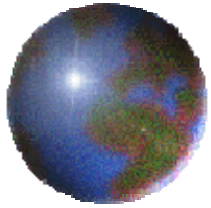


Science for Development: the Impact of the Current Economic Crisis

J.P.CONTZEN

Lisboa, June 18th, 2009

Introduction

- The current deep economic crisis at global scale will most probably affect the good progress achieved in recent years towards the fulfillment of the Millennium Development Goals which constitute the reference for measuring global development
- This negative occurrence could nevertheless be used as an opportunity for adopting a new approach, for promoting a new paradigm in global development, where S&T have their role to play

The Bright Aspects before the Crisis (1)

- At mid-point, some significant successes in the fulfillment of the MDGs:
  - Reducing absolute poverty by half is within reach
  - Primary school enrolment at 90%, except in 2 regions
  - Progress in health issues is significant:
    - Deaths from measles reduced by factor three in 6 years
    - Newly AIDS infected people decreased by 10% between 2001 and 2007
    - Halt to tuberculosis expected, should decline before 2015 target
  - Access to safe drinking water gained by 1.6 billion people

The Bright Aspects before the Crisis (2)

- Science & Technology have played a role in these achievements, mostly biotechnologies in the health sector, as well as information & communication technologies not only in health and education but also in poverty reduction. The massive growth in in the number of mobile phone subscribers (60 million new subscribers added in Africa in 2006, more than 22% of Africa's population had a mobile phone at the end of 2006) and the penetration of Internet constitute strong factors of economic development

The Most Negative Aspects before the Crisis

- Higher food prices may push 100 million people deeper in poverty
- Conflicts leave many displaced and impoverished
- Some 2.5 Billion people still live without improved sanitation
- Developed countries' foreign aid expenditures declined for the second consecutive year in 2007
- Market access for developing countries is little improved

The Current Economic Crisis (1)

- The current crisis is much more significant in terms of global impact than all previous economic crisis (the Great Depression of 1929, the Japanese Bubble of the late 1980s/early 1990's, the collapse of the economies of the Former Soviet Union, the ICT bubble around 2000). in less than a year, around 30 Trillions $ have gone up in smoke, twice the US GDP

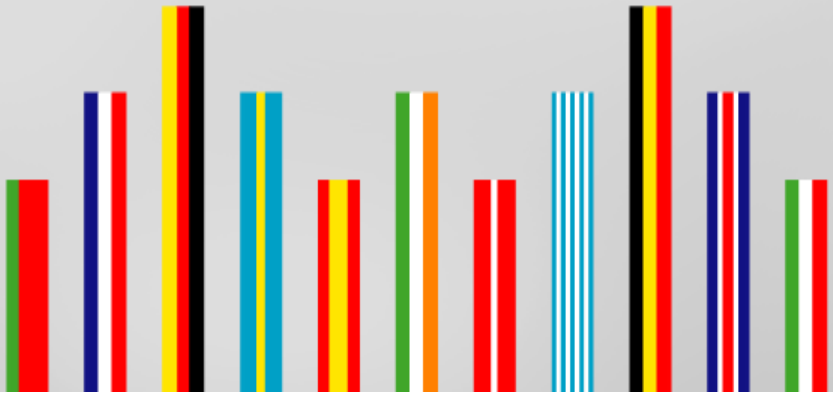
The Current Economic Crisis (2)

- The *World Economic Outlook* of the IMF projects for 2009 a decrease in world output of 1.3% (Canada 2.5%, US 2.8%, CIS excl. Russia 2.9%, European Union 4%, Russia 6.0%, Japan 6.2%). One positive aspect is the softer impact on developing countries and the prospect of a quicker recovery, as shown in the following slides (Guy Verhofstadt, De Weg Uit de Crisis)

Guy Verhofstadt

DE WEG UIT DE CRISIS

Hoe Europa de wereld kan redden




GDP
Geografisch
2006
>10%
6%-10%
3%-6%
0%-3%
<0%
geen data


GDP
Geografisch
2009
>10%
6%-10%
3%-6%
0%-3%
<0%
geen data

GDP
Geografisch

2010

GDP
Geografisch

2011


GDP
Geografisch
2012
>10%
6%-10%
3%-6%
0%-3%
<0%
geen data

The Current Economic Crisis (3)

- The crisis will necessarily affect the development of the less favored. Some effects are already felt:
  - Slump in export markets: minus 42% in export income in Algeria for the first quarter 2009, income from mining resources divided by three in Dem. Rep. of Congo from July 2008 to February 2009
  - Reduction in money transfer from migrants (30% of GDP in certain countries): minus 14.8% for the two first months of 2009 in Morocco

The Current Economic Crisis (4)

- Further reduction in ODA: as shown by the article of *La Stampa* of June 12, 2009, major donors do not fulfill their promises in terms of aid: 21.5 Billion $ were promised by the G7 in 2004 for the period going to 2010, 7 Billion have effectively been committed until 2008. The new players in ODA, China and India, compensate somewhat for this deficiency

LA DENUNCIA ALLA PRESENTAZIONE DEL NUOVO RAPPORTO DI ONE, L'ORGANIZZAZIONE CHE SI OCCUPA DELLO SVILUPPO DEL CONTINENTE NERO

"Italia e Francia tradiscono l'Africa"

"Roma ha pagato appena il tre per cento di quanto aveva promesso al G8 del 2005"

FRANCESCA PACI
CORRISPONDENTE DA LONDRA

Italia e Francia non rispettano l'impegno contro la povertà africana preso al G8 di Gleneagles nel 2005 e con la loro inadempienza rischiano di vanificare gli sforzi degli altri governi. Il duro j'accuse segue la presentazione del nuovo rapporto di One, l'organizzazione guidata da Bono Vox e Bob Geldof che si occupa dello sviluppo del continente nero, secondo il quale negli ultimi quattro anni gli otto Paesi più industrializzati hanno raccolto appena sette miliardi di dollari, un terzo dei fondi garantiti entro la fine del 2010. A zavorrare il decollo del partenariato è «l'ingiustificabile ritardo» di Roma e Parigi, «responsabili dell'80 per cento degli aiuti mancati».

La Finanziaria 2009 ha dirottato i fondi per la cooperazione sulle necessità interne

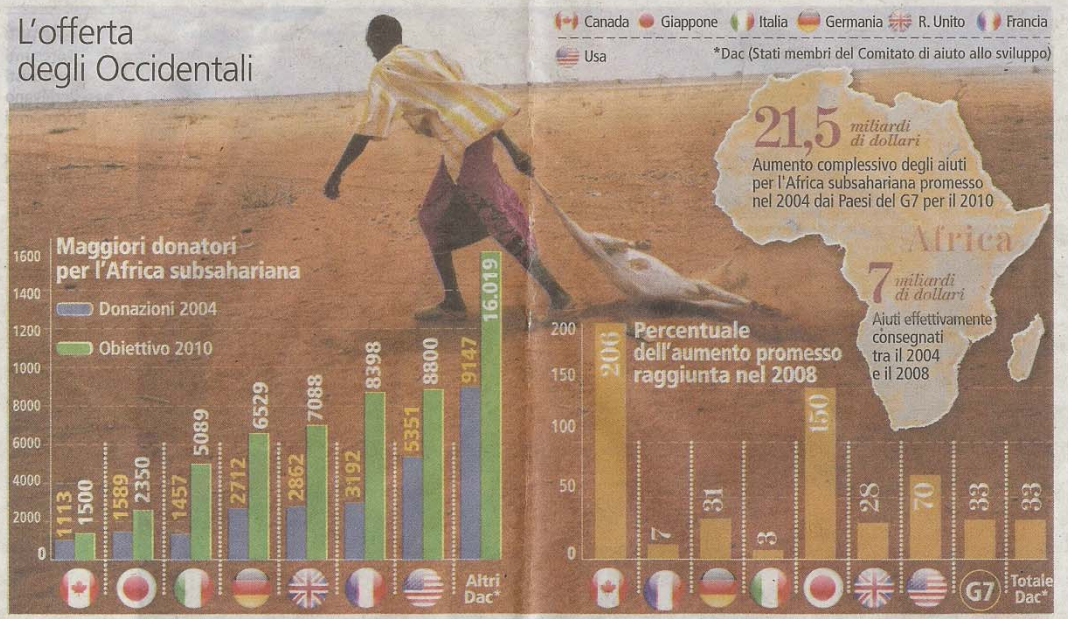
Mentre il ministro degli Esteri Frattini ricorda ai colleghi europei riuniti alla Farnesina l'impegno a rilanciare la crescita nelle regioni più vulnerabili del pianeta, l'arcivescovo Desmond Tutu, Bill Gates e Bob Geldof puntano l'indice da Londra contro le promesse di Pinocchio.

«L'Italia ha annunciato che metterà l'Africa in cima all' agenda del vertice G8 ma, osservando come si è comportata dopo il summit precedente, c'è da dubitare che abbia la credibilità per ospitare discussioni di tale importanza», dice Jamie Drummond, responsabile di One. Se la Francia ha rispettato solo il sette per cento degli impegni presi, il nostro Paese è andato molto peggio: a un anno e mezzo dall'obiettivo, i suoi assegni ora arrivano a mala pena al tre per cento di quanto stabilito a Gleneagles dall'anche allora primo ministro Berlusconi. All'origine della mancanza ci sono i tagli alla cooperazione previsti dalla finanziaria 2009 per fare fronte alle necessità nazionali ma, ricordano gli oratori, lo 0,7% del Pil indicato dall'Onu per sostenere i più bisognosi non è chimera irraggiungibile.

«La crisi rischia di annullare i progressi fatti dall'Africa dove, grazie agli aiuti internazionali, 34 milioni di bambini hanno cominciato ad andare a scuola e 3 milioni di malati di Aids ricevono regolari trattamenti» continua Arunma Oteh, economista dell'Africa Development Bank. Per mantenere i risultati servono 120 miliardi di dollari l'anno e la recessione sta mettendo a dura prova la generosità del mondo. Stati Uniti, Canada, Giappone guidano la cordata dei virtuosi ma il sostegno funziona se è globale anche perché, colpiti dalla disoccupazione, gli immigrati riescono a mandare meno soldi a casa e le rimesse, grande risorsa del continente nero, sono diminuite del 6,6 per cento.

La crisi rischia di annullare i progetti per l'istruzione e le cure ai malati di Aids

«Basterebbe sostituire la faccia di un bimbo africano con uno che conosciamo, dargli un nome noto e aggiungerci accanto tanti zeri» insiste il premio Nobel Desmond Tutu. Rendere la povertà storia è possibile solo a condizione di assumerla come parte della propria.



The Current Economic Crisis (4)

- Credit squeeze: securing money for new investments in developing countries will be increasingly difficult. In particular, securing enough capital for energy development will be a real issue. The total investment requirement for energy supply infrastructure over the period 2001-2030 is over 16 Trillions US$ for replacing and expanding supply facilities. It corresponds to 1% of global GDP and 4.5% of all investments (IEA World Energy Investment Outlook 2003 Insights)

The Current Economic Crisis (5)

- Credit squeeze (cont.): For Africa, it means allocating 4% of its GDP to this sole purpose. The alternative for Africa is the continuation of power outages which cost African economies as much as 2% of their GDP (The Wall Street Journal, April 18, 2008)

  The electricity sector alone needs about 10 Trillions US$, 60% of the total energy investment. Half of the energy investment will have to take place in the developing world.

The Current Economic Crisis (6)

- Credit squeeze (cont.): Even with such rate of investment, 1.4 Billion people would be without access to electricity in 2030, only 200 million fewer than now. Mobilizing the investment depends on the ability of the energy sector to compete against other sectors of the economy for capital. The competition for investment comes from two very important areas: the fulfillment of the Millennium Development Goals and the mitigation of, and adaptation to, climate change

The Current Economic Crisis (7)

- Credit squeeze (cont.): For MDGs, as already mentioned, ODA from developed and emerging countries do not cover the needs and will probably not meet the target set for 2015. Adaptation to, and mitigation of, climate change effects, require new investments amounting again to hundreds of billions of $. Even if the long term impact of such investments will be fairly moderate, i.e. a slowdown of about 0.1% in the average annual growth of global GDP, money has to be found for the required work, notably for Less Developed Countries

The Current Economic Crisis (7)

- Credit squeeze (cont.): Defining the right priorities for financing the required investments will be a difficult exercise. A lot of wisdom and solidarity will have to be exercised in the financing of our World's pressing needs, especially in time of crisis when national preoccupations are at the forefront

An Opportunity for Shaping the Future? (1)

- Our Society has experienced a period of “irrational exuberance” (Alan Greenspan); let us hope that it will not enter in a period of “irrational pessimism”. The crisis could be an opportunity for deepening or revising some of the current paradigms used for global development
- Renewed efforts should be consented by developing countries for reducing the dependence on foreign aid through increased regional initiatives, through more industrial partnerships

An Opportunity for Shaping the Future? (2)

- What could be the role of Science and Technology in this new framework? Three keywords are suggested:
  - Reinforce further the **knowledge base** by capacity building in Science and Technology, using all forms of partnership, North-South-South, regional, public/private
  - Develop **technological infrastructures**, notably in ICTs
  - Stimulate more **local innovation** which contributes to a good capacity utilization

An Opportunity for Shaping the Future? (3)

- In innovation, four complementary approaches should be followed:
  - Giving more emphasis on innovation driven by local demand, notably the societal demand
  - Devoting more attention to organizational innovation adapted to local conditions

An Opportunity for Shaping the Future? (4)

- Reaping the benefits of new innovative developments, notably in the energy and environmental fields, arising from the stimulus packages of developed countries
- Using the model of “non R&D innovators” developed successfully in Europe

Demand Driven Innovation (1)

- The developing world should be more attentive to its own local needs when engaging into the innovation process. Agriculture, energy management including the issue of carbon emissions, adaptation to climate change, waste management are among the questions which should drive the demand for local innovation

Demand Driven Innovation (2)

- Examples already exist and should show the way:
  - Digitalization of customs procedures in Senegal
  - Eucalyptus plantation project to absorb CO^2 in Niger
  - Use of the Congo basin as the “second lung of the planet”
  - Modification of the production process of nitrate-based fertilizers in Egypt
  - Reduction of refinery flares in Algeria
  - Reduction of methane emissions from public landfills situated near large African urban zones

Organizational Innovation (1)

- Even if it is aimed at realizing ultimate financial savings, the introduction of new products and processes requires large immediate investments with financial returns situated in the future. This constitutes an obstacle in times of credit crunch
- Organizational innovation is largely immaterial, it does need such large investments, hence it should be privileged. Periods of crisis bring more creativity:

"When money is scarce, it's time to think"

(attributed to Lord Rutherford)

Organizational Innovation (2)

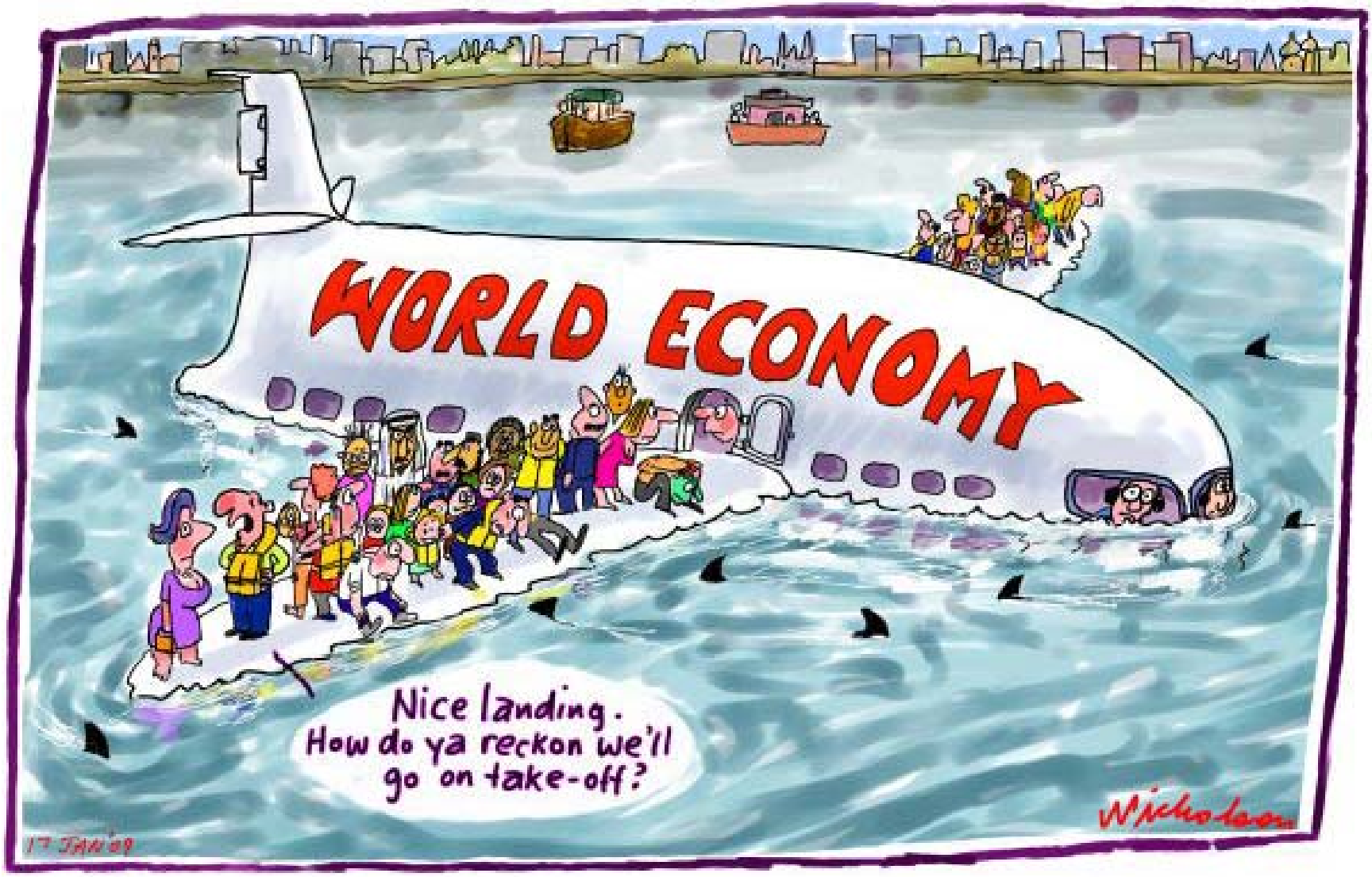
- The crisis should be an opportunity for revising some technological and industrial paradigms, even in developing countries. As an example, open source software, a component of the ICTs that have shown so useful in developing countries, should be considered with care

Organizational Innovation (3)

- Open source software and more generally open source services respond positively to tight financial situations, when operational expenditure is preferred to capital expenditure and when people have more time than money. “Cloud computing” will become increasingly appealing for individuals and enterprises as it will allow to pay a little for using someone else’s enormous capital investment

Fall Out from Stimulus Packages (1)

- Quenching the crisis needs an immediate response. Developed countries have entered massive stimulus packages for re-launching their economies. Within these packages, there is to the temptation of financing “shovel-ready projects” (Barack Obama) following the recipe of Keynes of the 1930’s. This leaves little place for innovation. The only chance resides in the adoption within stimulus packages and within public procurement – a powerful tool for stimulating innovative products- of measures with some degree of innovative content. Sustainable restructuring, green Keynesianism are keywords in this respect


WORLD ECONOMY
Nice landing. How do ya reckon we'll go on take-off?
17 JAN '09
Nicholson

Fall Out from Stimulus Packages (2)

- This new approach could favor the development of new innovative projects related to energy and the environment, such as green manufacturing plants, sustainable transport infrastructures, sustainable urban management, sustainable energy sources and distribution systems, green buildings, green chemistry plants, sustainable farming areas, sustainable water management

Fall Out from Stimulus Packages (3)

- The developing world should also benefit from these developments and partnerships with the developed world should guarantee a reasonable fall out

Non R&D Innovators (1)

- Within technological innovation, there are several models which can be followed by national systems and enterprises. One model relates to “Non R&D innovators”, called also “neglected innovators”, relying on an external knowledge base (no internal R&D) and oriented generally towards external markets

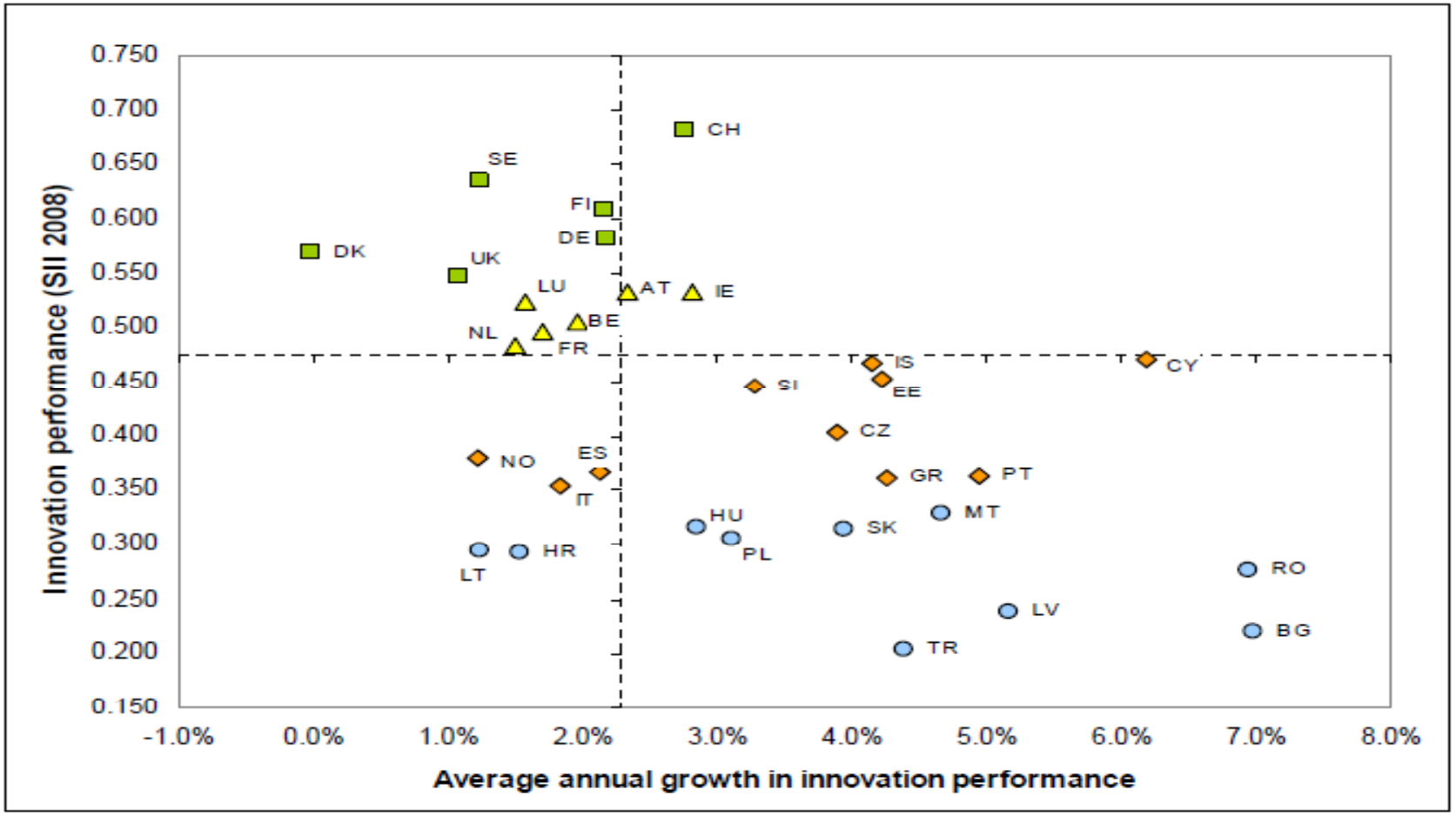
Non R&D Innovators (2)

- Innovation requires a sufficient base of Science &Technology for being efficient but it does not require mastering the entire knowledge chain. The experience acquired in Europe with “Non R&D innovators” might be worth being tried in developing countries

Non R&D Innovators (3)

- This model has grown in importance. According to the European Innovation Scoreboard 2008, in the EU 27, 52.5% of the innovative firms fall in this category, as opposed to 40% performing R&D in-house
- A large fraction of these “Non R&D innovators” have less than 50 employees, are active in low technology service sectors and are located in countries with below average innovative performance. They work generally in an isolated fashion

FIGURE 3: CONVERGENCE IN INNOVATION PERFORMANCE



Colour coding matches the groups of countries identified in Section 3.1: green are the innovation leaders, yellow are the innovation followers, orange are the moderate innovators, blue are the catching-up countries. Average annual growth rates as calculated over a five-year period. The dotted lines show EU performance and growth.

Non R&D Innovators (4)

- If this model, which allows to enter fully into the innovation process without having to go through the lengthy path of R&D, works in Europe, it should work equally in developing countries where creativity constitutes generally a dominant feature. Its prompt implementation in the developing world should be considered, giving a new life to innovation in the private sector and boosting entrepreneurship

Conclusion

- *As Charles Perrini (CIAN) hinted recently, the 20th Century lasted from 1914 (WW1) to 1989 (Fall of the Berlin Wall). Will the 21st Century start effectively after October 2008? The deep crisis that we are experiencing should be used as an opportunity for revising some of our paradigms, notably when tackling the issues of the developing world. For those involved in Science & Technology, we should not miss this opportunity*.