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Development and Innovation in the XXI century

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Summary

- The Long Run Trends in Growth and Development in Global Economy
- The Implications of Long Term Shifts in Global Investment and Saving
- The Role of Innovation in Economic Development and Growth
- Innovation Priorities for Europe
- European Finance for Innovation and Growth
- Global Imbalances
- The Role of Long Term Investment in the Development and Growth of Global Economy in the XXI Century

The Long Run Trends in Growth and Development in Global Economy

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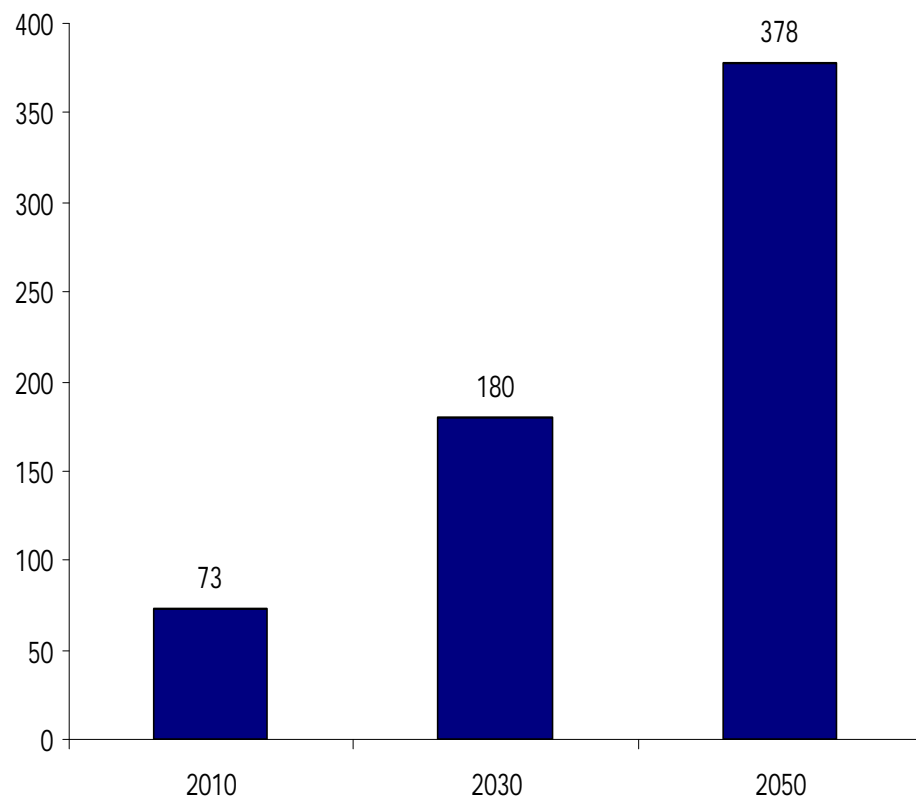
- Great Transformations are going to characterize the XXI Century
- Almost two thirds of the world population, mostly in Asia, will switch from self-consumption to consumption, from the closed circuit of an agricultural economy to the open source of a market economy
- By mid-century billions of people could reach levels not seen since the postwar rebuilding of Europe and Japan and the era of high growth mature economies.
- World economy will experience exceptional demand for capital investment.

The Long Run Trends in Growth and Development in Global Economy (*)

- World population will grow from 7 to 9 billions by 2050; GDP should rise, in the same period, from 72 trillion USD (at PPP) in 2010 to 380 trillion USD in 2050.
- North America and Western Europe is expected to fall from 41% in 2010 to just 18% in 2050, while Developing Asia's share is predicted to rise from 27% of world GDP to 49% in 2050.
- China is expected to overtake the US to become the largest economy in the world by 2020 – to be in turn overtaken by India by 2050.
- This does not mean necessarily that US and Europe are doomed to decline.
- (*) The estimates contained in this part of the Presentation are taken from, CITI, *Global Economic View. Global Growth Generators: Moving Emerging Markets and BRIC*, 21 February, 2011.

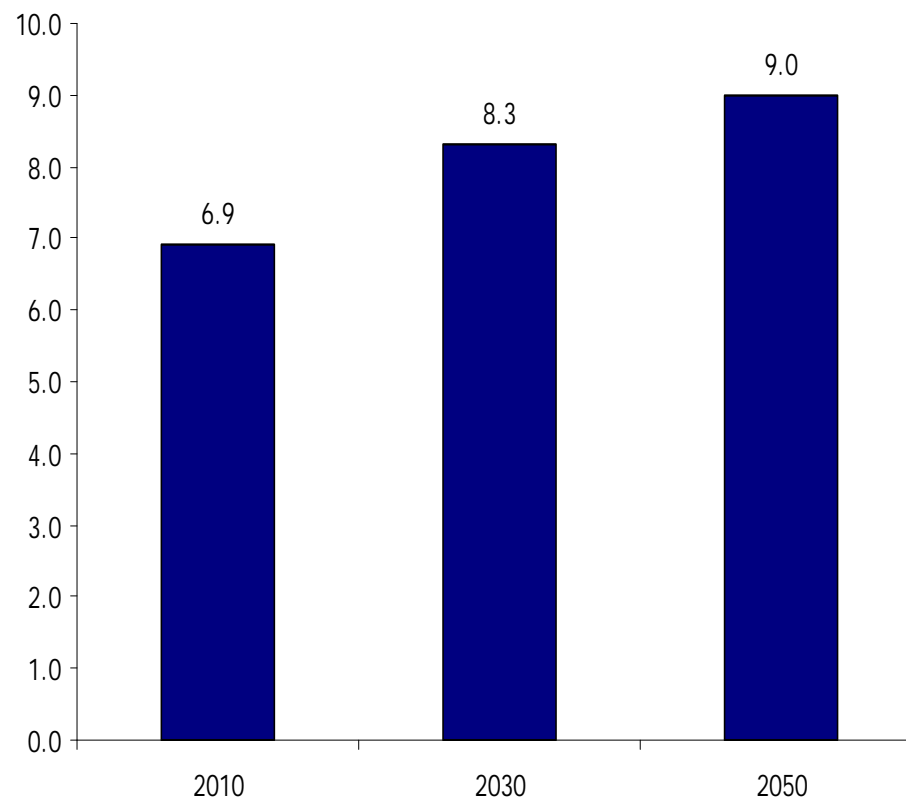
The Long Run Trends in Growth and Development in Global Economy

World GDP (2010 USD Tm)



Source: Citi (2011)

World population (in billions)



The Long Run Trends in Growth and Development in Global Economy

- **Looking ahead, both China and India, have huge investment requirements. It has been recently estimated that, to keep pace with urban population growth, China will build one New York City every two years. And India, a Chicago each year.**
- **The impact of such powerful rates of growth, urbanization and development will represent a great challenge for the environment and challenge the scarcity of natural resources of our planet.**
- **The question mark is if technology and innovation will be able to discover new solutions to make the transformations not only possible, but globally sustainable.**
- **Technology may represent the only solution to the problem but quality of institutions counts much too.**

The Long Run Trends in Growth and Development in Global Economy

- If current development patterns remain unchanged, we will see effects on the planet of enormous relevance.
- In 2030 the demand for energy will be 50% greater than today and 80% of this demand will be for fossil fuels. CO2 emissions will increase by 60%.
- Another very precious common good – water – will face severe effects after the “boom of investment and consumption” which will take place in the Century. Here technology must show all its powers to solve the problem.
- Let’s not forget, however, that technological breakthroughs are in the hands of chance (by surprise). The size of investment in science and technology is a measure of the effort and not of the probability of success in finding solutions.
- Anyhow, a good university system free to do basic research is the *conditio sine qua non* for scientific and technological major discoveries.

The Long Run Trends in Growth and Development in Global Economy

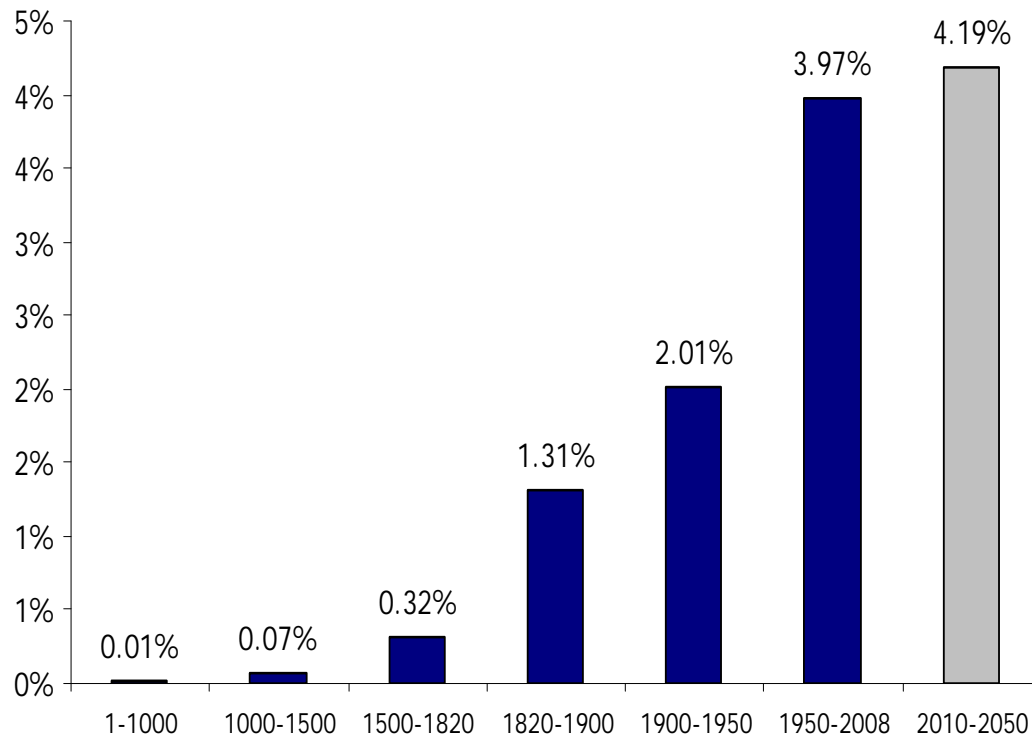
- In the XXI Century most of the people in the world will aim to have the same living conditions and sustainable growth of the advanced world. On grounds of justice – they have all the right to do so.
- But it is also economically convenient and politically binding to share the size of this exceptional global growth phase.
- This will need a strong, effective (not to compromising) and coordinated world governance, most probably around the G-20.
- It will require also the exchange of “best practices”, to achieve a global high tech, cultural and social welfare system, a great environmentally sustainable infrastructure system and smart energy policies.
- Europe (a more generally the advanced world) should share this “model” - as well as the “finance and know how” to produce it – with the rest of the world.

The Long Run Trends in Growth and Development in Global Economy

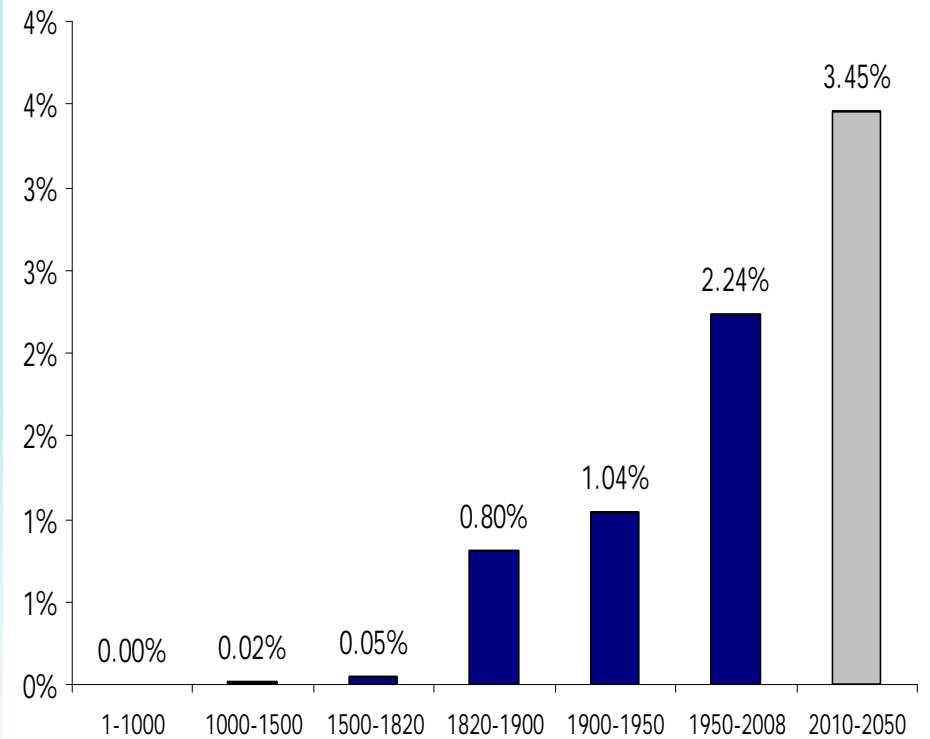
- Despite the very high investment rates of the fast growing late starters/converging economies, the consumption growth too is already a significant driver of domestic demand in many of these countries.
- Total consumer spending in Asian economies is likely to exceed total consumer spending in the Euro area during the next two years and that of the US within a dozen year.
- The proximate driver of this consumption boom is the growth of the “middle class” in fast growing Asia and Latin America.
- However, the per capita numbers suggest that the convergence process may have several decades (China) or even several generations (India) to go.
- Mature economies – which should have a comparative advantage in capital goods production – take advantage of the export opportunities created by these high investment rates to very different degrees.

The Long Run Trends in Growth and Development in Global Economy

Average world real GDP growth AD1 to 2050



Average world real GDP per capita growth AD1 to 2050



Source: Citi (2011)

The Long Run Trends in Growth and Development in Global Economy

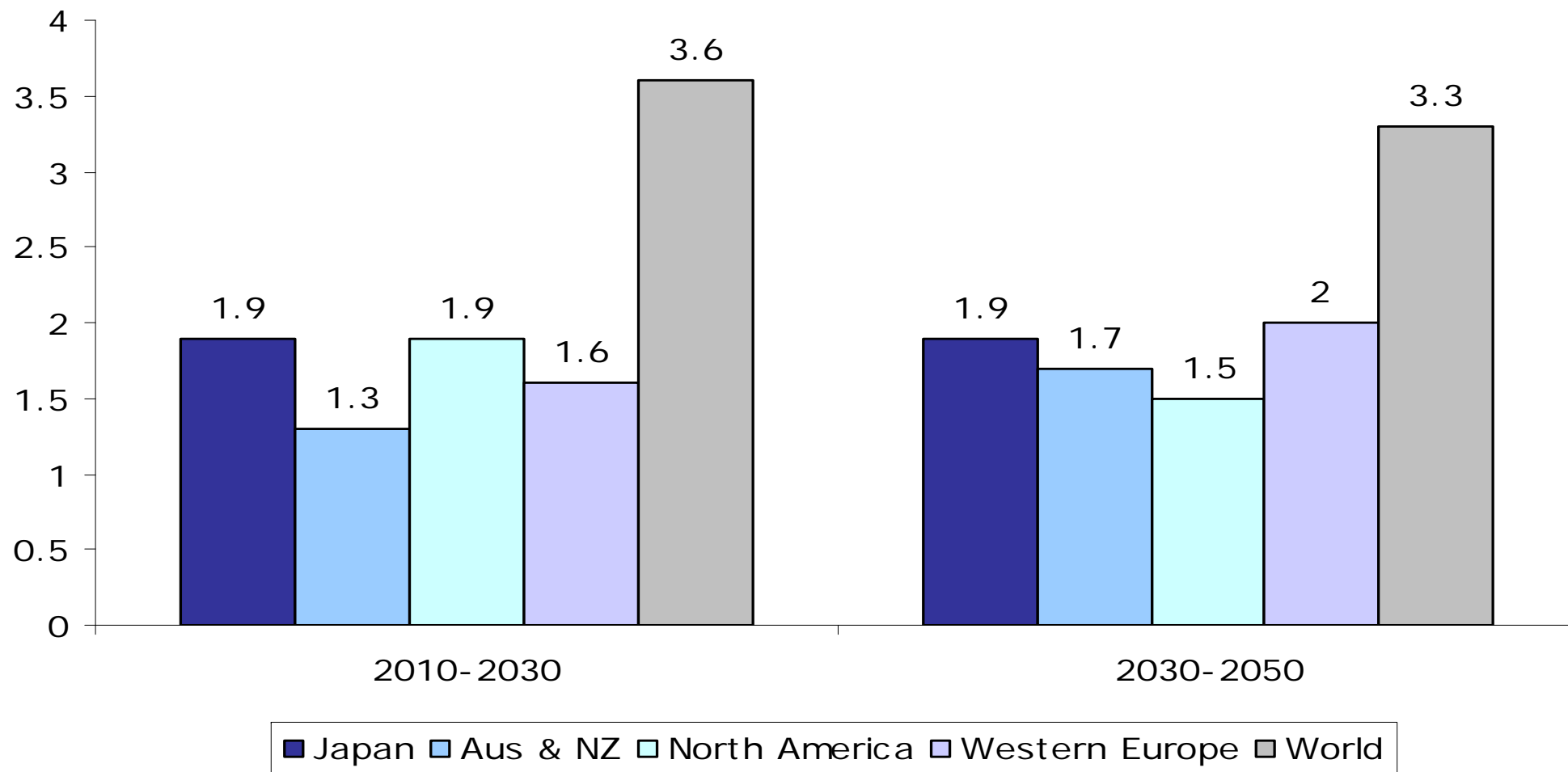
- **The speed of globalization has increased in the last twenty years.**

It has been based on some key factors:

- ✓ **A geopolitical factor: with the fall of the Berlin Wall, and the shifting of the political power from the Atlantic to the Pacific.**
- ✓ **A technological factor: the spread of the use of IT and the lowering cost of transportation.**
- ✓ **An economic factor: Asia producing low-cost goods and America buying them on credit.**
- ✓ **A financial factor: creating global virtual money.**
- ✓ **An ideological factor: the “political apotheosis” of free market economy.**

The Long Run Trends in Growth and Development in Global Economy

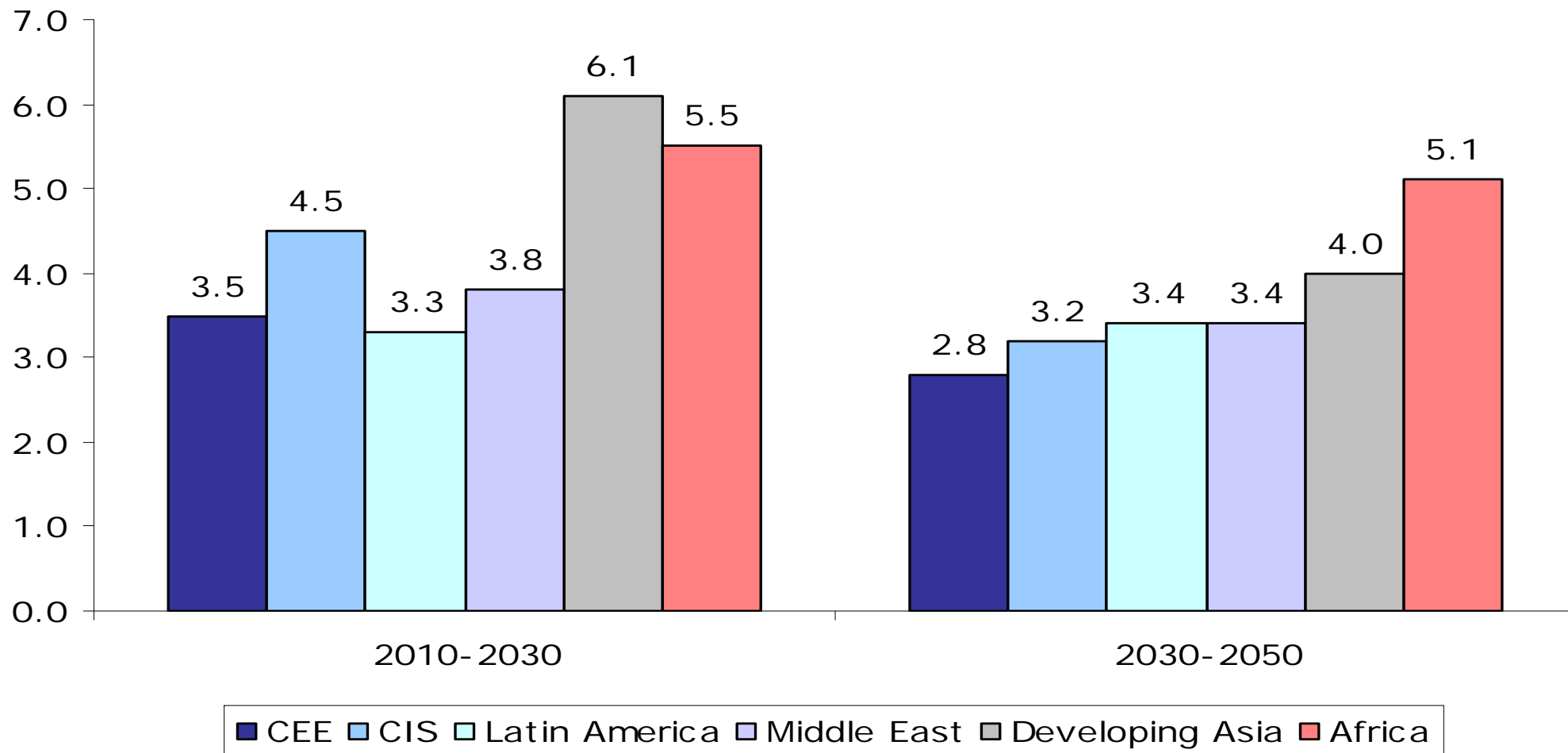
Advanced Economies - Average real GDP per capita growth (2010-2050)



Source: Citi (2011). GDP per capita measured in PPP USD

The Long Run Trends in Growth and Development in Global Economy

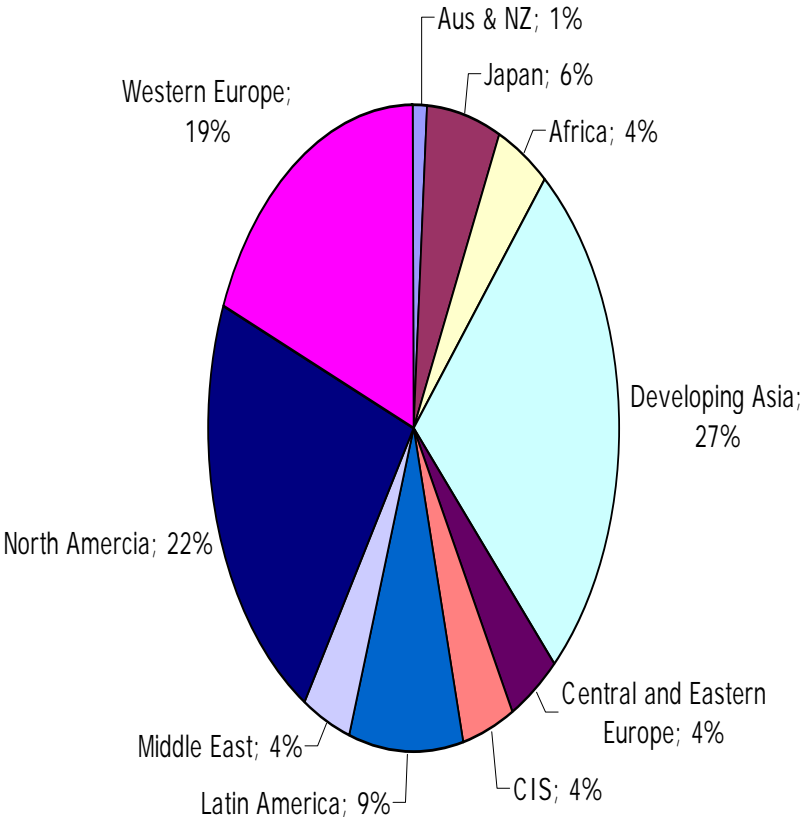
Emerging Economies - Average real GDP per capita growth (2010-2050)



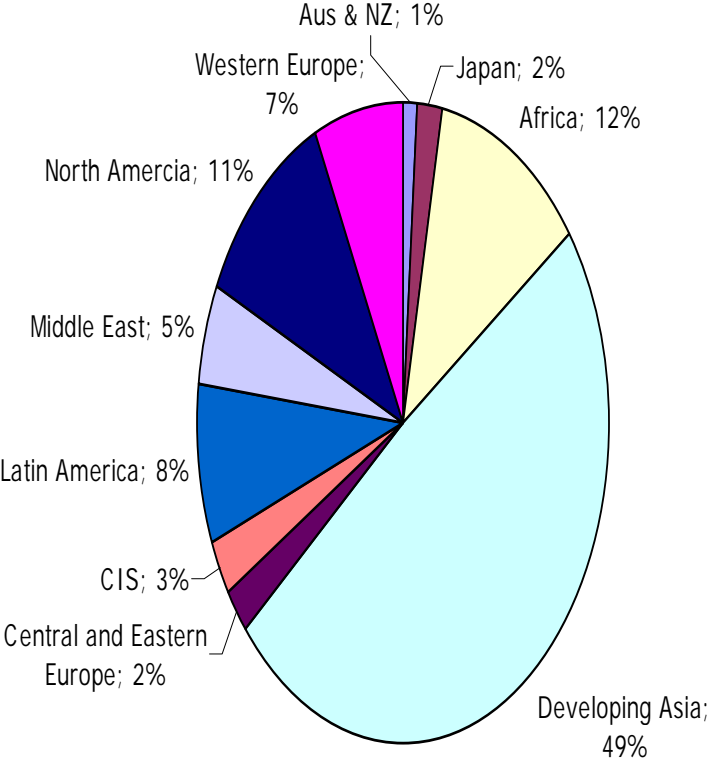
Source: Citi (2011). GDP per capita measured in PPP USD

The Long Run Trends in Growth and Development in Global Economy

Composition of World real GDP 2010



Composition of World real GDP 2050



Source: Citi (2011). GDP per capita measured in PPP USD

The Implications of Long Term Shifts in Global Investment and Saving

The Implications of Long Term Shifts in Global Investment and Saving (*)

- Mature economies will need to finance innovation, environment, infrastructure to exit the crisis, to reinforce their growth rates and competitiveness on global markets, to face the consequences of an ageing population and to ensure public debt sustainability (successful fiscal long-term consolidation requires both stricter fiscal policy and more economic growth).
- In developing countries, the income per capita catching up process requires huge investments in infrastructure (transportation, TLC, energy...). These countries will need to import more long term capital especially in the form of direct investment. Indeed their financial markets are insufficiently developed and they will be relying for quite a long time on “global” financial funding.

(*) The estimates contained in this part are taken from McKinsey Global Institute, *Farewell to cheap capital? The implications of long-term shifts in global investment and saving*, Dec. 2010. 17

The Implications of Long Term Shifts in Global Investment and Saving

>>>Therefore policy makers should understand that capital investment can lay the foundation for long-term economic growth, increasing both profits and living standards. Investment is needed to create the factories and equipment that make goods, the roads and rail that help move goods, and the laboratories and schools that foster innovation. Strong growth expectations will spur strong demand for investment.

But....

- In future economic growth saving will not increase enough, leaving a substantial gap between the willingness to save and the desire to invest.
- This difference between the demand for capital to invest and the supply of saving will likely increase real long-term interest rates.
- Given the scarcity of long term finance, the competition for capital will be intense.

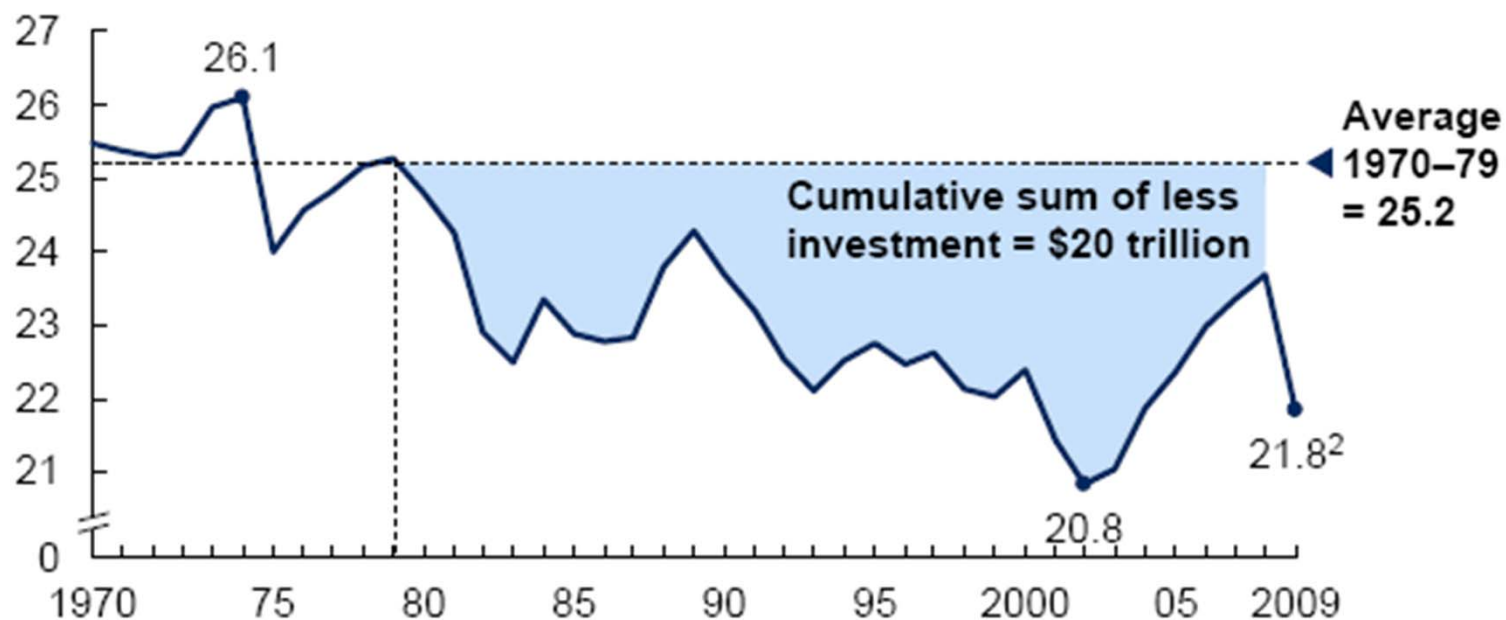
The Implications of Long Term Shifts in Global Investment and Saving

- The “saving glut” (see Bernanke 2005) really resulted from a falloff in the demand for capital, seen in the rate of global capital investment. Since the 1970s, global investment as a share of GDP fell from 26.1 percent to a recent low of 20.8 per cent in 2002.
- This falloff produced a reduction of the interest rates and a consequent decrease of the household’s saving rates and an increase of private and public debt especially in U.S.A.)

Global investment as a share of GDP has declined since 1970, with about \$20 trillion cumulative less investment over the period 1980-2008

Global nominal investment rate¹ by year, 1970–2009

% of GDP, nominal values



\$ trillion

Investment	0.8	2.7	5.1	7.1	14.0 ³
GDP	3.1	10.8	21.7	31.7	59.7 ³

1 Nominal gross capital formation over nominal GDP.

2 2009 data based on 53 countries.

3 2008 data (latest available figures for all countries).

SOURCE: McKinsey Global Economic Growth Database; World Development Indicators of the World Bank; Haver Analytics; McKinsey Global Institute

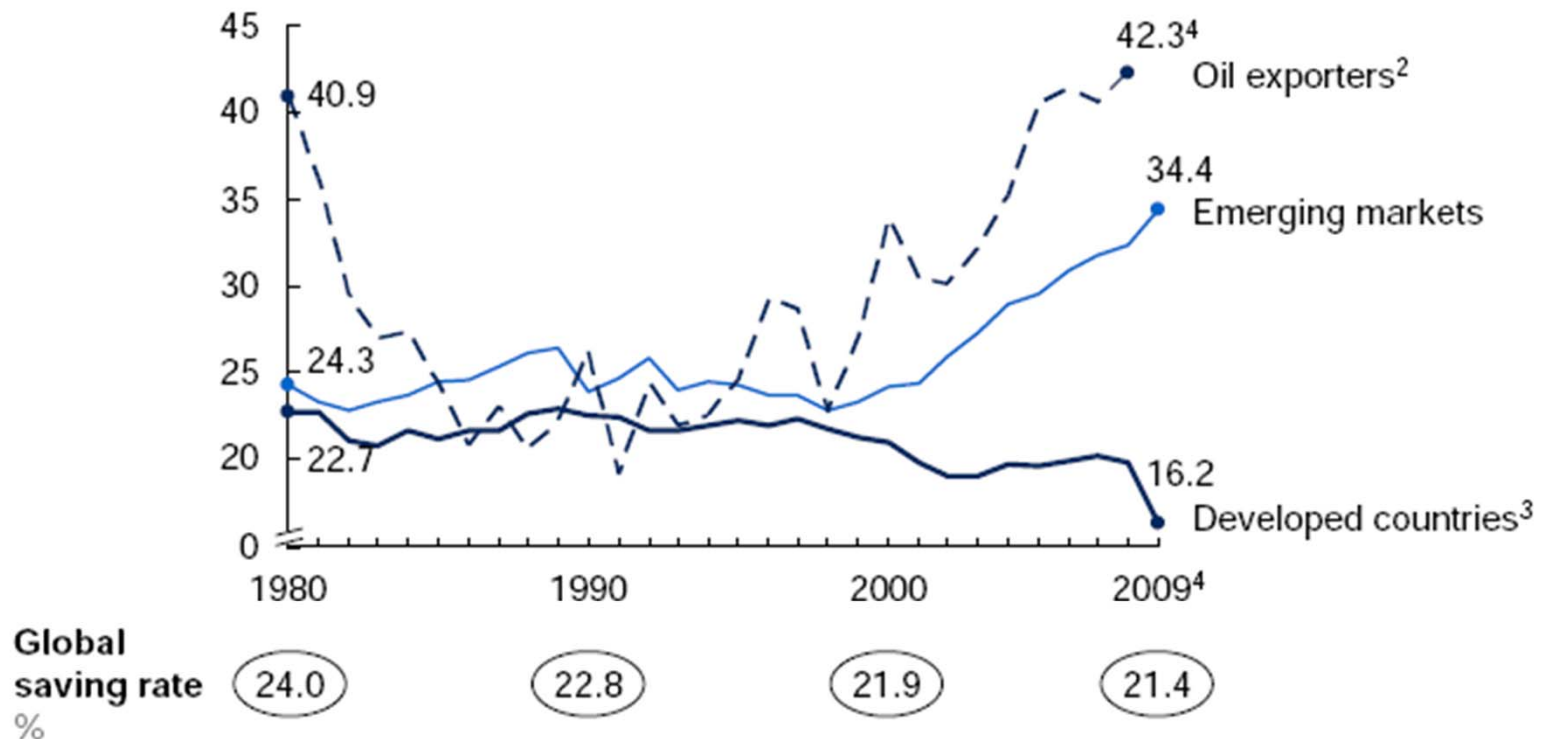
The Implications of Long Term Shifts in Global Investment and Saving

- Collectively, developed countries' gross national saving fell from 22.7 percent of their GDP in 1980 to 19.7 percent in 2008.
- The national saving rate fell more in the United States than in any other mature country, from 20.6 percent of GDP in 1980 to 12.7 percent in 2008. In contrast, gross national saving rates were relatively stable in France and Germany.
- Households account for most of the drop in national saving in many developed countries. Not only in the United States, but also in Australia, Canada, Italy, Japan, South Korea, and the United Kingdom, among others.

Decline of saving rates in developed countries

Saving rates in developed countries have declined over the past 30 years

Gross national saving rate¹
% of global GDP



1 Gross saving by households, corporate sector, and government sector for 111 countries.

2 Algeria, Angola, Azerbaijan, Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Saudi Arabia, United Arab Emirates, Venezuela.

3 Countries with average 2004–08 GDP per capita > \$14,500 (world average), excluding developed oil exporters.

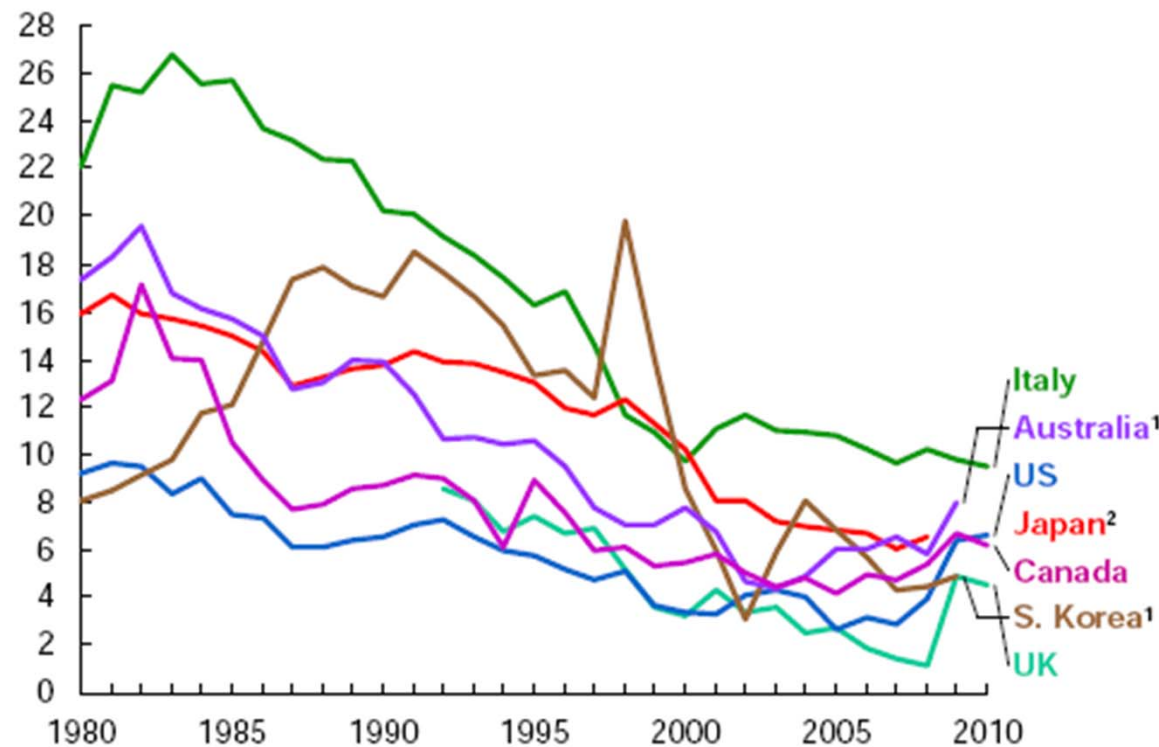
4 Estimates based on a sample of 52 countries (equivalent to about 85 percent of global GDP); data for oil exporters through 2008.

SOURCE: CEIC; Haver Analytics; McKinsey Global Economic Growth Database; World Development Indicators of the World Bank; McKinsey Global Institute

Decline of household saving rates in developed countries

Household saving rates in many developed countries have declined substantially

Household gross saving rates, 1980–2010
% of GDP



Change		
Percentage points		
1980–90	1990–2000	2000–10
Italy	-10.5	-0.2
Australia ¹	-6.2	0.2
US	-3.2	3.2
Japan ²	-3.5	-3.7
Canada	-3.3	0.8
S. Korea ¹	-8.1	-3.7
UK	n/a	1.3

¹ Data available through 2009.

² Data available through 2008.

³ Covers 1992–2010.

SOURCE: McKinsey Insights China; McKinsey Global Economic Growth Database; National sources; McKinsey Global Institute

The Implications of Long Term Shifts in Global Investment and Saving

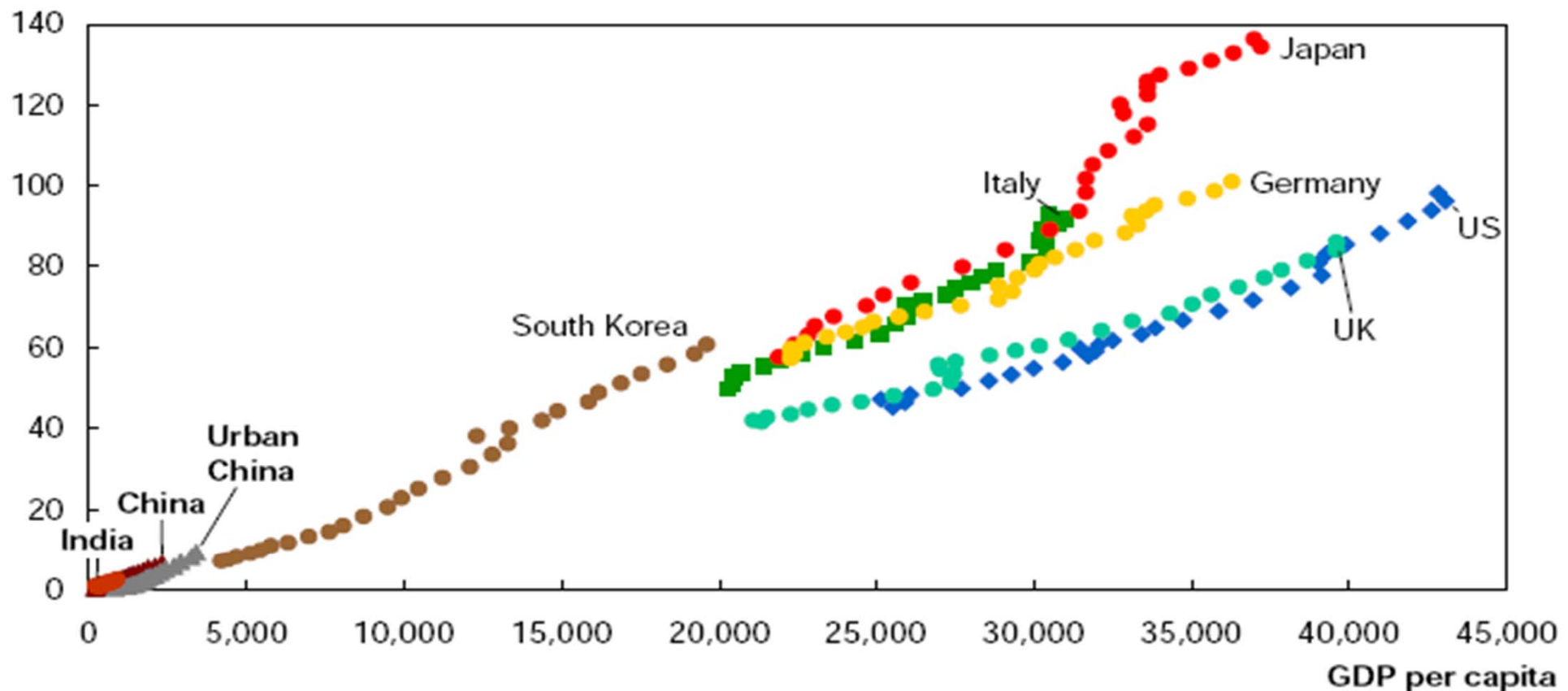
- Across Asia, Latin America, and Africa, the demand for new homes, transport systems, water systems, factories, offices, skyscrapers, hospitals, and shopping centers has already caused a jump in investment.
- China's investment rose to 43.9 percent of GDP in 2008, up from 35.0 percent in 1990. It rose even higher in 2009, to 49 percent of GDP, as the government increased public investment to stimulate the economy during the global recession.
- India's investment rate climbed to 39.5 percent of GDP in 2008, up from 23.5 percent in 2000.
- Considering the still very low levels of capital that these countries have accumulated, these high investment rates could continue for decades.

Capital stock per capita in China and India is very low compared with that of developed countries

Capital stock vs. GDP per capita by country and year, 1980–2008

\$ thousand, sample of selected countries, constant 2005 prices and exchange rates

Capital stock per capita¹



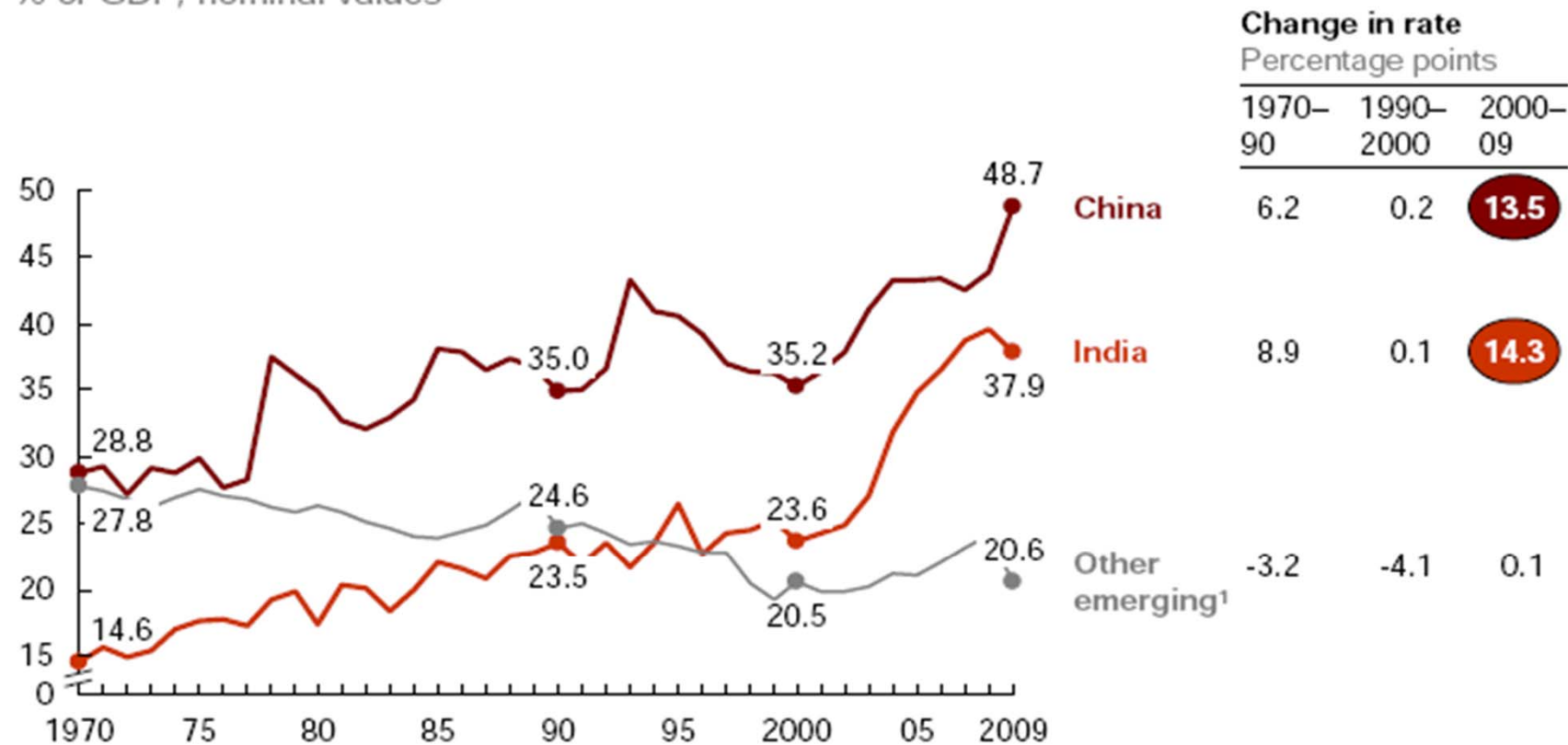
1 Stock of net fixed assets at the end of the year, assuming 5 percent depreciation rate for all the assets.

SOURCE: McKinsey Insights China; McKinsey Global Economic Growth Database; McKinsey Global Institute

The Implications of Long Term Shifts in Global Investment and Saving

Among emerging economies, investment rates in China and India have reached very high levels

Investment rate by country and year, 1970–2009
% of GDP, nominal values



¹ Countries with an average GDP per capita between 2004 and 2008 below \$14,500, excluding China and India; 2009 data based on partial samples of 36 countries (equivalent to about 85 percent of GDP from emerging economies).

SOURCE: CEIC; Haver Analytics; McKinsey Global Economic Growth Database; World Development Indicators of the World Bank; McKinsey Global Institute

The Implications of Long Term Shifts in Global Investment and Saving

> In most scenarios of future economic growth, recent estimates project that global investment demand could increase further, exceeding 25 percent of GDP by 2030.

➤ The real investment demand, according to Mc Kinsey estimates, will be of about \$4 trillion in infrastructure, \$5 trillion in residential real estate, and \$15 trillion in other productive assets in 2030.

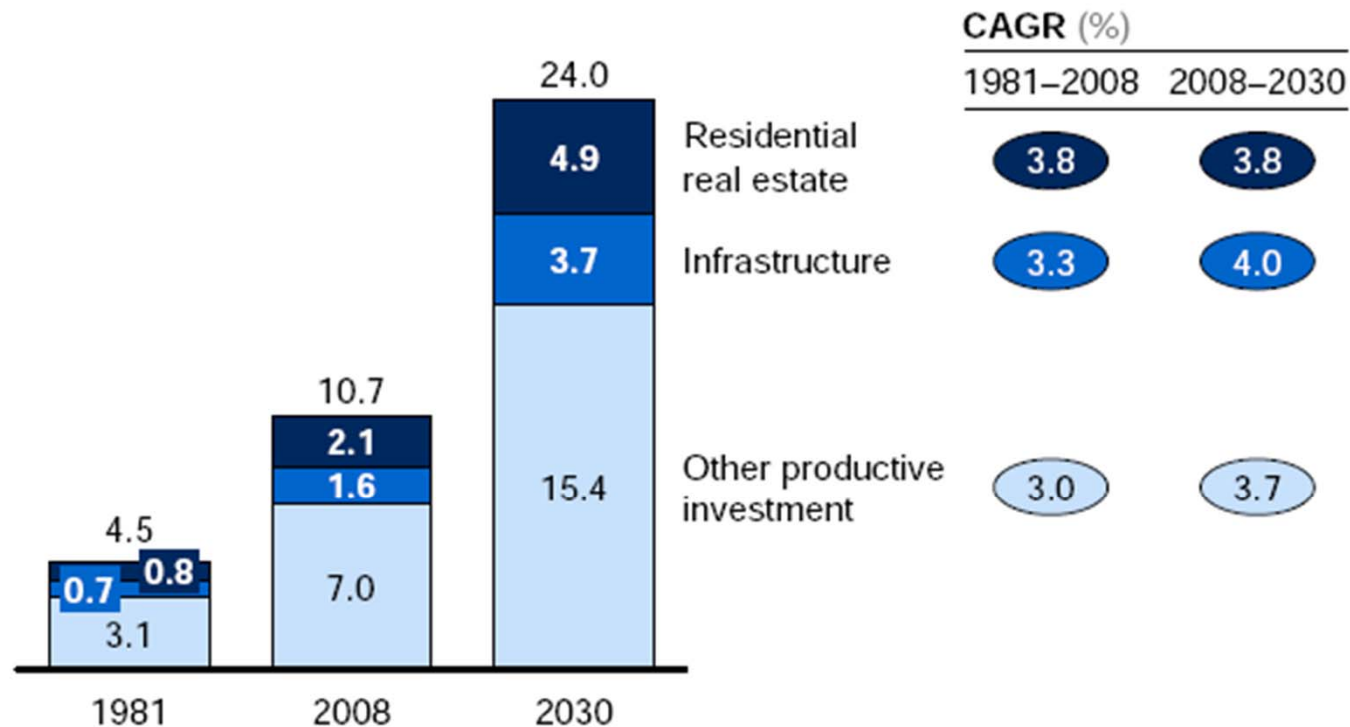
The Implications of Long Term Shifts in Global Investment and Saving

In 2030, global desired residential real estate investment is expected to reach about \$5 trillion per year, while desired infrastructure investment will reach about \$4 trillion

CONSENSUS GLOBAL GROWTH SCENARIO

Desired global investment¹ by industry

\$ trillion, selected years, constant 2005 prices and exchange rates



¹ Forecast assumes the price of capital goods increases at the same rate as other goods and assumes no change in inventory.

SOURCE: Economist Intelligence Unit; Global Insight; McKinsey Global Economic Growth Database; Oxford Economics; World Development Indicators of the World Bank; MGI Capital Supply & Demand Model; McKinsey Global Institute

The Implications of Long Term Shifts in Global Investment and Saving

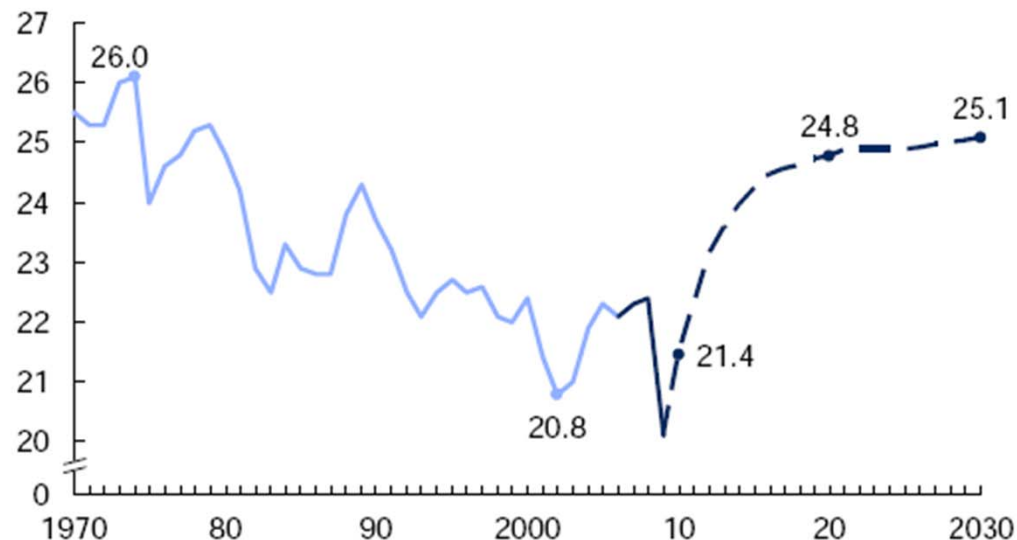
- As emerging markets continue to grow and urbanize, they are likely to drive the global investment rate higher. If the world economy recovers and current consensus GDP growth forecasts are met, Mc Kinsey calculate that the annual investment in real terms will rise from 22.4 percent of global GDP in 2008 to 25.1 percent in 2030

In the consensus global growth scenario, global investment demand could increase to about 25 percent of GDP by 2030

Global investment rate, 1970–2030
% of global GDP

CONSENSUS GLOBAL GROWTH SCENARIO

- Historical trend in nominal terms¹
- Historical trend in real terms²
- - - Projection in real terms^{2,3}



1 Based on actual prices and exchange rates of each year.

2 Shown in 2005 prices and exchange rates.

3 Forecast assumes the price of capital goods increases at the same rate as other goods and assumes no change in inventory.

SOURCE: Economist Intelligence Unit; Global Insight; McKinsey Global Economic Growth Database; Oxford Economics; MGI Capital Supply & Demand Model; World Bank's World Development Indicators; McKinsey Global Institute

Global Imbalances

Global imbalances

- In the last decades, the saving and investment behaviours in world economy is deeply changed (see next table).
- The current account (CA) imbalances are reflecting these gap between surplus countries (emerging and developing economies) and net debtor ones (mainly the advanced countries)
- In emerging economies savings surpluses are expected to be persistent in the coming years , while the absence of robust policy to support domestic saving in the advanced economies will contribute to maintain the presence of “global savings glut” at world level
- The presence of global imbalances is not necessarily undesirable: the rebalancing of global savings could lead to an different resources allocation which guarantees a robust growth in Advanced countries and potential gains in terms of revenues, technological transfers and innovation diffusion in the emerging ones.

Global imbalances

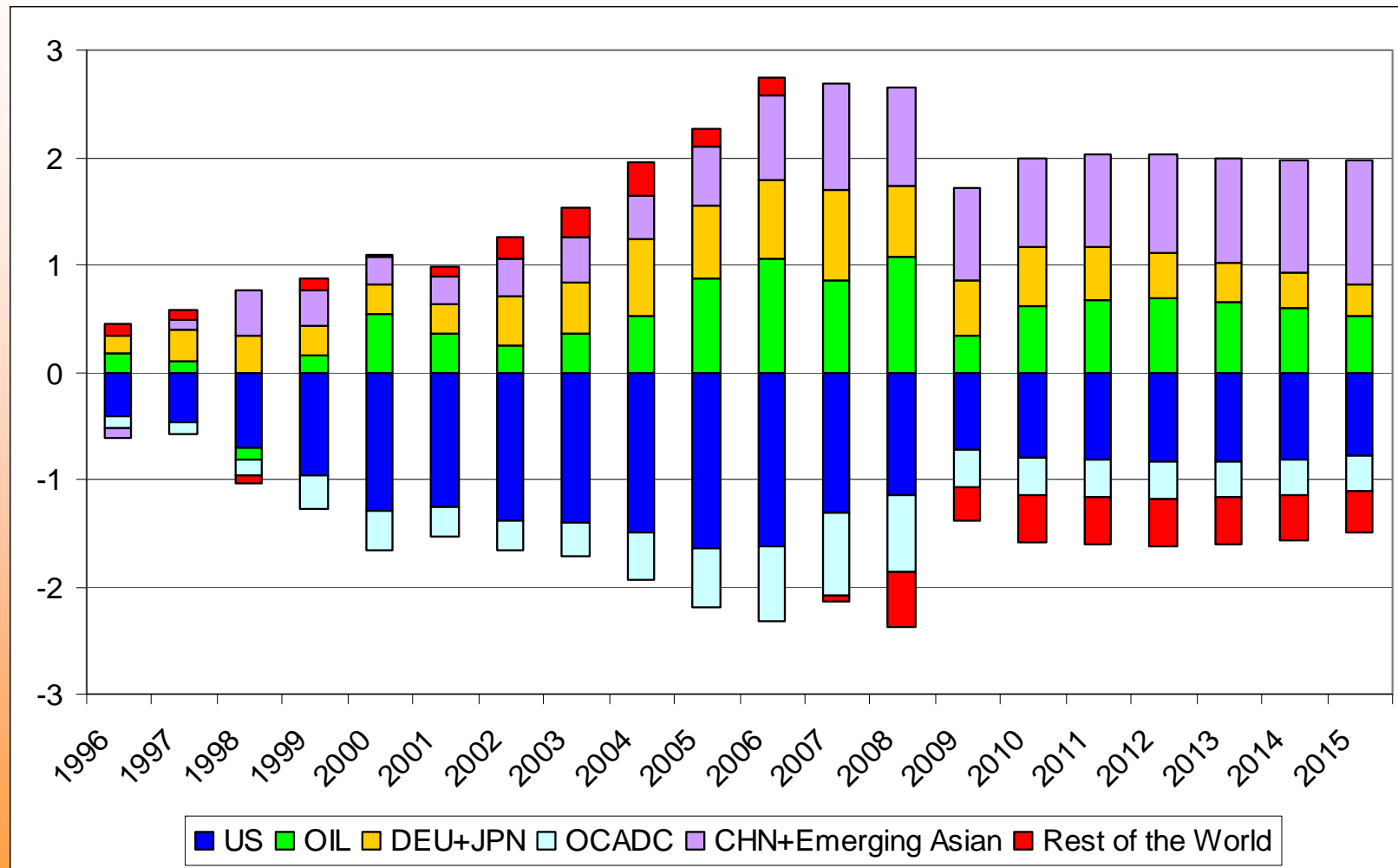
	<i>Average</i>							<i>Projections</i>		
	1996-03	2004	2005	2006	2007	2008	2009	2010	2011	2012-15
World										
Savings	21.8	22.1	22.8	24.1	24.3	24.1	21.8	23.0	23.8	25.1
Investment	22.1	22.1	22.5	23.2	23.7	23.8	21.6	22.6	23.3	24.6
Advanced Economies										
Savings	21.0	20.0	20.2	20.9	20.8	19.6	17.1	18.1	18.9	19.7
Investment	21.3	20.7	21.2	21.6	21.6	20.9	17.8	18.4	19.0	20.1
<i>Net lending</i>	-0.3	-0.7	-1.0	-0.7	-0.8	-1.3	-0.7	-0.3	-0.1	-0.4
United States										
Savings	17.0	14.5	15.1	16.2	14.3	12.4	10.9	12.4	13.8	15.5
Investment	19.6	19.7	20.3	20.5	19.6	18.0	14.8	15.9	16.5	18.5
<i>Net lending</i>	-2.6	-5.2	-5.2	-4.3	-5.3	-5.6	-3.9	-3.5	-2.7	-3.0
Euro Area										
Savings	21.3	21.9	21.6	22.6	23.4	22.0	19.0	19.6	19.9	20.1
Investment	20.8	20.4	20.8	21.7	22.3	21.9	18.9	18.8	18.9	19.4
<i>Net lending</i>	0.5	1.5	0.8	0.9	1.1	0.1	0.1	0.8	1.0	0.7
Emerging Economies										
Savings	25.0	29.6	31.1	33.0	33.3	33.8	32.1	32.5	32.9	33.8
Investment	25.0	27.3	26.9	27.9	29.2	30.3	30.1	31.0	31.5	32.0
<i>Net Lending</i>	<i>0.0</i>	<i>2.3</i>	<i>4.2</i>	<i>5.1</i>	<i>4.1</i>	<i>3.5</i>	<i>2.0</i>	<i>1.5</i>	<i>1.4</i>	<i>1.8</i>
Developing Asia										
Savings	32.9	38.4	40.2	42.9	43.8	44.2	45.0	44.6	44.7	45.4
Investment	31.5	35.8	36.1	36.9	36.9	38.4	40.9	41.6	41.7	41.5
<i>Net Lending</i>	<i>1.4</i>	<i>2.6</i>	<i>4.1</i>	<i>6.0</i>	<i>6.9</i>	<i>5.8</i>	<i>4.1</i>	<i>3.0</i>	<i>3.0</i>	<i>3.9</i>

Source: IMF 2010

The determinants of Global imbalances

- Fiscal balance: the impact of public deficit on CA balance may depend also on the composition of public expenditures. Precautionary savings in both advanced and developing countries can decrease with higher social spending (insurance effect). On the other hand, lower level of social expenditures (health, pensions, social security, etc.) can lead to an increasing volume of household saving.
- Demographic dynamics: according to life-cycle theory, countries with higher portion of elder people experience larger current account deficits.
- Quality of political institutions: the private saving is shifted from domestic to more developed financial markets to ensure a safety channel for investment.
- Growth rate: international capital can be attracted by expectations of high returns in economy showing high level of productivity growth.
- Relative importance of oil production: Oil exporters can show high surpluses in period of increasing oil prices.

Global Imbalances (% of world GDP)



Data source IMF, 2010.

The Evolution of Global Imbalances

- In the mid-1990s the dimension of global current account were on the whole unexceptional, in particular, even if the current account deficit of US was quite large in absolute terms, its weight, expressed as percentage of GDP, was about 1.5%.
- Nevertheless, after the Asian Crisis (1997), CA surpluses were favoured by weak currencies in developing Asian countries and Newly Industrialized Countries and by strong economic growth in China.
- Moreover, the increase in commodity prices after the crisis recessionary period generated surplus in oil-exporter countries.
- At the same time, widening deficits arose from many advanced economies.

The Evolution of Global Imbalances

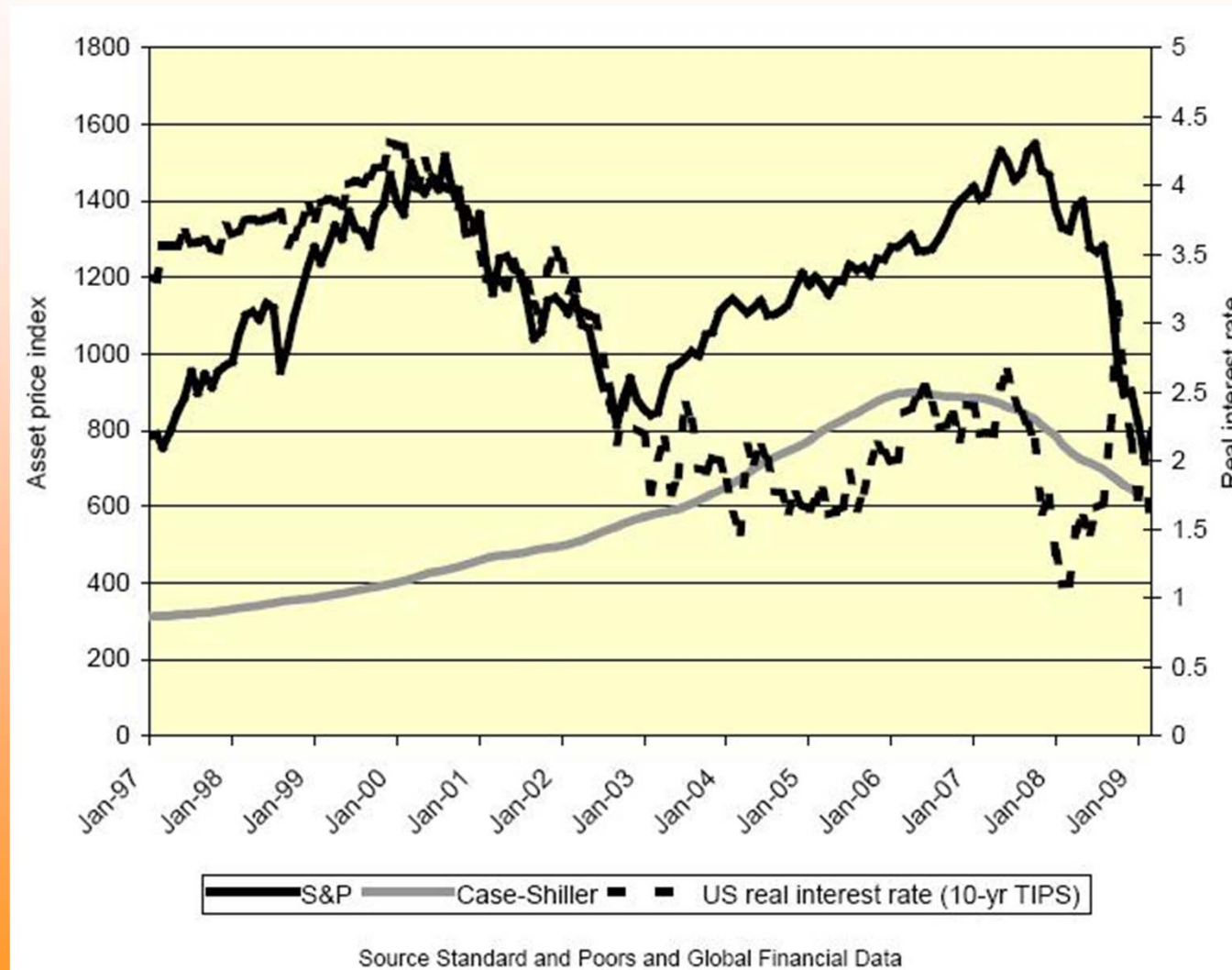
- The surpluses of Asian countries proved to be persistent after the crisis period because private saving rate reached the pre-crisis level while the investments declined sharply.
- CA surpluses in these countries were supported also by exchange rate policies: rates at competitive levels with respect to pre-crisis period (export-led strategies and accumulation of international reserves as buffers against future financial crisis).
- After 2000, the strong growth in China: the addition of an excess of savings in the global capital markets.
- Starting from 2005, surpluses of China and oil exporting country have become one of the major counterpart of the global deficits.

The Evolution of Global Imbalances

- In the first 2000s, expectations of future productivity growth in US attracted capital from emerging market savers, which flowed in US causing an increase in stock prices and a appreciation of US-\$.
- After 2004, under a generally accommodative monetary policy in advanced countries (especially in US), low interest rates, and a strong emerging countries growth (China), the overall deficit rose for advanced countries.
- In addition, the global demand for excess savings was also stimulated by the growing deficits in Eastern Europe countries.

The Evolution of Global Imbalances

Nominal Us-asset prices and Real Interest Rate



Global Imbalances and Financial Crisis

- International imbalances and world crisis may represent the “two sides of the same coin” (Bini Smaghi, 2008).
- The strong global disequilibrium in the saving behaviours among countries as well as unrealistic expectations of productivity growth in US, have contributed to strengthen the bubbles in asset and housing prices
- The lack of coordination at international level and the following economic policy decisions have definitively concurred in worsening the financial and global stability
- Accommodative monetary policies of the most important international players did not favour the adjustments process needed to re-equilibrate these imbalances.
- Well-known distortions in international capital markets have generated multiplicative effects.

Global imbalances

➤ After the financial crisis

- ✓ Global imbalances nearly halved during 2009-10 as a result of the crisis, with a marked decline in the United States' deficit and in the surplus of the oil-exporting countries.
- ✓ Fiscal consolidation tends to follow current account reversals on the basis of previous experience and will be much needed in some countries as a result of a massive build-up of government debt related to the global crisis.
- ✓ The current high debt and/or budget deficits of most advanced countries can lead to a reduction over the next years of the supply of government bonds of these countries.
- ✓ Nevertheless, only small efforts are devoted in reducing the structural driving forces of global disequilibrium.
- ✓ Shared actions to favour a real financial sector development in emerging markets must be considered.
- ✓ On the other hand, a new allocation of international savings could be desirable if the reduction of US assets importance in international portfolio is associated with a increasing role played by Europe financial instruments.

Global imbalances

- After the financial crisis
 - ✓ Thus, this process could favor a rebalancing of capital flows from surplus to deficit countries towards corporate bonds, equity and/or foreign direct investment.
 - ✓ Of course, this shift in the international capital allocation can take place only if the return-risk profile of new and different instruments of public or public-private securities will fit the preferences of long-term investors and international savers.
 - ✓ This is the challenge that infrastructure finance will have to face in the coming decades.

The Role of Innovation in Economic Development and Growth

Knowledge, Innovation and R&D

- Part of the challenges of XXI Century development depends on scientific discoveries and technological innovation as a fundamental driver of sustainable global economic growth.
- A fundamental part of technological innovation is the activity of Research and Development (R&D).
- Activity on R&D depends on – direct and indirect - public intervention and policies and on private initiatives and the market.

Knowledge, Innovation and R&D

- What determines in general the propensity to invest in R&D? (*)
- There is in market economy a general under-propensity to invest in R&D.
- This is because there is a fundamental difference between public, social rate of return and private rate of return of the activity of search.
- It has been shown, by large empirical evidence, that if knowledge is not appropriated, then it becomes a sort of public good, this increases its potential diffusion and then its potential output growth.
- This hints at the need of various forms of public intervention in the innovation activity.

(*) see G. Dosi, *On the determinants of investment in innovative activities in business firm*, LTIs Venice Forum, *Towards a Sustainable Future: The Role of Long-Term Investment*, 28 and 29 October 2010.

Knowledge, Innovation and R&D

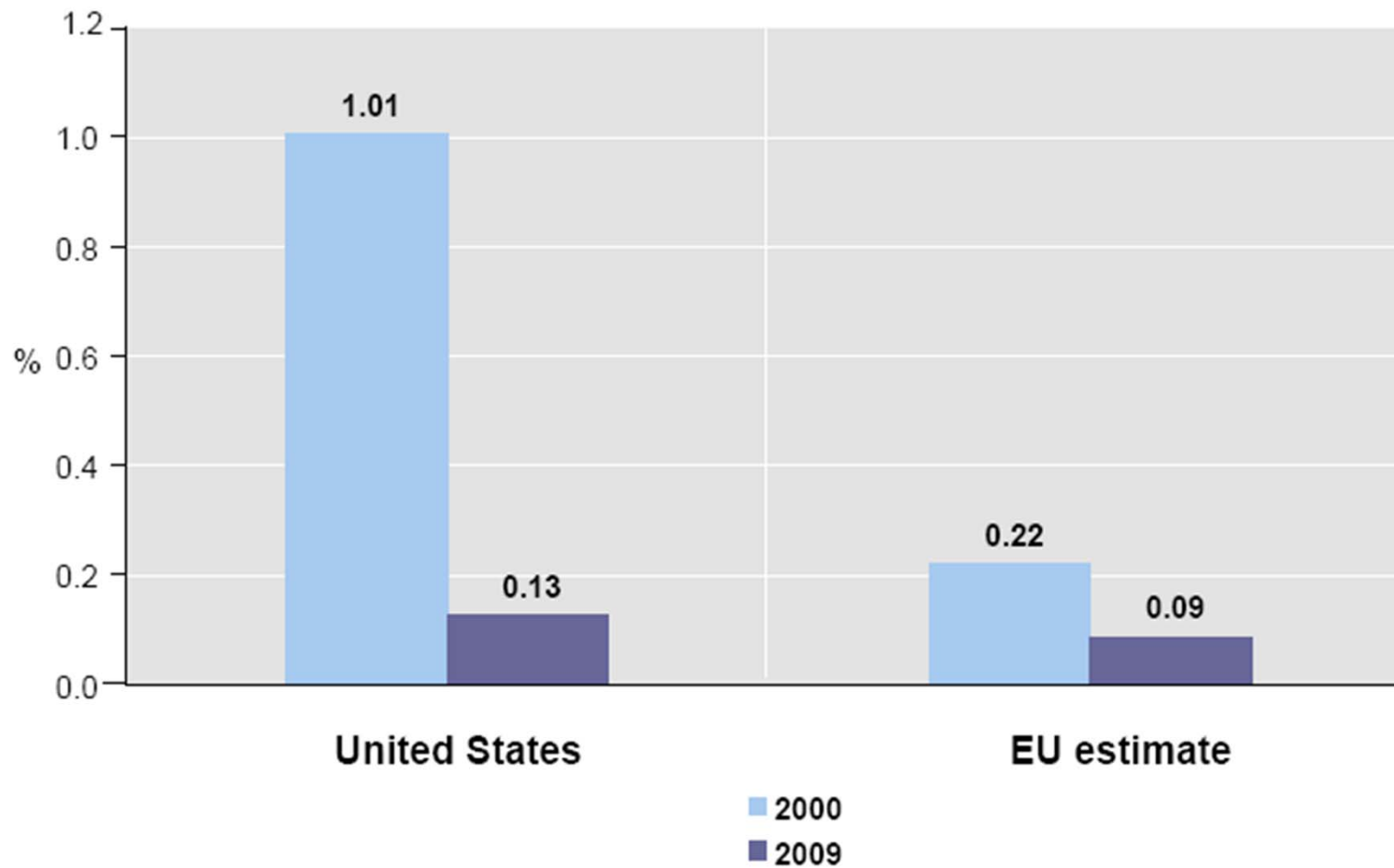
- What determines the propensity to invest in R&D by private profit-motivated actors?
 - ✓ First, the fundamental driver are sector-specific technological opportunities – search is higher in ICT than in textile, because ICT have a much richer pool of potential opportunities of innovation.
 - ✓ Second, it depends on sector specific ways of doing search; in some sectors firms do not do R&D off the line, but do learning by doing or by using.
 - ✓ Third, the role of appropriability as determinant of the propensity to innovate (and in particular International Property Rights) should not be overstated. There is evidence that in increasing the scope and tightness of propriety right increase the rate of innovation. On the contrary, the increase of number of claims on components of complex technology might actually hinder the project of innovation.

Knowledge, Innovation and R&D

- What can the public do to increase the general problem if underinvestment in search?
 - ✓ First, public support for high tech start ups (around 60% of venture capital in the US comes directly from federal money).
 - ✓ Second, subsidies and tax rebase on private R&D. They tent to be, however, quite expensive. More effective have been in the past more discretionally policies – such as US implicit industrial policies associated with military and space programs or Japan implicitly discretionary industrial sector based policies.
 - ✓ Third, a fundamental public role in the generation of new knowledge comes from universities and public laboratories.
- The idea is that we should prefer a society that publicly generates knowledge that is freely available under the condition of no appropriation.

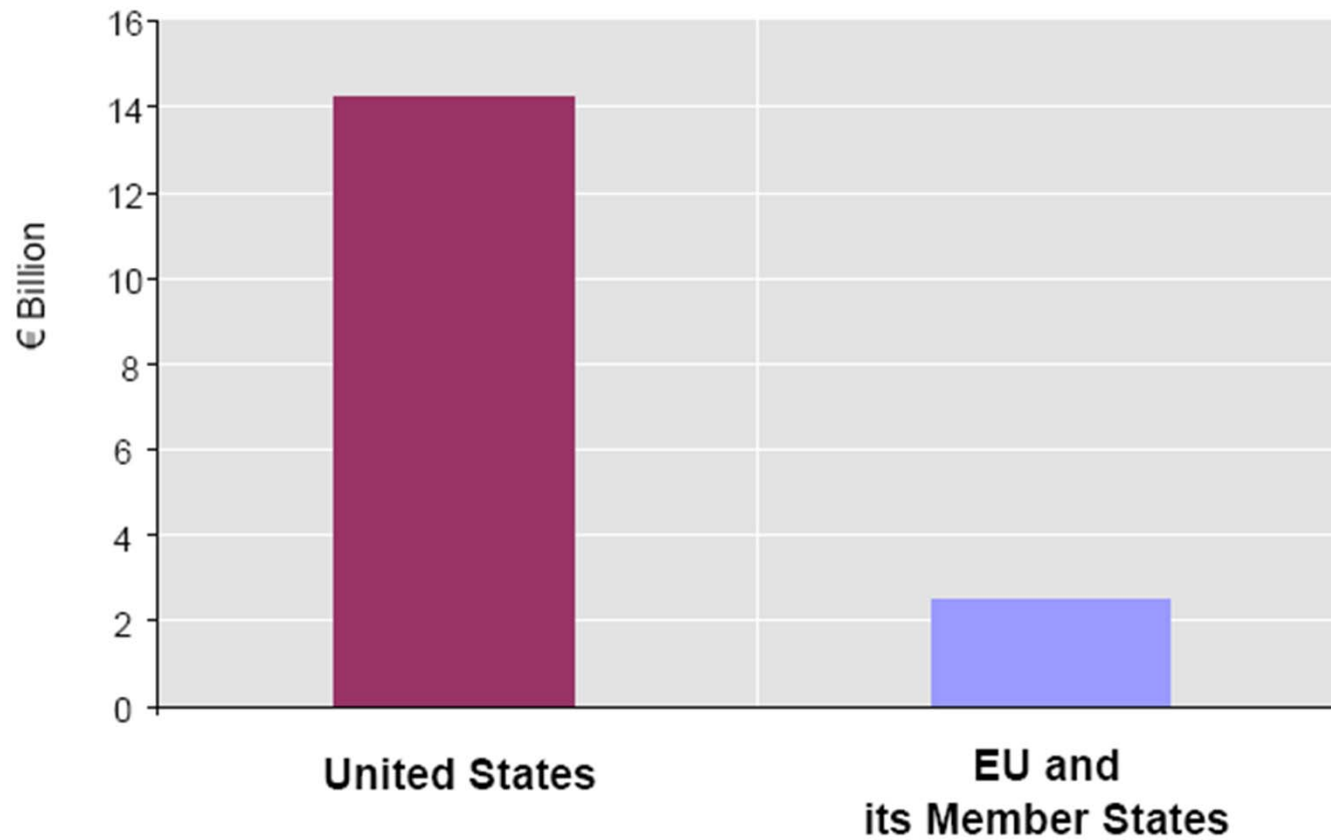
Knowledge, Innovation and R&D

Venture capital in % of GDP, 2000 and 2009



Knowledge, Innovation and R&D

R&D procurement expenditures (excluding defence, in € billion in 2007)



Knowledge, Innovation and R&D

- The challenge is to have a sort of innovation-friendly Keynesianism that focuses with a similar massive investment resources, that you had in space and military programs in the past, on huge, ambitious investment programs in civil sector that fulfil both Keynesian purpose and technology-focusing purpose.
- Among the priorities sectors we mention environment, biotechnologies, infrastructures, smart networks, etc.

The European Institutional Framework

Financing innovation in Europe: The Lisbon Agenda

- Strong institutions and policies are at the centre of EU long term vision.
- At the top of the “Lisbon Agenda” (2000) is the establishment of a competitive, innovative and knowledge-based society, capable of sustainable growth, creating more and better jobs and greater social cohesion.
- With the Economic and Financial crisis, the ambitious objective of the Lisbon Agenda has been partly overtaken by the urge of recovery plans for financial sector.
- Especially now, it is important to stimulate long-term investment in knowledge with the aim to create the conditions for a sustainable and durable growth with potential benefits for future generations.

The recent European Institutional Framework

- Innovation in products, services, business and social processes and models has been placed at the heart of the “Europe 2020 Strategy”. Innovation is a key driver of social and economic prosperity and of environmental sustainability.
- According to recent estimates, achieving the target of spending 3% of EU GDP on R&D by 2020 could create 3.7 million jobs and increase annual GDP by close to €800 billion by 2025.
- The new European Commission Communication (546/2010) advocates a strategic and integrated approach to research and innovation. It aims to improve conditions and access to finance for research and innovation, to ensure that innovative ideas can be turned into products and services that create growth and jobs.

The recent European Institutional Framework

➤ At its meeting on 4 February 2011, the European Council concluded that:

- ✓ Private investment in innovative products and services should be encouraged, in particular by improving framework conditions.
- ✓ It's fundamental the creation of the Digital Single Market by 2015
- ✓ There is the need to lift remaining legal and administrative obstacles to the cross-border operation of venture capital.
- ✓ In conducting fiscal consolidation, Member States should give priority to sustainable growth-friendly expenditure in areas such as research and innovation, education and energy

• On February 2011, the European Commission launched a public debate on the key issues for future EU research and innovation funding programmes for the next Multi-annual Financial Framework (MFF)

[the Green paper, *Towards a Common Strategic Framework for EU Research and Innovation funding*]

European Finance for Innovation and Growth

Financing Innovation in Europe

- The EU has set up a number of programs and financial instruments for Innovation and High Growth SMEs
- The CIP (Competitiveness and Innovation Framework Programme). The European Commission has mandated the European Investment Fund (EIF, part of the EIB Group) to manage a EUR 1.1bn facility within the CIP. It will be split between venture capital and guarantees.
- The Risk-Sharing Finance Facility (RSFF) was the first “European scale programme” to use debt-based finance to complement the more traditional financing means such as grants or equity as provided by the European Investment Fund (EIF).
- The Structured Finance Facility (SFF) of EIB was established for providing additional support to large projects through instruments with a risk profile higher than that usually assumed by the Bank. The focus is on high priority sectors such as Trans European (infrastructure) Networks (TENs), the Innovation 2010 Initiative (“i2i”), energy and cooperation in partner countries.

Financing Innovation in Europe

➤ **The need for an European Innovation and Technology Growth Fund**

- ✓ The success of the RSFF need to be complemented now by the creation of another new European instrument on the equity side. The Ecofin should call the Commission and the EIB to open up again the Marguerite WG, to study the feasibility of designing another EU endorsed Equity Fund for Innovation and Technology Growth (ETGF).
- ✓ Innovative European Growth Mid-Caps form a large and crucial segment for the future of European economy and competitiveness. They are characterized by a unique asset class in terms of risk/return financial as well as industrial and economic perspective (potential platform for growth to consolidate technology-enabled industries; large reservoir of qualified job creation across Europe; and significant pan-European GDP increase).
- ✓ The ETGF would invest in high potential driven growth companies. At least 50% of the fund would be in RSFF eligible investments. Open to value creation in sector such as clean and renewable technologies, ICT and MedTech. The sponsors may be the same core sponsor of the Marguerite Fund. And as Marguerite it should also be open to other EU-27 long term financial investors.

Financing Innovation in Europe: the role of EIB

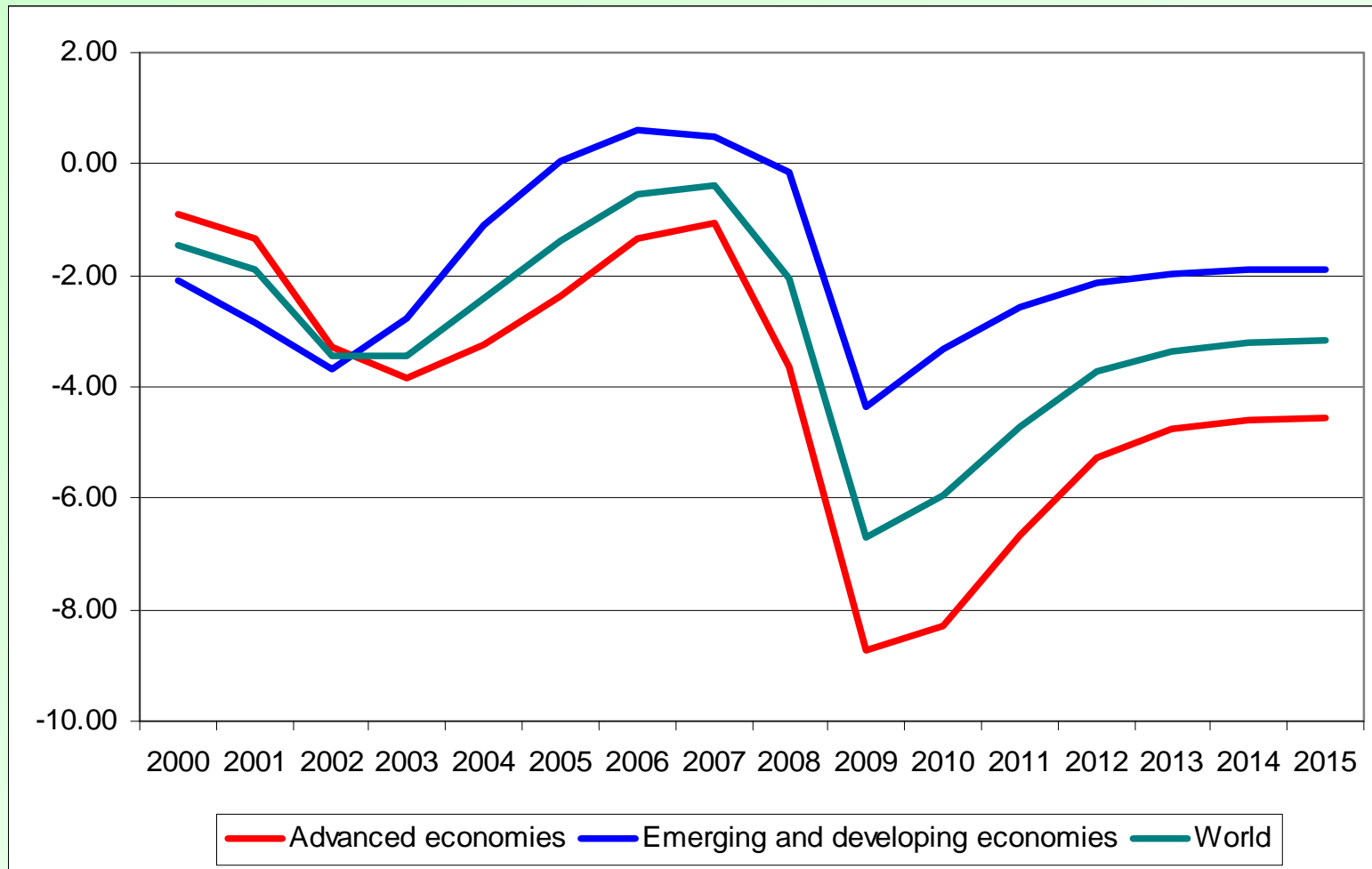
- In education and training, the EIB wants to concentrate on improving the quality of education on offer, notably through the implementation of the lifelong learning concept.
- In the agenda for research and development the EIB support will go to R&D in IT as a crucial enabling technology for implementing the knowledge-based economy and to emerging and new technologies.
- Both emerging technologies and new technologies in mature sectors are important. Emerging technologies having a significant impact on the economy are for example biotechnology and nanotechnology. New technologies in sectors such as steel, chemicals, agro-food have the benefit of incremental innovation and productivity gains. Environmental technologies reflect the importance attached to energy efficiency and climate change in transport, manufacturing and process industries, power generation and renewable such as hydrogen, solar, wind, and second generation bio-fuels.

The Role of Long Term Investment in the Development and Growth of Global Economy in the XXI Century

The role of long term investments

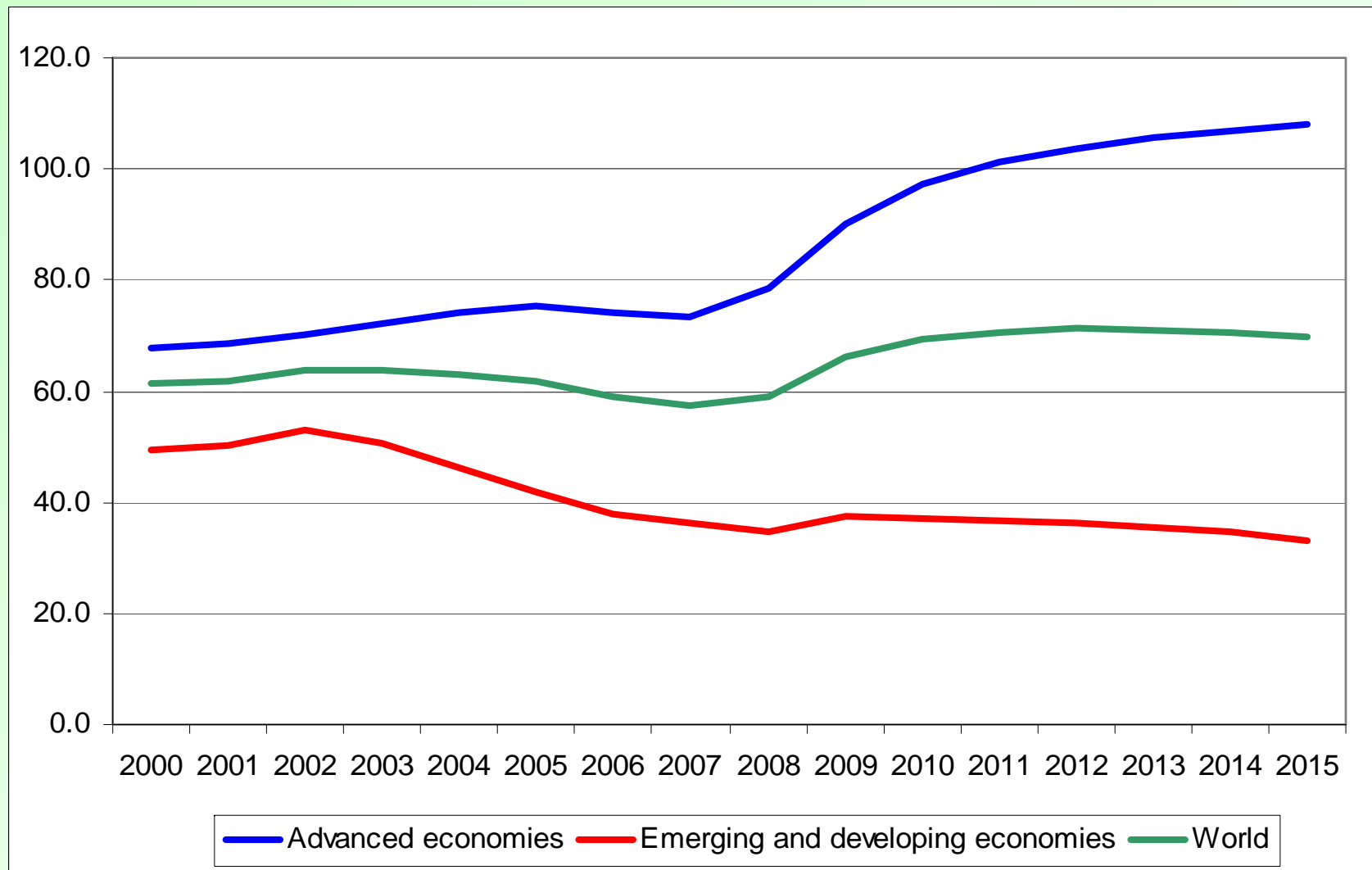
- How to finance growth and innovation if there is no public money?
- After the 2008 crisis, in fact, public finance of advanced economies is under stress.
- The level of public debt/GDP ratio of G-7 countries soared to post-war levels.
- For the "advanced economies" within the G-20, this ratio peaked to 102% in 2009 and is expected to reach 122% in 2014.
- According to IMF, 10 to 15 years of fiscal adjustment are needed to return to pre-crisis levels of public debt.

Fiscal balance (% of GDP)



Data source IMF, 2010.

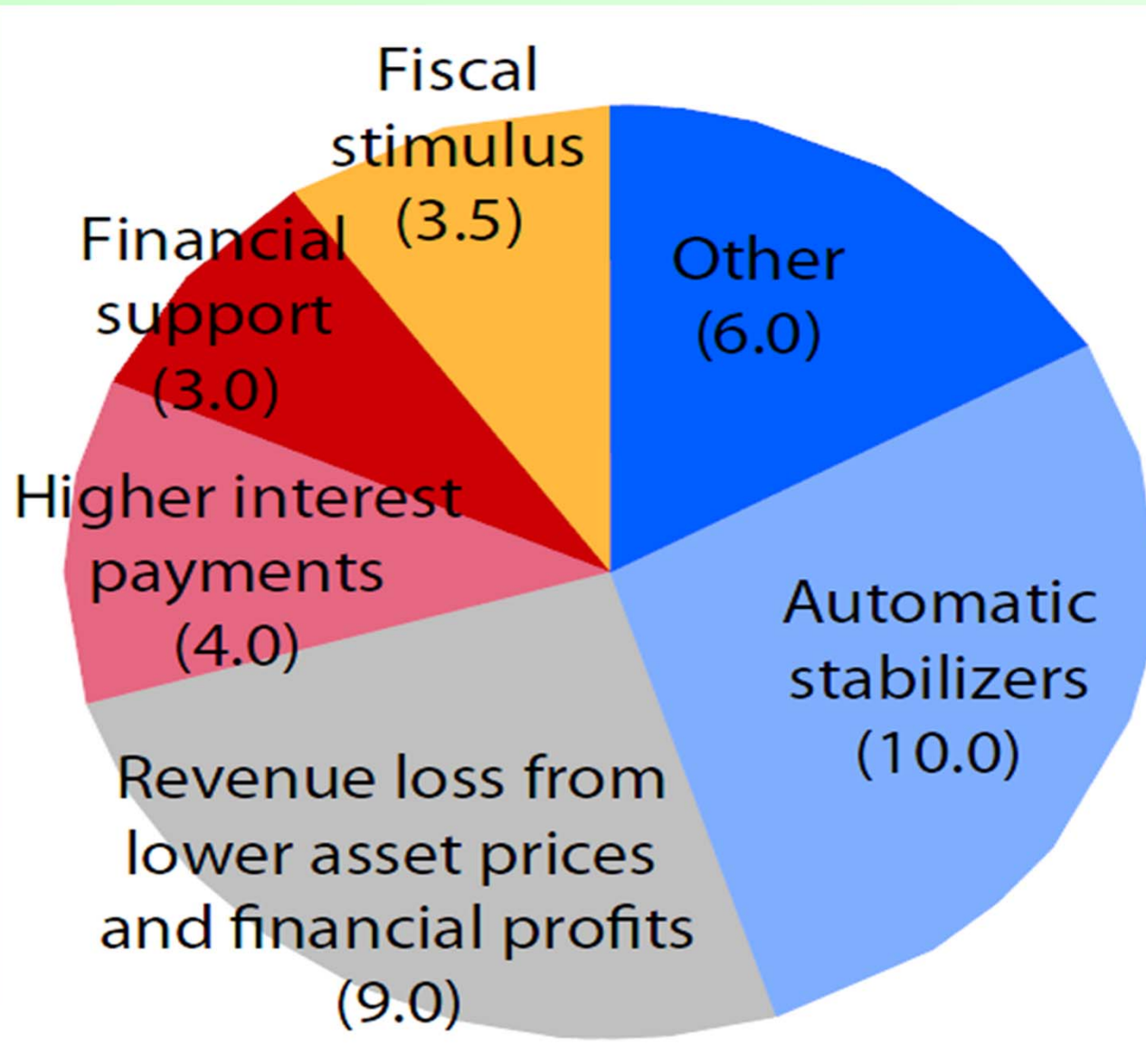
Public debt (% of GDP)



The role of long term investments

- Public budgets are drained by government interventions to save financial institutions and other sectors hit by the crisis.
- Revenue losses, automatic stabilizers, and higher interest payments constitute the main part of government debt increase.
- Most advanced economies need to lower their deficits and their debt substantially.

Decomposition of Government Debt Increase (2007-2014)



The role of long term investments

- In the coming years, the debt reduction will have to face the negative effects of low growth rates and the increasing costs of the welfare state.
- In addition, the economy should support a growing population of ageing citizens.
- The problem is therefore “structural” not just cyclical.
- Restoring sustainable debt over the medium term will be indeed a very challenging task.

The role of long term investments

- International capital flows can match the long-term exit-strategy policy mainly based on strong investments in infrastructure and innovation (see for instance the Obama's recovery plan and the EU "2020" strategy).
- In Europe, we expect that the demand for infrastructure, energy and innovation will grow rapidly.
- For instance, the overall cost of the Trans-European Transport Network (TEN-T) still to be financed has been assessed at around 500 millions euro by 2020.
- The overall cost investments in Energy and Climate Change in EU is estimated in over 2,500 billion by 2020. It includes energy infrastructure, energy generation, renewable energies, and environment systems and infrastructures.

The role of long term investments

- Investing in R&D and infrastructure requires a long-term perspective, due to the time horizon of projects realization.
- As far as they are productivity-enhancing, large scale R&D and fixed capital investment contribute to long-run economic growth.
- At the same time, they express their potential returns only after several years.
- These kind of investment are mainly related to the improvement of the business and consumer environment, by modernising the interconnection framework, by lowering the transport costs, and by supporting the green economy, among other things.

The role of long term investments

- Long-term investment may also induce sustainable growth, employment and global stability.
- It generates stable cash flows over longer periods and financially sustainable long-term risk-adjusted rates of return.
- In developed financial markets, long-term investment is usually countercyclical and thereby mitigates volatility, stabilizes the economy, and sustains growth.
- In presence of credit constraints, however, long-term investment can face a higher liquidity risk and weakens, sometimes, the solidity of the industrial and banking sectors.

The role of long term investments

- Long-term investors are characterized by a low reliance on short-term market liquidity, due to stable resources, often made of regulated or guaranteed deposits, long-term savings products or long-term borrowing.
- They usually have a robust capital base, which relies mainly on reserve accumulation and enables them to absorb short-term fluctuations in financial markets (drawing on reserves in bad years and feeding them in good years).
- Long-term investors include major institutions financing economic development (such as EIB and KfW), sovereign wealth funds, pension funds, public retirement funds, insurance companies, etc.

The role of long term investments

- Long-term investors may play a key role in sustaining and attracting capitals for strategic investments, looking at a new economic model oriented to “commons” rather than “consumer goods”.
- Long-term investors do not generally seek speculative IRR or strong capital gains, due to the clear social responsibility that they usually have in their mission.
- They are willing and capable to keep in their books long-term assets and liabilities.
- They are able to spread risks between generations.

The role of long term investments

➤ The size of long-term investors

- ✓ According to recent estimates by the French Council of Economic Analysis (2010), the weight of the potential long-term investors is equal to about 60% of world GDP and more than 40% of the stock markets.

Size of long-term investors (end of 2009)*

Pension Funds	29.5
Insurance Companies	20.0
Sovereign Wealth Funds and Public Savings Banks	3.8
Total	53.3

*Trillion dollars. Source: Conseil d'Analyse Économique, Investissements et investisseurs de long terme, 2010

The role of long term investments

- On April 2009, the Long-Term Investors Club (LTIC) was established by
 - ✓ Caisse des Dépôts (CDC)
 - ✓ Cassa Depositi e Prestiti (CDP)
 - ✓ European Investment Bank (EIB)
 - ✓ KfW Bankengruppe

- On June 2009, new members joined the Club:
 - China Development Bank (CDB)
 - Caisse de Dépôt et de Gestion (CDG) – Morocco
 - Mubadala Development Company – United Arab Emirates
 - Omers – Canada
 - Vneshekonombank (VEB) – Russia

The role of long term investments

New long-term financial instruments

- After the financial crisis, new and feasible ways to channel major capital flows from the global market to long-term infrastructural initiatives should be sought.
- These initiatives should have strong 'positive externalities' for the environment, the energy sector, the transport sector, R&D, human capital, TLC, and the economic system as a whole, while using the least amount of public resources possible.
- Public and private sectors must work together to build new forms of complementarities.
- New rules and incentives for PPPs and PFIs and new financial instruments should be introduced.

The role of long term investments

New long-term financial instruments

- New architectures for equity funds, project bonds, debt instruments and, more generally, credit-enhancing initiatives must be considered.
- A new regulatory framework - more friendly with long-term investment or, at least, not discriminatory against it - is needed.
- This should involve accounting standards, prudential principles, and corporate governance, as well as 'ad hoc' systems of fiscal incentives

The role of long term investments

New long-term financial instruments

- Regarding the European new financial instruments, the first examples are the 2020 European Fund for Energy, Climate Change and Infrastructure ('Marguerite'), set up in 2009, and the Inframed Fund
- 'Marguerite' is a pan-European equity fund for investment in energy, climate change and infrastructure, which core founders are EIB, KfW, CDC, CDP, ICO, PKO and the EU Commission.
- The expected total fund size is EUR 1.5 billion. It is estimated that over the next few years, the Fund will mobilize investments in the range of 30-50 billions euro.

The role of long term investments

New long-term financial instruments

- 'Marguerite' will invest in 'greenfield' projects in energy and infrastructure sectors, such as TEN-T, TEN-E and particularly interconnectors, gas storage and LNGs, renewable energies, distribution and hybrid transport systems, etc.
- These sectors/projects will have solid IRR and satisfactory Economic Rates of Return (ERR).
- The Fund will be an investment vehicle for long-term institutional investors from both the public and private sectors. It will mainly invest in equity stakes, but it will also have associated debt facilities.
- The 'Marguerite' Fund is one of the first examples of 'reinforced cooperation' in the European financial sector

The role of long term investments

New long-term financial instruments

- A similar initiative in the area of the Union for the Mediterranean has been taken with the creation of the equity fund 'InfraMed', by a joint initiative of CDC, CDP, EIB, Hermes (Egypt) and CDG (Morocco).
- Other common financial instruments should be considered, such as Project Bonds, Eurobonds and Guarantee Schemes.
- If successful, these financial instruments will be an interesting long-term investment opportunity for institutional investors such as pension funds, insurance companies, SWFs, as well as households.
- In addition, they could become the prototype for a family of funds (i.e. 'Marguerite' 2, 3, and 4; 'Inframed' 2, 3, and 4, etc.)

The legal framework

A lot of international and/or European set of rules, aiming to reinforce banking system and to strengthen financial stability, have in fact penalized (or may in future penalize) long-term investments in innovation and infrastructure. The main examples are Basel II and III, for banks, Solvency II for insurance companies, and the IAS for a very large range of financial institutions.

- Therefore these long-term investments, notwithstanding their high positive externalities for growth and competitiveness, cannot attract an adequate amount of private and sovereign capital which are mostly focused in high profit short term financial investments.
- These rules have not considered that growth is a condition for long-term fiscal consolidation, and that both growth and fiscal consolidation are conditions for financial stability. Therefore financial stability needs long-term investments.

The role of long term investments

The new accounting standards

- As for the accounting standards, for instance, the 'mark to market' principle does not permit distinctions between short-term and long-term investment values in the balance sheets.
- Therefore, some reforms are needed to:
 - ✓ introduce accounting criteria that reflect long-term investors specific business model
 - ✓ distinguish between different temporal durations/matching liabilities and investments
 - ✓ take into account the value of future cash flow over the long-term

The role of long term investments

New fiscal incentives

- In many European Countries' tax systems, the long-term investments are disadvantaged when compared to the financial short-term investments. These discriminatory disincentives should be abolished.
- 'Ad hoc' incentives for long-term initiatives of general interest might be introduced, as those granted to the US Project Bonds or awarded to the renewable energy projects.
- On the one side, financial institutions can be eligible for incentives if they decide to hold part or all of their assets as long-time investments. On the other side, investments can be considered as long-term projects if they have certain specific characteristics.

Conclusions

Conclusions

- The XXI Century will be an age of great challenges.
- Innovation is going to be a main driver of strong, balanced and sustainable growth.
- Large public procurement program at a national, regional or even global level, are needed to foster and spread around innovation potentialities.
- But, considering the budget constraints and the needs of fiscal consolidation, it is also necessary to attract private capital by creating new financial instruments and a legal framework more favorable for long-term investments promoting innovation and sustainable growth.

Conclusions

- But the real challenge – as we have already stressed – may be to launch a sort of innovation-friendly Keynesianism, that uses the same massive investment resources, allocated in the past in space and military programs, for financing a huge, ambitious environmental and innovation program fulfilling both Keynesian and technology-focusing purposes.
- The European Union could easily raise on global markets 1000/1500 bn Euro for financing such a program
- The tool may be the issue of European sovereign bonds.

Conclusions

- To conclude. All the future estimates that we discussed are doomed to be falsified by reality. In history – as in life - the “unexpected is always upon us”.
- Beyond the scenes there is the “war of currencies” - a crucial issue whose outcome is very difficult to predict. It depends, in fact, of the evolution and the combination of geopolitical, economic, financial, demographic, and cultural elements which are part of the great puzzle of global history of the XXI Century.
- However, we still do not have the necessary “conceptual infrastructure” to understand it. The elaboration of a new science (“scienza nuova”) to make a sense of post Cold War evolution of the global world is the great conceptual challenge of this and future generations.