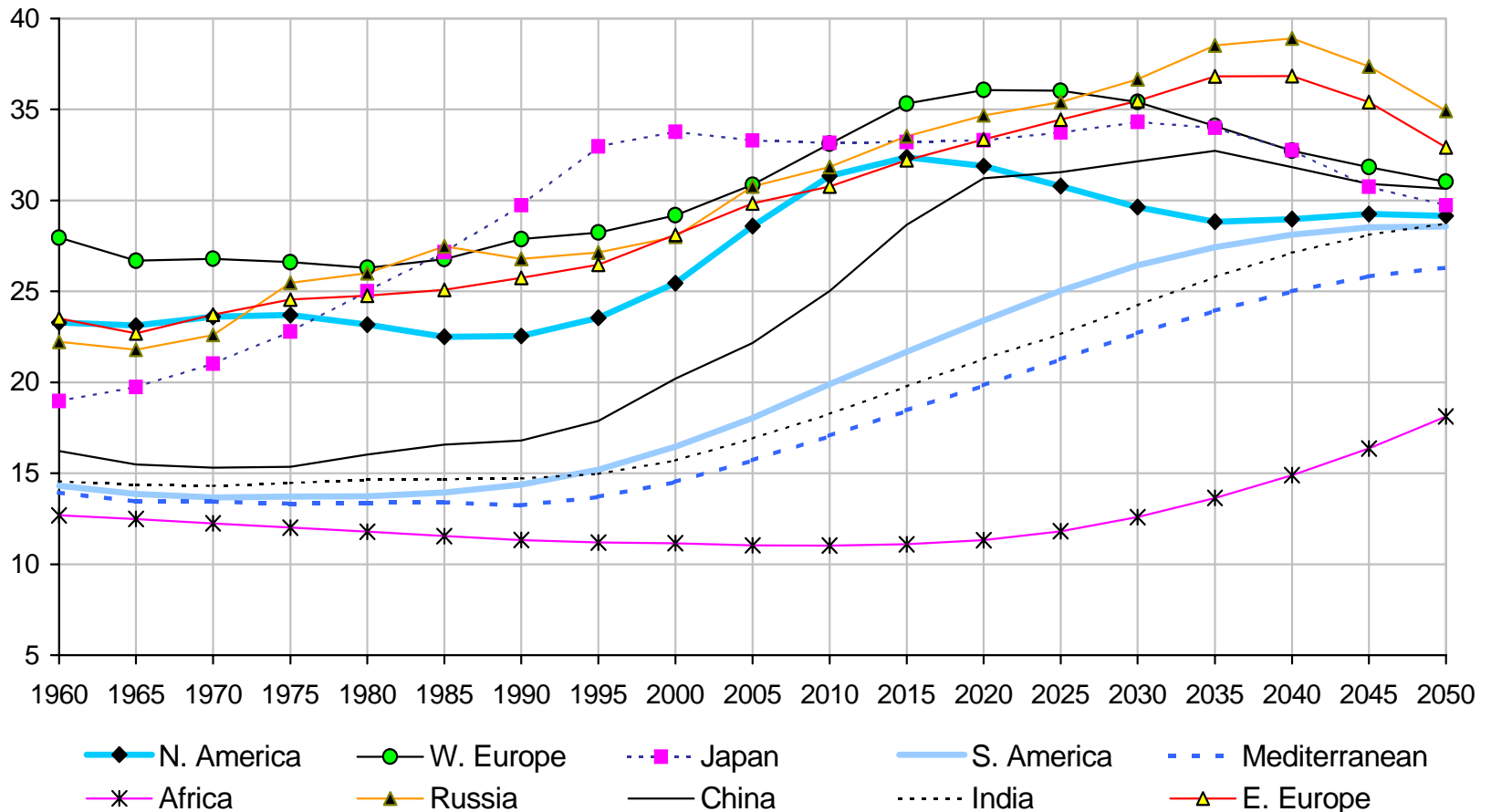
Working age population annual growth rate 1960-2050



DEMOGRAPHIC TRENDS

High savers ratios reach their top in sequential waves

High Savers Ratio (age group 45-69 yrs in percentage of total population)
1960-2050



POTENTIAL FOR CATCHING UP

The growth process in Ingenu 2

Production sectors

$$YF_t^z = C_t^z + I_t^z$$

Utilization of the regional final good

$$YF_t^z = AF_t^z G(B_t^z, M_t^z)$$

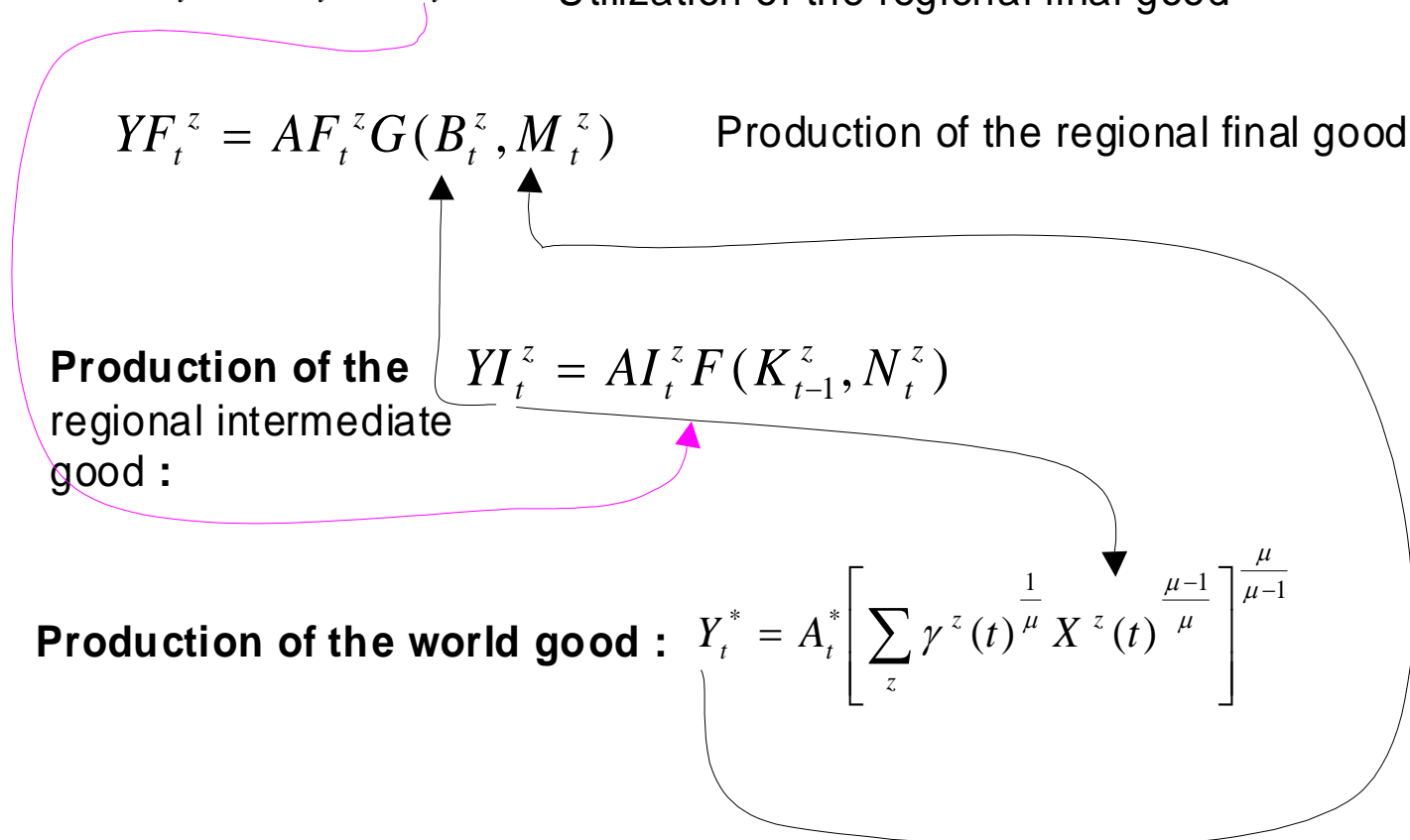
Production of the regional final good

Production of the regional intermediate good :

$$YI_t^z = AI_t^z F(K_{t-1}^z, N_t^z)$$

Production of the world good :

$$Y_t^* = A_t^* \left[\sum_z \gamma^z(t)^{\frac{1}{\mu}} X^z(t)^{\frac{\mu-1}{\mu}} \right]^{\frac{\mu}{\mu-1}}$$



POTENTIAL FOR CATCHING UP

A Schumpeterian Paradigm

- There is a global technology frontier which shifts outwards with the increments in knowledge due to leading-edge innovations in frontier countries (namely North America).
- The countries behind the frontier implement technologies already developed elsewhere. Part of the inputs of technological diffusion are brought via foreign trade.
- The further a country is behind the global technology frontier, the faster it can grow.
- As emphasized by *Gerschenkron*, backwardness can be an advantage for growth provided “appropriate” institutions are developed within the country

POTENTIAL FOR CATCHING UP

Crucial Hypotheses of World growth

The catching-up in total factor productivity:
mechanics of technological diffusion

$$\frac{A_{i,t}}{A_{i,t-1}} = [1 + \lambda^t] \frac{A_{1,t}}{A_{1,t-1}} \left[\mu_i^t + (1 - \mu_i)^t \frac{A_{1,t-1}}{A_{i,t-1}} \right]$$

λ Is an acceleration coefficient of the growth rate of TFP in the leading region

μ is a brake factor capturing social impediments to the speedy diffusion which depends on the distance between the level of TFP relative to that of the leader

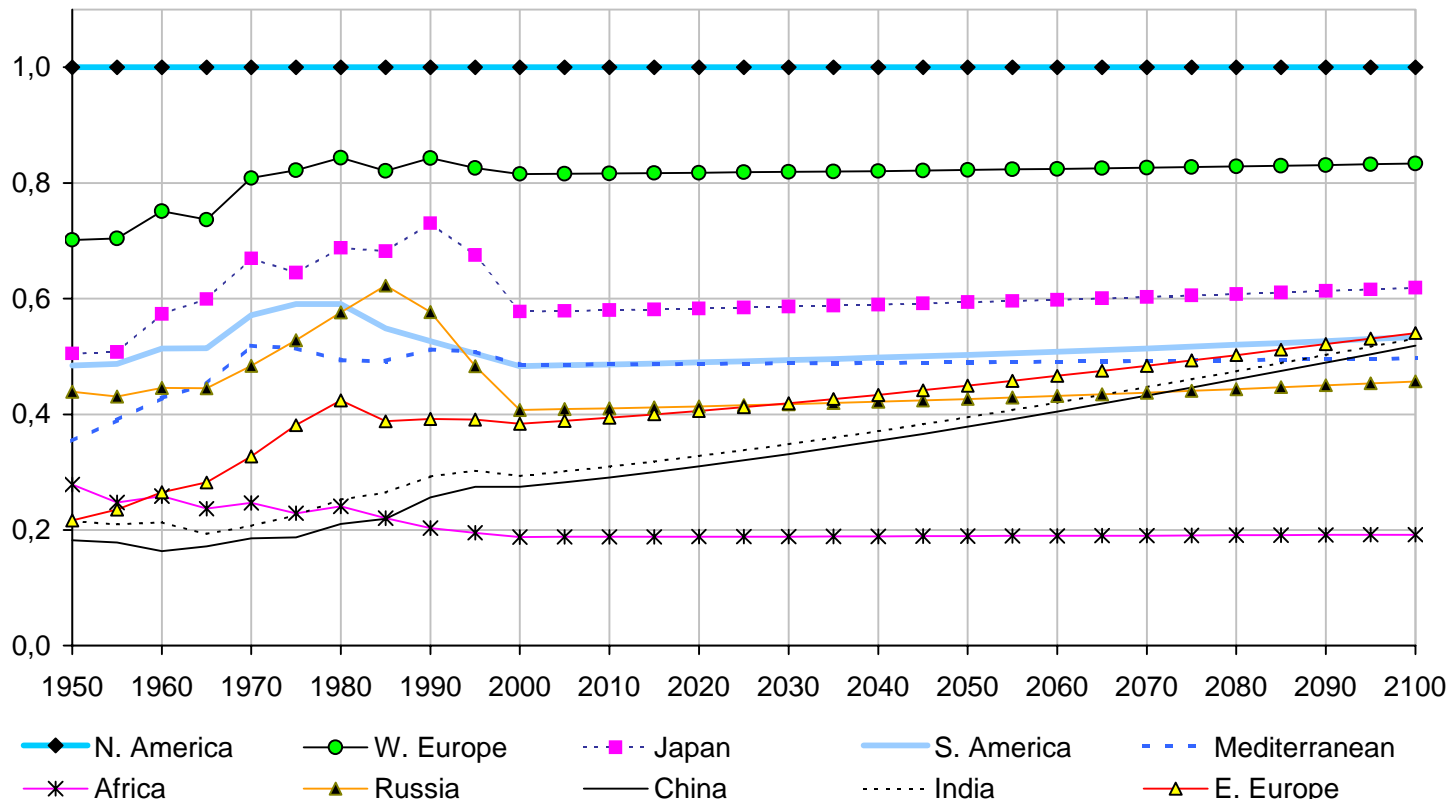
POTENTIAL FOR CATCHING UP

The pattern of TFP Growth in the baseline Scenario

North America keeps leading

Three catching-up regions: China, India, Eastern Europe

Total Factor Productivity : 1950-2100 (percentage of "North America" level)



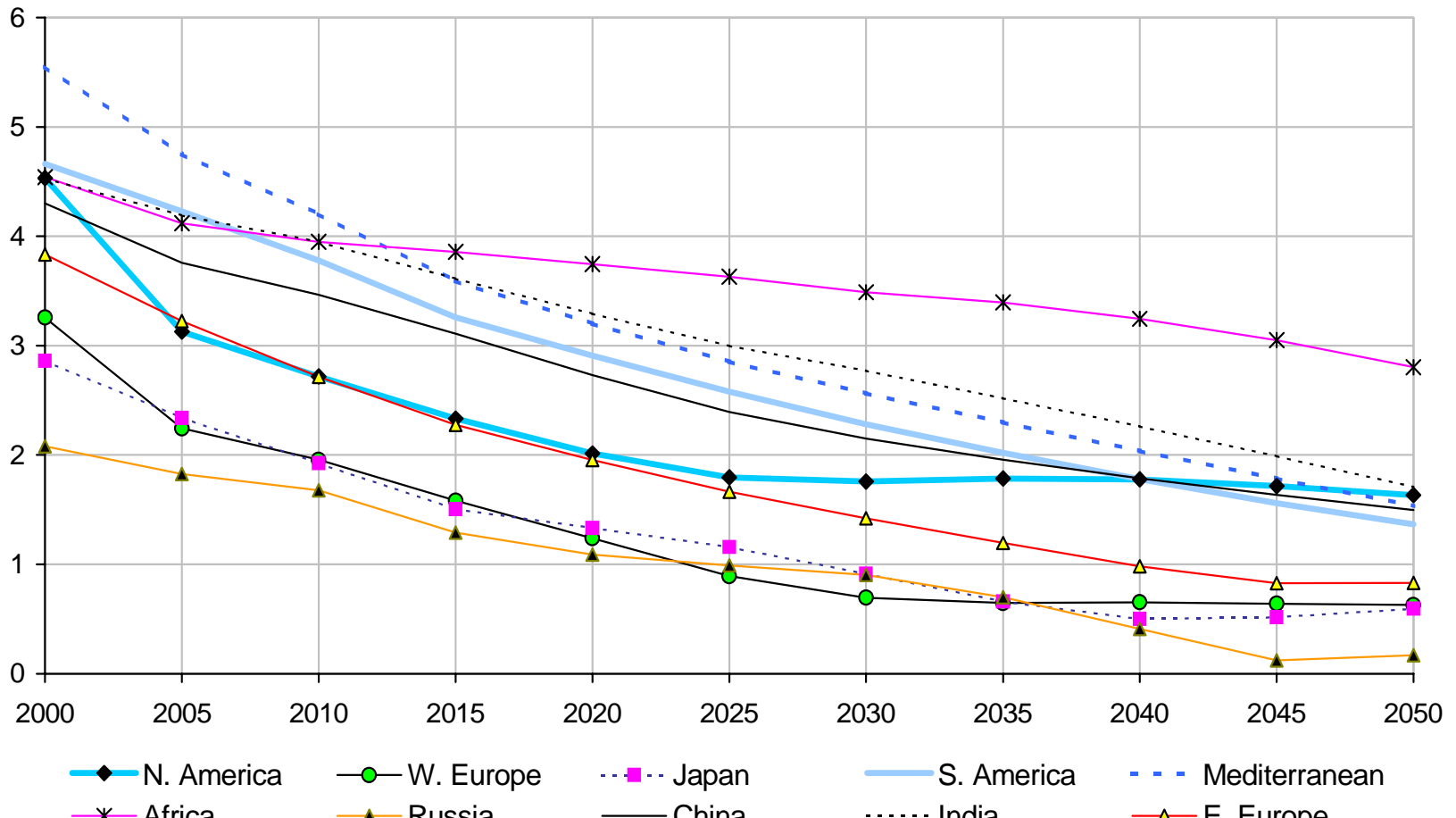
BASELINE SCENARIO

Japan, Europe and Russia have the lowest growth rates

America slows down fast, then recovers

In China the speed of catching-up partly offsets the demographic decline

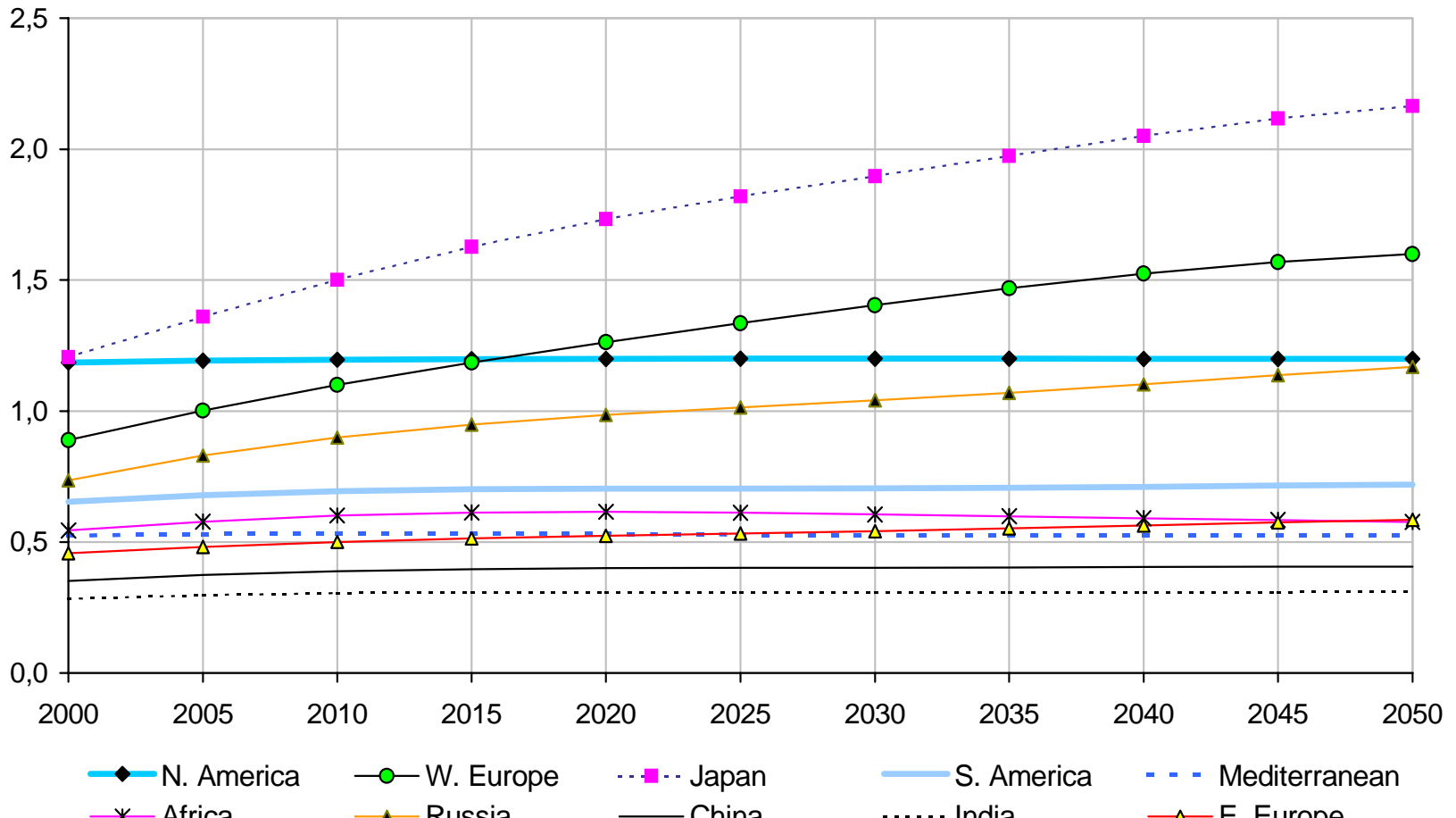
GDP Growth rate (2000-2050)



BASELINE SCENARIO

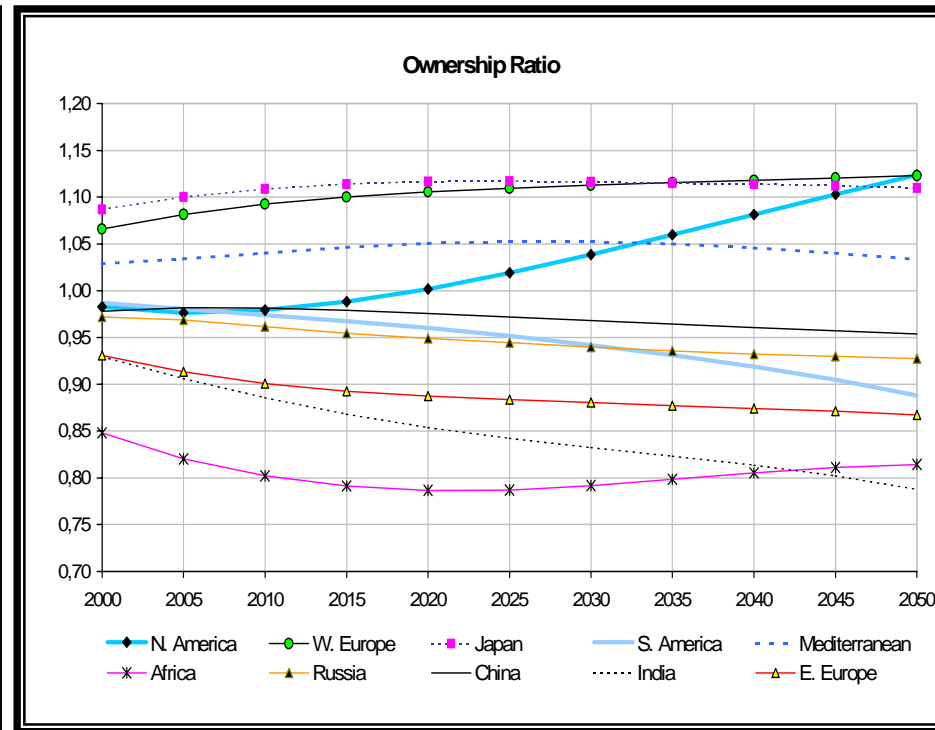
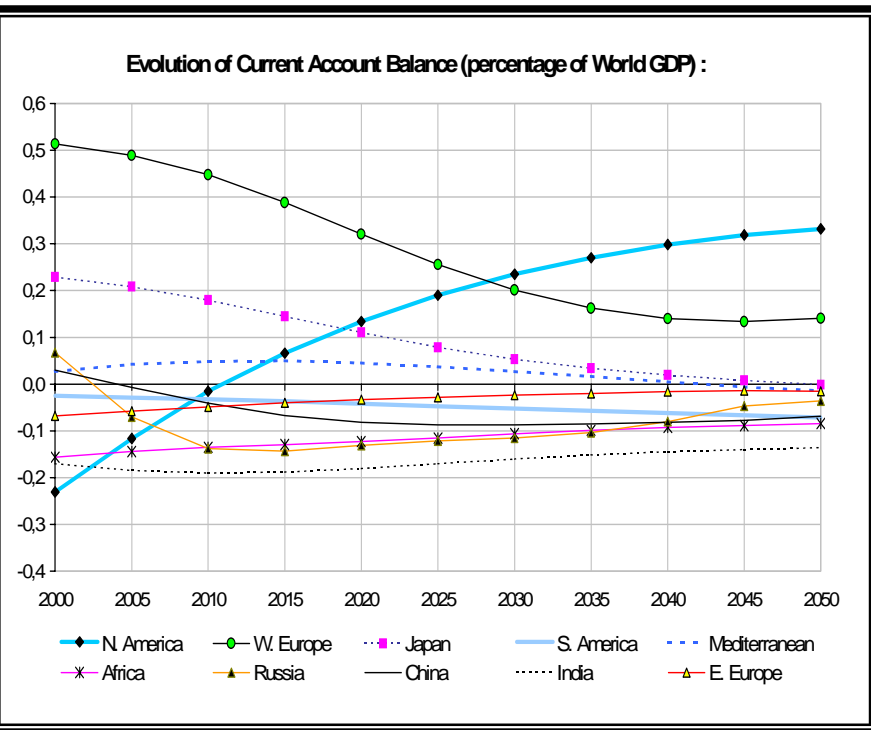
Real exchange rates appreciate in the fastest-ageing regions (Europe, Japan, Russia) against North America. They remain relatively stable in other regions

Evolution of Real Exchange Rate (2000-2050)



BASELINE SCENARIO

The redeployment of capital flows to the world regions with the best growth potential



BASELINE SCENARIO

Main features for Europe

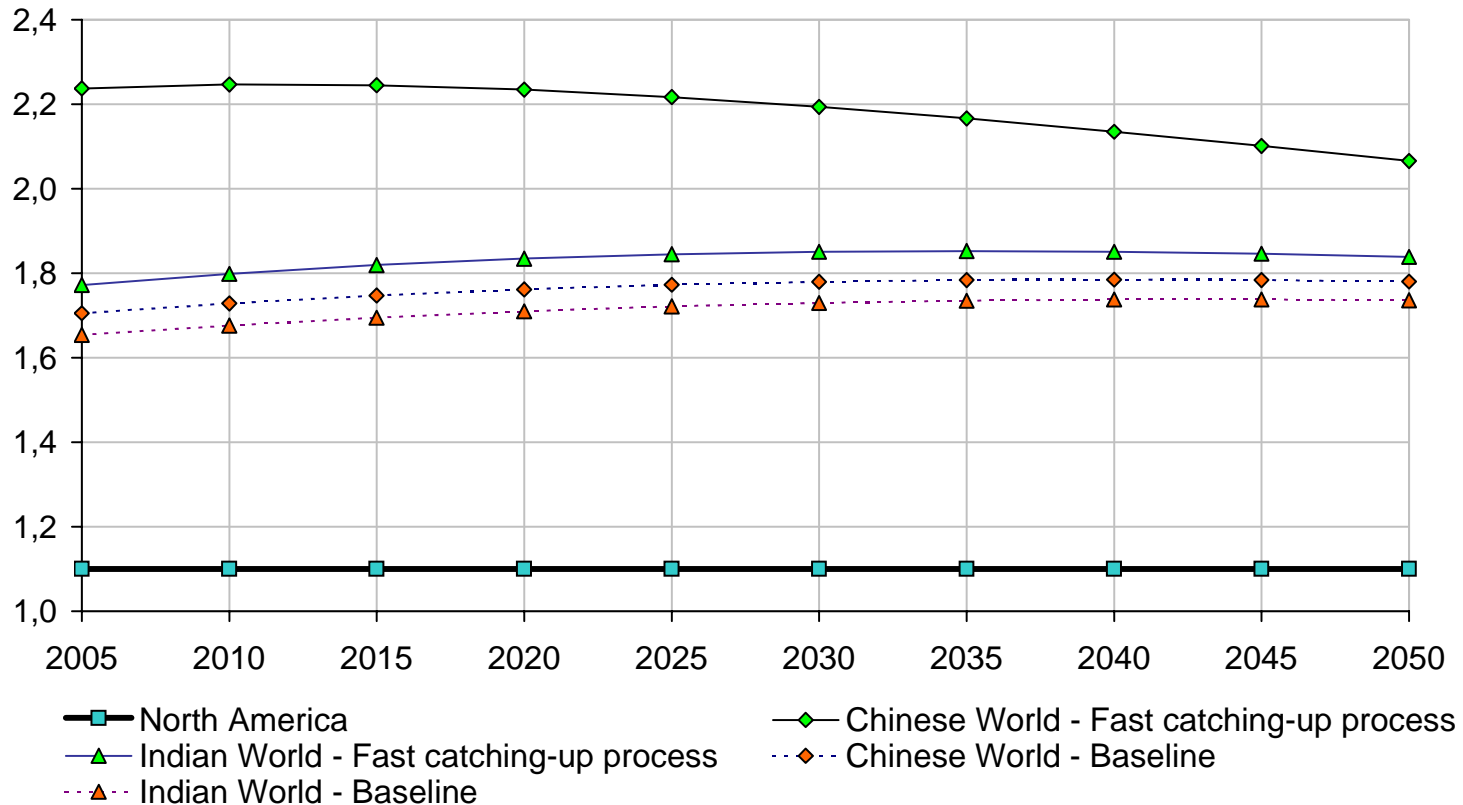
- The demographic profile and the weak catching-up in TFP will make Europe a slow growth region.
- Europe will be a pervasive world creditor with an appreciating real exchange rate
- European households will benefit from globalisation via capital income drawn from their creditor position and gains in purchasing power on imported goods

FASTER CATCHING-UP IN CHINA AND INDIA

Main Hypotheses

Supply-side factor: an enhanced technological diffusion more pronounced in China than in India in the first half century

Total Factor Productivity (annual growth) :

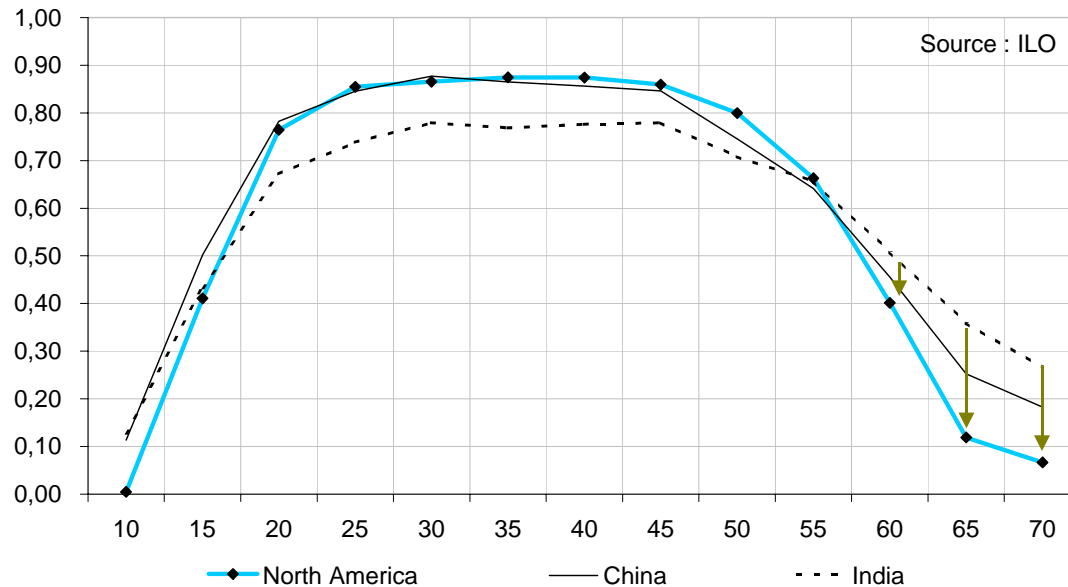


FASTER CATCHING-UP IN CHINA AND INDIA

Main Hypotheses

Demand-side factor: extension in coverage of public pension systems.
Convergence of the participation rates for age group (60-69) toward the level of North America

INGENUE 2 : Age-linked rate of employment covering to North America :



Share of pensions in GDP

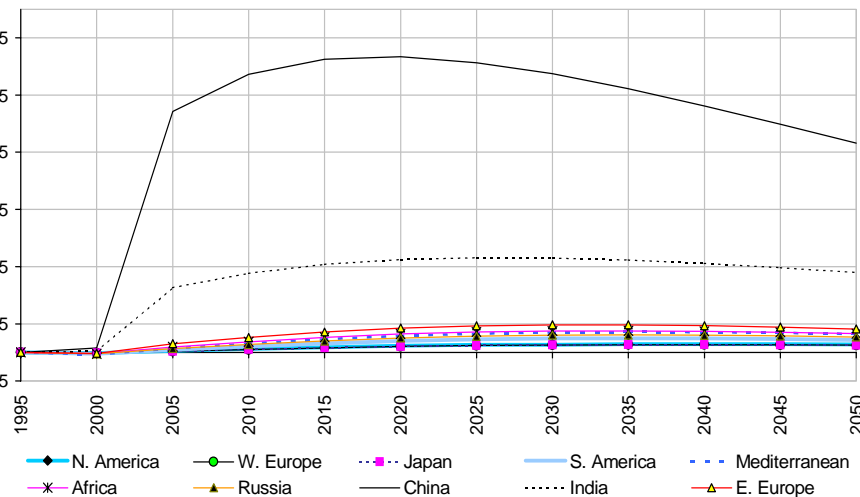
In %	2000	2050 (baseline)	2050 (expanded public pension)
China World	2.1	7.3	8.0
India World	3.2	7.7	9.2

FASTER CATCHING-UP IN CHINA AND INDIA

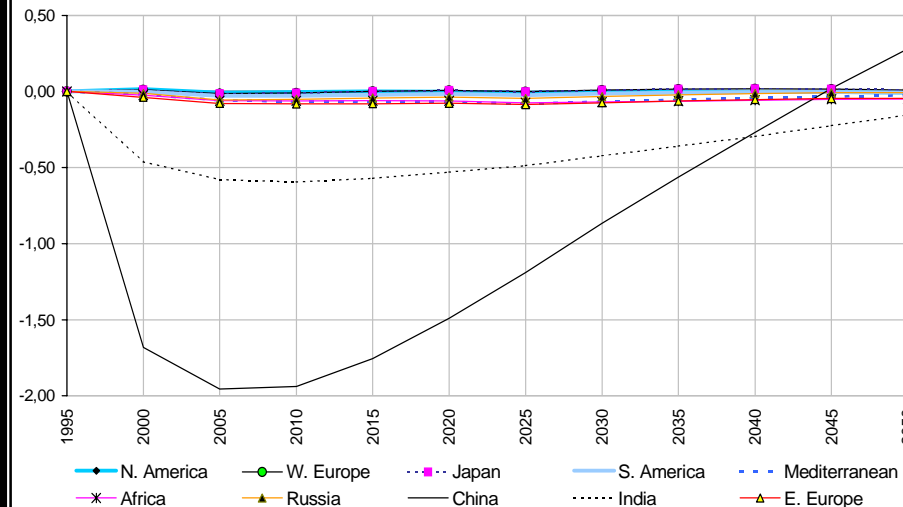
Boost in Productivity and Real Income

The faster technological diffusion accelerates growth and lowers the propensity to save in a first stage. Then growth slows down gently and saving recovers with higher income

GDP Growth rate
(difference from baseline scenario)



Evolution of the Net Saving (in percentage of GNP)
(difference from baseline scenario)

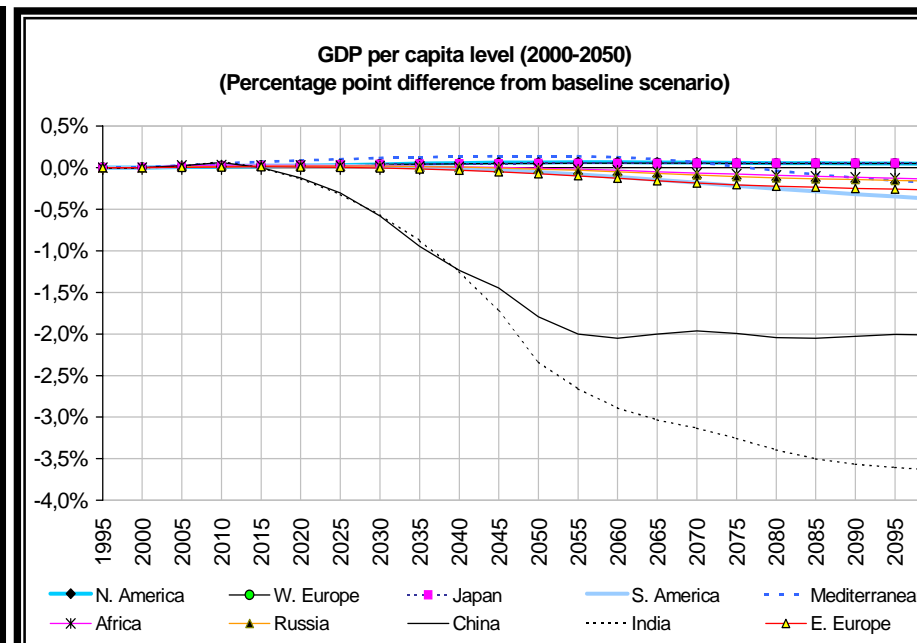
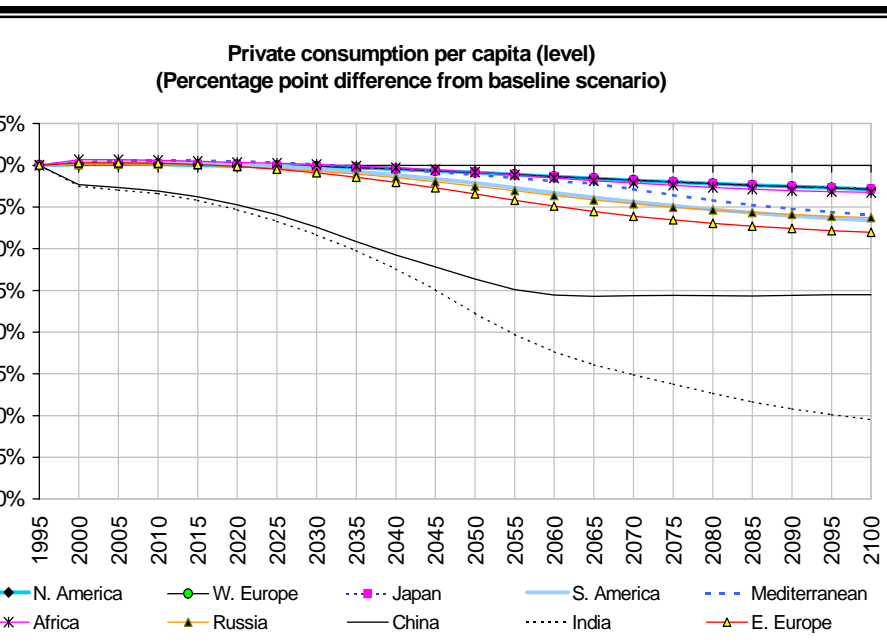


FASTER CATCHING-UP IN CHINA AND INDIA

Transition Cost to Better Social Welfare

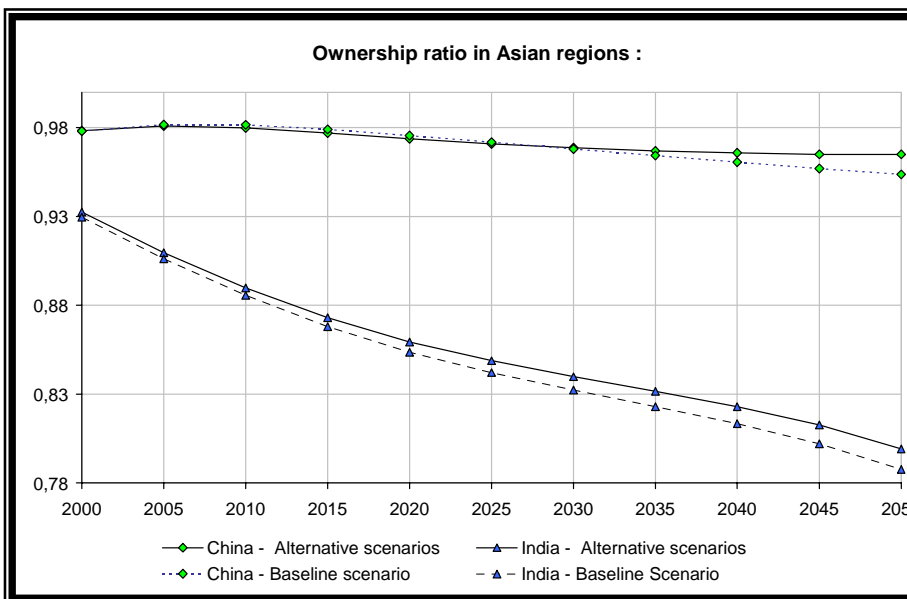
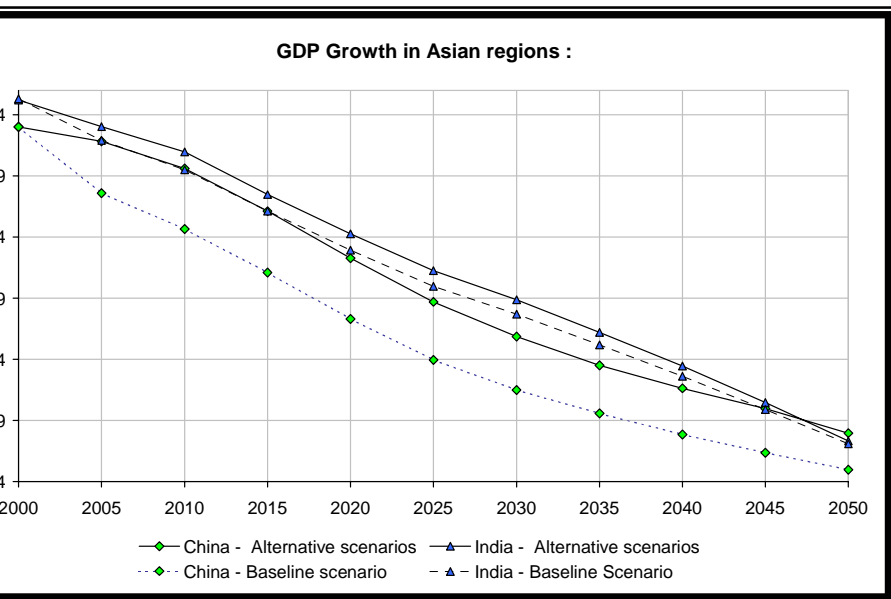
The improved social welfare is costly while the reform is under way:

- The participation of older workers is reduced
- The higher dependency ratio must be financed via higher taxes and saving



COMBINED SCENARIO OF HIGHER GROWTH IN TFP AND IMPROVED SOCIAL WELFARE

- The growth-enhancing factor dominates on GDP and private consumption
- The effects on saving are in opposite directions so that they cancel out on net capital flows and international financial positions



The international impact of a change to a more inward-looking growth regime in Asia is thus muted

HOW TO GET FROM HERE TO THERE?

- 1. The baseline scenario points out to the need of restoring a sustainable saving/investment balance in the US**
 - A substantial real depreciation of the dollar:
 - will boost net private saving in slowing down domestic demand
 - will change the structure of demand in favor of non-traded goods, thus mitigating the negative impact on employment
 - A reduction in the budget deficit is the surest way to improve national saving (weak Ricardian equivalence in the US)

HOW TO GET FROM HERE TO THERE?

2. The baseline scenario depicts Europe as a low growth region on persisting in inefficient policies

- Europe has a declining working-age population and is relatively close to the technology frontier. The only source of potential growth will stem from boosting innovation
- Overcoming Europe's shortcomings requires:
 - more public spending on higher education and R&D
 - better links between public and private research
- Long-run growth is enhanced by countercyclical economic policy (*Aghion and Howitt*). In a situation of high profits and low productive investments, domestic demand should be raised to induce firms to spend instead of buying back their equity capital

HOW TO GET FROM HERE TO THERE?

3. The baseline scenario shows that the world growth regime in the XXIth century will have its engine in regions with a huge labor force and fast catching-up

Overhauling the growth regime in Asia towards domestic demand is a top priority. It involves:

- Promoting financial reforms to set up smooth well-regulated credit systems for the private sector, including consumer credit.
- Investing in infrastructure and mass education to lower the barriers to technological diffusion
- Initiating long-standing social policies to vastly improve social welfare systems and above all extend their coverage