ICEG European Center

Knowledge Economy, Innovation and Growth in Europe

Budapest, 2006

TABLE OF CONTENTS

EDITORIAL[1]

ICEG European Center and the Institute of Prospective Technological Studies (IPTS, DG Joint Research Centre, European Commission), with the help of experts from IMF and the World Bank, co-organised a workshop on "Europe towards eServices, Innovation and Growth" at the Krynica International Economic Forum in September 2006.

The workshop consisted of ten panels aimed at better understanding and identifying Knowledge Society strategies for the European countries that would support their economic and social development. In particular, the panels addressed the question of the development trajectories of the New Member States and Candidate Countries towards the Knowledge Society, taking into account both their present specificities and the changing global context. The key object of the panels was to reach some useful guidelines to enrich future orientations in research and political strategies at national and European level, with special attention to the role played by info-communication technologies.

The ten panels were organized around the topics of growth, innovation and services having a strong focus on Europe. The major questions discussed at the panels included the following:

I. EUROPE TOWARDS GROWTH?

1. What are the prospects of the European Knowledge-based Society in a globalised society?
2. How can Europe improve its competitive edge whilst maintaining its specificity?
3. What are the visions for Europe's future growth?

II. EUROPE TOWARDS INNOVATION?

1. What technologies will be needed to support industrial change?
2. What are the general ICT trends? Where will the next paradigm shifts occur?
3. What are the visions for Europe's future innovation capacities?

III. EUROPE TOWARDS A SERVICE ECONOMY?

1. How far has Europe progressed towards the Information Society and the Knowledge Society?
2. What type of applications will European citizens demand?
3. What are future successful IST strategies?

The aim of this eBook is to summarise – shortly after the event – the main findings of the presentations as twelve out of forty presenters sum up their findings and messages. The eBook is divided to three major chapters. The first chapter on "Asian Growth: patterns and Challenges for Europe" tries to highlight some of the ICT related factors of the outstanding Asian growth, pointing to the implications of this rapid catch-up for Europe. The second chapter on "Central and Eastern European growth patterns" discusses the major features of current growth in the New Member States focusing at such diverse issues as total factor productivity, social models and the role of the state, contribution to growth of higher education and human capital supply. The final chapter on "Knowledge Economy in the NMS" includes contributions on the spread of ICT driven services, the role of innovation and economic policies stimulating ICT take-up, innovation and R&D in these countries.

The first chapter on "Asian Growth: patterns and Challenges for Europe" starts with the contribution of John Bradley (Economic and Social Research Institute), who discusses outward FDI in terms of increased competition for the means of accelerated development in the CEE region. The simultaneity of the collapse of Communism in Europe with the rapid rise of dynamic economies in Asia (a process dominated by China) presents problems for the previous European FDI-based model of development exemplified by Ireland. At the

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same time the alternative development model, based on growth of indigenous industries and exemplified by Denmark, does not appear to be a feasible route for most CEE economies. The contribution examines the dilemma of choosing an appropriate model by the CEE region, with its mix of small and medium-sized economies located inside the EU single market in a world where the "China price" must be matched.

Annaflavia Bianchi (IPTS, DG JRC, European Commission) describes in her contribution the main drivers of the recent growth of the largest Asian countries, China and India, trying to outline the knowledge-based components of this extraordinary development. Based on the assessment of the growth patterns, the paper identifies the main implications and opportunities for Europe, both in terms of competitive pressure and of cooperation opportunities especially through FDI, technology transfer and joint research.

The next contribution of Peter Lovelock's (University of Hong-Kong) provides a brief review of the first two "waves" of China's ICT growth and development before leading into an overview of the government-driven policy of internationalisation. He addresses the issue concerning the reasons of this path, its drivers and the main focus of the policy and its beneficiaries. His presentation asks the question concerning the focus for China's overall ICT 'industry' and the regional and global impact of this policy and the already emerging developments.

The final contribution in this chapter of Nick von Tunzelmann's (Freeman Institute of Innovation, SPRU, University of Sussex) summarises the results of a study currently in its final stages of completion, funded by IPTS/ESTO, into 'ICT for Growth and Cohesion in a Global Knowledge-based Economy: Lessons from East Asian Growth Areas'. He argues that the "lessons" are not so much cases of copying policies or structures in place in East and South Asia, but rather one of understanding the drivers of the 'new' growth dynamics and then making inferences about how Europe might go about reacting in a positive vein to those drivers.

The second chapter of the eBook on "Central and Eastern European growth patterns" begins with the contribution of Michal Mejstrik (Institute of Economic Studies at the Charles University) and Julie Chytilova (Institute of Economic Studies, Charles University in Prague and EEIP, a.s.), who finds as a crucial issue for the Eastern European countries to understand that a single European Social Model does not exist. He argues that only recently some Eastern European unionists have started to defend their requirements by a reference to the European Social model having in mind its inefficient continental form. Deeper public discussion of the pros and cons of the various social models and approaches should be triggered taking into account also resulting past and future country competitiveness. His contribution suggests those models compete to open opportunities based on forward looking approach with full respect to the minimum harmonized standards (such as social safety net etc.) instead of fixing the past.

The contribution of Paolo Garonna (United Nations Economic Commission for Europe) asks whether there is a "New Europe" approach to growth and competitiveness, which is significantly different from the "Old Europe" one. Relatedly he asks whether the experience and the outlook for Eastern Europe, in particular the New Member States is relevant for Europe as a whole. He argues that the recent European crisis is of unprecedented gravity in the post-war period. It has many dimensions, but the main one is its economic dimension, i.e. the "economic disease" that slows down growth investment and competitiveness. Therefore he suggests that it is important to see whether New Europe can represent an alternative to ossification and decline, and bring new perspectives to the future of European construction.

Thomas Laursen (World Bank) in his contribution analyses aggregate growth patterns in the EU8 economies, examining the main factors affecting growth as well as some of the policies that may help to sustain or enhance growth prospects. The purpose of analysis is to shed light on whether the same key factors support growth at the sector level as at the country level and potentially strengthen the basis for policy directions. His contribution finds that since the mid-1990s, rapid output growth in the region was driven by services and industry, with domestic demand playing a relatively larger role in the Baltic countries and net exports more important in the Visegrad countries. Total factor productivity rose rapidly in all EU8, but capital accumulation was also important, notably in the Baltics.

The last contribution in this chapter of Daniela Gressani (World Bank) argues that the countries of Central Europe and the Baltics have made great strides towards establishing social policies well adapted to their new status as dynamic market economies and members of the European Union. Good practices have been generated, for example in health in Estonia, old-age pensions in Poland, and social transfers in Slovakia. Her

contribution discusses the upgrading of higher education, which now stands out as the most important area, where further progress is needed.

The third chapter on "Knowledge Economy in the NMS" begins with the contribution of Itzhak Goldberg (World Bank), who argues in his contribution that while the diversity of Knowledge Economy development in the transition post socialist economies is associated with GDP per capita, one needs to look for the bottlenecks – the weakest links in the chain of Knowledge Economy components: education, ICT, investment climate, innovation (R&D). His contribution discusses the determinants of innovation discusses approaches to government support for commercial innovation arguing that such support does not necessarily mean "Industrial Policy". Instead he recommends support instruments to follow: (i) neutral and transparent project selection and (ii) public – private partnership through risk sharing.

Marc Bogdanowicz (IPTS, DG JRC, European Commission) sketches out the general context of development of the e-Services in the New European Member States arguing that the information Society take-up has occurred in the New European Member States during 2000-2005. According to him the forthcoming "deployment period" will allow to reap of the benefits of such technology while transforming radically most human activities. He stresses that this transformation relies on deep social trends among which the emergence of a service economy is one to observe, while two major categories of innovations - Ambient Intelligence and Web2.0 - seem to define the potential space of the future e-services.

Pál Gáspár (ICEG European Center) presents in his contribution factual evidence on the diffusion of eGovernment services in the New Member States, discusses the major factors that affected these developments. His presentation demonstrates the recent catch up in the level and quality of eGovernment services, presenting the non-negligible differences among the countries observed. The presentation assesses the most important drivers and barriers of eGovernment in the New Member States, making a strong link between the diffusion of eGovernment and the reform of public sector and administration. The presentation concludes with policy options and issues, and with research and development challenges.

Angela Dunbar (WHO) provides an overview of the preliminary findings of the WHO Global Observatory survey on eHealth and identifies various opportunities for ICT to facilitate health system transformation on the road to fair access, quality and responsiveness. The contribution acknowledges the vast diversity in the European Region in terms of health, economy, health priorities, drivers for change and penetration of information and communication technologies (ICT). It also provides basic principles for ICT adoption.

The final contribution of Pál Gáspár (ICEG European Center) discusses in his contribution two major issues based on the first findings of an ongoing project the presentation. First, it assesses the major structural, financial, organisational challenges the health systems of the New Member States face. Second, it presents briefly the evidence on the spread of eHealth in the European Union. Finally, the paper links eHealth and health sector challenges by asking where eHealth could contribute to meeting the aforementioned challenges of health systems in the NMS.

The authors and editors of this eBook hope that it will be a very informative and interesting reading, and it raises the interest of the scientific and policy community to discuss further these crucial topics of growth, innovation, R&D and Knowledge Economy.

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LIST OF ABBREVIATIONS

3G	3rd Generation
ADSL	Asymmetric Digital Subscriber Line
ASEAN	Association of South East Asian Nations
ASIC	Application Specific Integrated Circuits
AVS	Audio-visual Standard
BEEPS	Bank Business Environment and Enterprise Performance Survey
BPO	Business Process Outsourcing
BRICS	Basic Research in Computer Science
BICEPS	Baltic International Centre for Economic Policy Studies
CAGR	Compound Annual Growth Rate
CAT	Computer Added Translation
CAP	Computer Aided Policy, Computer Assisted Production
CAS	China Association for Standardisation
CDMA	Code Division Multiple Access
CEE	Central and Eastern Europe
CES	Constant Elasticity of Substitution
CNC	Computer Numerical Control
CSO	Czech Statistical Office, Chief Sales Officer
DEC	Digital Equipment Corporation
DVD	Digital Versatile Disc
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECA	Eastern Europe and Central Asia
ECB	European Central Bank
ECDC	European Centre for Disease Control
EEMS	Eastern European Member States
EFTA	European Free Trade Association
EHSCG	eHealth Standardization Coordination Group
EMU	Electronic, Mobility, Ubiquitous
ERDF	European Regional Development Fund
ESA	European Space Agency
ESF	European Social Fund
ESM	European Social Model
FDI	Foreign Direct Investments
GDCF	Gross Domestic Capital Formation
GDP	Gross Domestic Product
GPT	General Purpose Technology
GSM	Global System for Mobile Communication
GUS	Polish Central Statistical Office
HDI	Human Development Index
ICT	Information and Communication Technology
ICs	Integrated Circuits
IDA	Interchange of Data between Administrations, Info-comm Development Authority
IMF	International Monetary Fund
IP	Internet Protocol
IPO	Installation Productivity Option
IPR	International Planning and Research Corporation
IPTS	Institute for Technological Prospective Studies
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
ISTAG	Information Society Technology Advisory Group

IT	Information Technology
ITU	International Telecommunication Union
KEI	Knowledge Economy Index
LAN	Local Area Network
LCD	Liquid Crystal Display
MOF	Microsoft Operations Framework
MNC	Multinational Corporation/Company
NHS	National Health Service
NIS	National Innovation System
NICS	Newly Industrialized Countries
OECD	Organisation for Economic Cooperation and Development
OS	Operating Surplus
PC	Personal Computer
PPP	Public-Private Partnership
PTA	Preferential Trade Agreements
R&D	Research and Development
RFID	Radio-frequency Identification
RMB	Renminbi, Chinese Currency
SAR	Special Administrative Region in China
SBIR	Small Business Innovation Research
SIPO	State Intellectual Property Office
SME	Small and Medium Sized Enterprises
SMIC	Semiconductor Manufacturing International Corporation
S&T	Science and Technology
TCD	Tool Command Language
TFP	Total Factor Productivity
TOT	Terms of Trade
TRE	Total Reallocation Effect
UK	United Kingdom
UNDP	United Nations Development Programme
VAT	Value Added Tax
WHA	World Health Assembly
WHO	World Health Organisation
WIFI	Wireless Fidelity
WSA	World Summit Award
WTO	World Trade Organisation

I. ASIAN GROWTH: PATTERNS AND CHALLENGES FOR EUROPE

JOHN BRADLEY[4]: ASIA VERSUS EASTERN EUROPE: FDI, R&D INVESTMENTS AND RELOCATION OF INDUSTRY

INTRODUCTION

Since the countries of Eastern Europe are unlikely to be major sources of outward FDI, we discuss these issues in terms of increased competition for the means of accelerated development in the CEE region. The simultaneity of the collapse of Communism in Europe with the rapid rise of dynamic economies in Asia (a process dominated by China), present problems for the previous European FDI-based model of development exemplified by Ireland. However, the alternative development model, based on growth of indigenous industries and exemplified by Denmark and Finland, does not appear to be a feasible route for most CEE economies in the short to medium term. We examine this dilemma and suggest that the CEE region, with its mix of small and medium-sized economies now all located inside the EU single market, and in a world where the "China price" must be matched, cannot assume that its development model will be a simple choice between the Irish and Nordic models.

TWO CRUCIAL ISSUES FACING CEE ECONOMIC STRATEGISTS

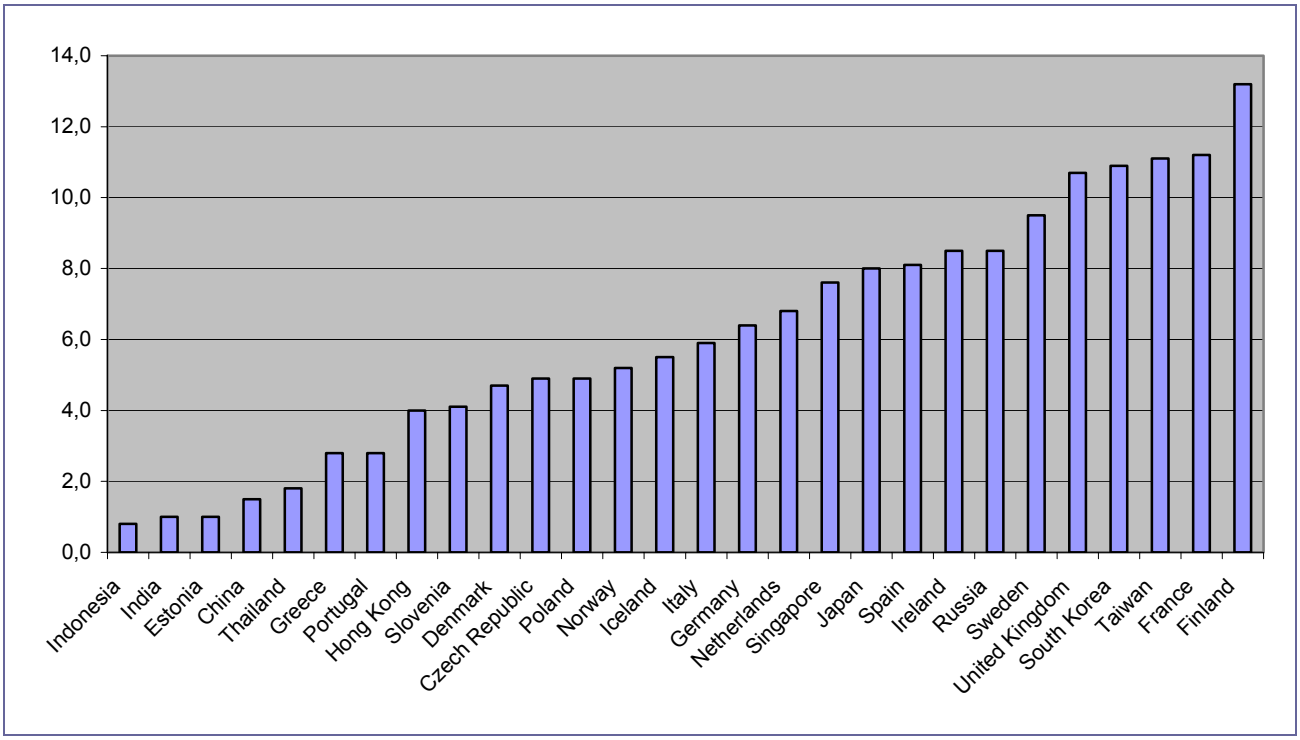
With perhaps the exception of Poland, all of the new EU member states are archetypes of small open economies, and this has major implications for the design and evolution of successful growth strategies. Within the European context, the economies of small nation states and regions have more in common than is often recognised. In his reflection on the Irish growth experience, US economist Paul Krugman stressed the need for a better balance between a purely regional paradigm, with growth driven by an export base, and the kinds of macroeconomic and productivity-driven issues that matter for national economies, even small ones. He explored the extent to which one has to look inside an economy like Ireland, Finland or Estonia, at its internal macroeconomic mechanisms and business interrelationships, in order to understand it. Ireland today has adjusted to thinking about its economy in national as well as regional contexts. The economies of the CEE region are still at an early stage in that exercise.

Two stylised facts are worth emphasising in relation to the development of small EU states. The first is the importance of ensuring that a sufficiently high fraction of third-level education is in the area of science, engineering and technology. Chart 1 shows the percentage of 24 year old graduates who have such training and qualifications in a range of countries. Finland scores highest; Ireland is in the leading pack; Poland is about average; Estonia, the fastest growing economy in the CEE region, surprisingly, is at the bottom of the international range, a fact that does not bode well for the sustainability of the Estonian convergence process.

A second key factor in the development of small states is that their domestic market is usually too small to permit a competitive strategy based on scale economies and cost reductions other than in highly selective niche sectors. Their strategic dilemma has been characterized as "the small-country squeeze", illustrated in Chart 2 below.

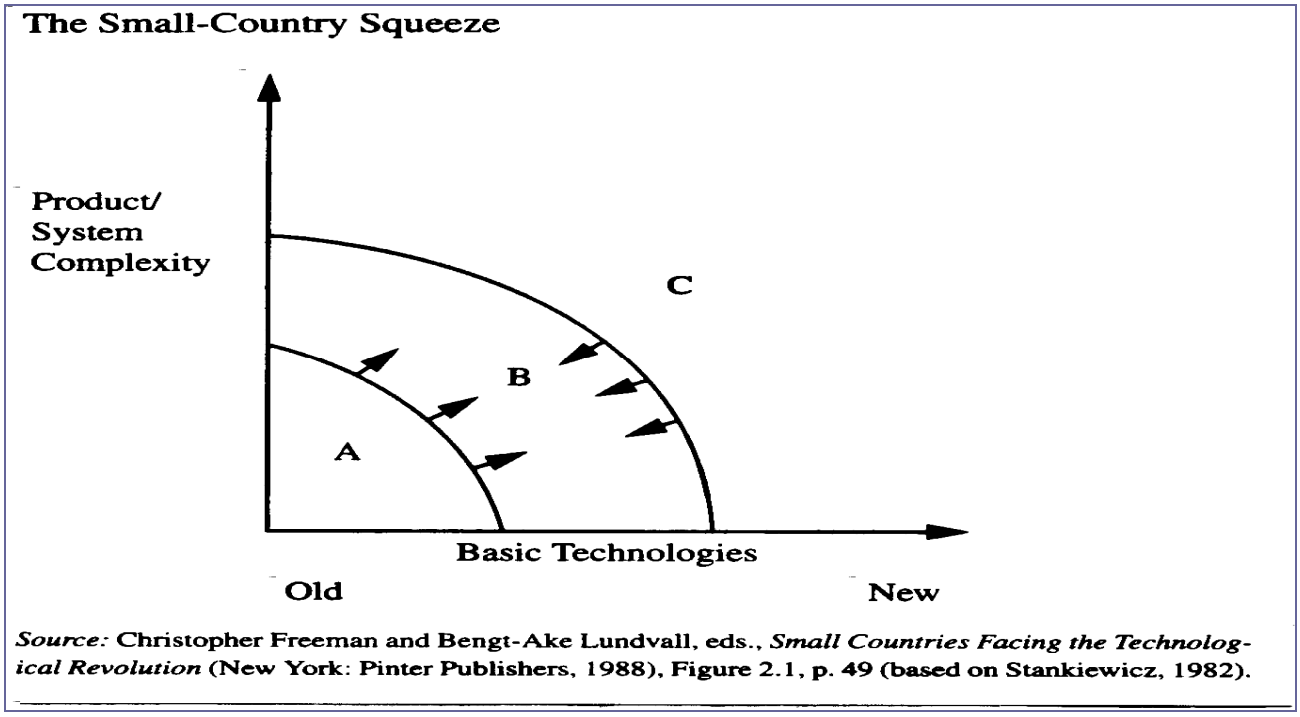
[4] Dr John Bradley was formerly a Professor at the Economic and Social Research Institute (ESRI) in Dublin, and is now an independent consultant

Chart 1. Percentage of 24-year olds with natural science and engineering degrees
(years vary between 1990 and 2001)



Source: National Science Board ***(http://www.nsf.gov/statistics/seind04/append/c2/at02-33.xls)***

Chart 2.The small-country squeeze



Source: Kotler et al, 1997, page 104 (Chart 4.5)

Such countries are subject to fierce competition in simple products based on mature technologies from the newly industrialized countries (NICS) of Asia: area A of Chart 2. Their indigenous manufacturing is usually effectively excluded from markets for complex products, based on new technologies, where the "superpowers" are dominant: area C of Chart 2.[5] Area C is itself increasing as traditional sectors themselves even adopt new technologies. Area B of Chart 2 – the natural domain of "nichers" - is therefore being squeezed in both directions. Only when the niches are dominated by foreign multi-national enterprises are they likely to be capable of sustaining global competition. The niche sectors in Ireland – computers, software and pharmaceuticals – are almost all foreign owned. Niche sectors in the CEE region still contain "traditional" activities such as textiles and clothing, whose large-scale indigenous firms are subject to relentless external competitive pressures, and only have a very limited scope for sustainability.

THE "IRISH" DEVELOPMENT MODEL

The relevance for the newly liberalised economies of CEE of the experience of a small country like Ireland that converged from relative poverty to the EU average standard of living in less than 15 years is quite obvious. The new EU member states also grapple with the challenge of convergence. Meanwhile, Ireland has moved on, and faces the more complex challenge of continual renewal in a global economy of daunting competitiveness.

There is scope for misunderstanding and error in the role of economic ideas in designing growth strategies. The actual facts of development challenges are seldom in dispute. But what is crucial is the way that local (and sometimes international) policy makers and analysts think about the facts. In other words, the conceptual frameworks that underpin policy actions are all-important. Failure to develop is usually associated with incorrect conceptual frameworks rather than with the absence of hard work. On the other hand, a framework that is highly appropriate seems to have the power to energise people, dragging them along in its train.

In facing the challenges of today, many of the economies of CEE find themselves with a broadly similar standard of living and similar development challenges. The experience of the small EU countries and regions of the "old" periphery suggests that success is almost always associated with a far wider range of overlapping and mutually reinforcing strategic approaches than are normally used by economists, and that strategy best operates within robust and appropriate institutional frameworks that must be carefully designed and implemented.

Let me comment briefly on the Irish experience of development in recent decades. It is clear that there were some very special circumstances in the early 1960s surrounding the initial Irish switch to trade liberalisation and active encouragement of inward investment.

- *First*, the manifest failure of the previous protectionist policies had been so obvious that no political party or domestic lobby favoured their retention.
- *Second*, the range of abilities and expertise available within the Irish public sector was considerable, in part as a legacy of our previous incorporation into the UK, but there was a willingness to learn from European experiences, in particular the indicative planning experiences of France.
- *Third*, the completion of European reconstruction, and the growth in importance of the then EEC, provided the opportunity to capture some of the rapidly expanding flow of American investment into Western Europe.
- *Fourth*, rapid advances in technology and declining transport and communications costs from the 1960s onwards facilitated the process of foreign investment by multinational corporations, which flourished spectacularly from the late 1980s.

Why might one consider the example of the Irish policy inflection point of the early 1960s to be relevant to discussions today? The reason is straightforward. Tactical policy mistakes and errors can usually be detected before too much damage is done, and revised policies implemented in a learning game of trial and error. However, this is only the case when the strategic thrust of policy has been set correctly. Getting the medium-term strategy right is vital mainly because change is very difficult and errors are very costly. When strategy is

[5] Countries like Finland (Nokia), the Netherlands (Philips) and Switzerland (Nestle) can sustain world class multi-national enterprises, but these tend to be exceptions in the context of most small countries.

wrong, retribution usually follows, as it did in post-war Ireland. Perhaps the paradox was that the extreme peripherality and vulnerability of the Irish economy in the late 1950s forced its policy makers to become more thoroughly international in their outlook. Had the challenge been more modest, perhaps they would have had to change less and was less aware of shifting global forces?

LESSONS OF RELEVANCE FOR EASTERN EUROPE

Today, on the global economic map, the lines that matter are those defining "natural economic zones", which can be regions or states. With falling transportation and telecommunication costs, economies have become increasingly interdependent.

This process of global competition is organised today mainly by multinational firms and not by governments. Production tends to be modularised, with individual modules spread across the globe so as to exploit the comparative advantages of different regions. Hence, individual small nations and regions have less power to influence their destinies than in previous periods of industrialisation, other than by refocusing their economic policies on location factors, especially those which are relatively immobile between regions: the quality of labour, infrastructure and economic governance, and the efficient functioning of labour markets.

In talking about regional and national development strategies, it is common to use a mainly economic framework of analysis. But there are severe limitations to using a purely economic perspective on transformation and renewal. Rather than searching for ever more clever fiscal tricks, I believe that a better way for policy-makers in the CEE region is to accept the constraints of being progressively integrated into the single European market, and to broaden the debate beyond the strictly economic issues. Economic policy research tends to be directed at issues and challenges that arise at the level of regions, nations or even groupings of nations such as the EU. Business policy research, on the other hand, is focused on the performance of individual firms or groups of firms, and Michael Porter has stressed that it is more helpful to consider firms as competing in industries, not in nations. This simple insight lies at the heart of the differences between the mainly regional/national-based perspective of economic researchers, and the mainly firm-based perspective of business researchers, particularly in matters concerning the design and execution of industrial strategy. This is particularly relevant in small countries and regions, where the economic research agenda is often heavily influenced and distorted by trends in international monetary and macro economics, and where regional problems, including industrial strategy tend to be neglected.

COMBINING ECONOMIC AND BUSINESS INSIGHTS

One might characterize a key challenge of industrial policy making in any small nation or region as that of blending the techniques and insights of the predominantly economic analysis of what one might call the “outer” business environment with those of the business analysis of the “middle” ground of strategy. These two areas are often studied in isolation from each other by non-overlapping groups of researchers. Seldom are the two different perspectives looked at as being entirely complementary and mutually supportive. Seldom are they both invoked to guide policy-makers.

At the level of the individual firm or corporation, strategy is usually formulated in a context where government policies are largely exogenous, and firms address the challenges of assessing the business portfolio and identifying strategic goals. The crucial role of management is to formulate a corporate strategy that aligns with the nation’s or region’s wealth-building strategy. So, this issue is usually examined largely from the point of view of domestic or of regional companies adjusting to national strategy.

In Ireland and other small, open economies, however, causality as often as not runs in the opposite direction. In other words, the Irish industrial development agency – the IDA - constantly scans the world for inward investment in high technology sectors. In the case of Ireland in the 1960s, even when the domestic environment was not sufficiently attractive to persuade leading-edge firms to locate in Ireland, information on firms’ expressed needs were fed back to the Irish government by the IDA, and major policy changes could be executed quite rapidly. A case of information feed-back was the transformation of the Irish university system in the mid-1970s, where massive resources were put into the enhancement of electronic engineering and chemistry to create a skilled labour force for potential inward investors. A more recent example was the provision of generous resources to the university system to fund basic research in the areas of electronics and

biotechnology, when a lack of such skills was identified as a potential bottleneck to future investment opportunities.

Thus, the national wealth creation strategy in Ireland and other small nations often needs to adapt to the requirements of firms in the global corporate environment, and not the other way around. The strategic challenges facing them are very different from those facing large developed nations like the US, Japan, Germany, France, and the UK. A question that one might ask is whether enterprise agencies in the CEE region have quite so close and symbiotic a relationship with the highest policy-making levels in their own governments as the IDA has had with Irish policy-making? How quickly can the CEE administrations develop the cross-economy networking skills that were less in demand before EU membership, but will be crucial in the future?

Luck also plays a large part in industrial strategy. But luck and chance are best handled within well thought out and coherent frameworks that take full account of the nature of the external environment (opportunities and threats) as well as realistic views of domestic capabilities (strengths and weaknesses). Industrial policy frameworks such as those associated with the names of Raymond Vernon, Michael Porter and Michael Best do not provide all the answers. But they can help policy makers in both the public and private sectors to bring focus and synergy to the disparate policies that make up broad industrial strategy in small open European economies.

At the risk of oversimplification of what are very complex issues, the recent industrial performance in Ireland shows that the intelligent combination of economic policy and business strategy has generated huge synergies in terms of rapid national growth and convergence. To achieve these synergies requires a certain degree of economic policy autonomy that can be used, for example, to exploit opportunities and remedy weaknesses shown up by policy frameworks such as Porter's and Best's. In this case, Ireland was lucky in that it could build a growth and convergence strategy around its EU Structural Fund programmes, and could articulate them in a series of multi-annual National Development Plans. The CEE development strategists now have that opportunity, as the new National Development Plans are implemented for the period 2007-2013.

THE ROLE OF PUBLIC POLICY MAKERS

What are the major strategic developmental tasks that any government needs to tackle? I believe that there are four key elements:

(a) Assessing a state's strengths and weaknesses:

The state must play a crucial role in shaping and reshaping the conditions within which the market operates, through providing public goods and promoting research, analysis and dialogue. In Ireland this is perhaps easier to implement politically than in the CEE region, since Irish politics is only weakly differentiated on a left-right axis. Irish political parties tend to present themselves as "national managers" of a mainstream globalised economy. The great nationalist debates are now over, and there never was much of an ideological debate! There is a broad understanding of the strategic needs of the economy, and governments are judged on how well they appear to be implementing the agreed strategy.

Drawing on a wide range of local policy research, it is clearly understood in Ireland that concepts of national competitiveness need to be deepened to embrace local inputs of infrastructure, skills and entrepreneurship, and that many of the foreign firms that came in the 1980s will move offshore to lower cost locations. Successful Irish-owned firms are themselves becoming international investors as the Irish business environment continues to restructure in the global economy. Thus, EU enlargement is seen both as an opportunity (new markets for Irish firms) and a threat (other small states are rapidly upgrading their infrastructure and human resources).

Irish economic policy researchers tend to regard the local economy, the global economy, and the relationship between the two, as defining the scope of their work. Universities and research institutes play a vital role in this process, both with EU academic collaborators and in association with the local business community. Academic economists quickly learned to market their work for international publication in terms of the analysis of a small, open economy (which is of universal interest), rather than in terms of Ireland (which is not)! My experience of the CEE area suggests that the under-funding and relative isolation of their university systems may induce a reluctance to explore strategic challenges through policy research, because it is thought

to be of "un-academic" or low status or of limited interest to other European regional economists. This needs to change radically if CEE administrations are to build on the possibilities of their limited autonomy within the enlarged EU.

(b) Recognizing trade-offs between policy options and building coalitions for action:

The dilemmas to be faced here are complex, and involve issues such as efficiency (or growth) versus equity (or redistribution); sectoral diversification versus sectoral concentration; the optimal pace of change and renewal (shock versus gradualism); inward investment versus domestic "bootstrapping", etc. Policy frameworks must be put in place to support these market decisions. Political decisions are not always to the liking of economists, but seldom entirely ignore the implications of solid research. Good research makes it harder for policy-makers to get away with bad decisions!

(c) Building a healthy business-government relationship:

When this relationship is with locally-owned businesses, political tensions can easily arise. But in the case of Ireland, the crucial internal relationships are between government and the social partners (i.e., trades unions and employers' organizations) on the one hand, and with foreign multinational firms, on the other. The Irish experience shows that, although such firms often have turnovers larger than the national GDP, the relationship can be mutually beneficial and these firms have a long record of providing long-term, secure and well-paid employment. In exchange, they expect that their requirements will be taken seriously, and lines of communication will work efficiently. In Ireland, the internal Social Partnership underpins the efficiency of the economy, mainly by ensuring that conflicts are discussed and resolved (where possible) in a context where the costs of failure are widely understood.

There is a huge pay-off to such formalised relationships in terms of disseminating information throughout the economy. Students have a better understanding of where the job opportunities might be, and select careers accordingly. Educators find it easier to design relevant courses. Researchers have a ready audience for their output, and get better feedback. Employers have better information to feed into their business planning. Foreign investors become more familiar with how the region functions, and can take very long-term decisions in a more predictable environment. Policy-makers, who are most in need of guidance, tend to make more sensible decisions. In a Smithian way, all these actors pursue their own self interest, but somehow the outcome seems to be better than if relationships are adversarial and knowledge is hoarded or absent.

(d) Enhancing government-government co-operation:

Government-government co-operation in Ireland takes place almost entirely under the auspices of the EU, where Irish Government Ministers and civil servants negotiate with other member states, and are part of external EU negotiations where their domestic interests are affected. With the exception of Structural Funds (which are coming to an end in Ireland), and the CAP price supports (which are applied to all EU member states), the Irish relationship with Brussels deals more about policy than directly about money. CEE policy-makers have to deal with Brussels in a very similar way. But the price for loss of monetary autonomy and diminished fiscal freedom is a guaranteed equitable share-out of EU development funding!

As I review the performance of successive Irish governments, these are the four key strategic issues that I monitor. We in Ireland are very conscious that the European Union has been enlarged by ten new states, with two more to follow, many of which have made rapid and successful transitions to liberal policy regimes, and will soon become remarkably attractive alternative locations for inward investment. The quality of Irish strategic thinking as much as the efficiency of its businesses will be what determines future performance.

For the CEE development strategists there is much detailed work to be done that would be impossible to explore in this paper. But three themes that will be crucial are worth highlighting:

1. Growth, development and renewal strategies needs to be placed at the centre of government activity, and clearly distinguished from the day-to-day activities of social ministries. If this is done – as with the EU-aided National Development Plans and Structural Funds in Ireland – there is a real chance to

produce a step-change in economic performance. But such strategies need to be animated by careful research rather than considered merely as routine aspects of public expenditure.

2. The apparently high level of educational qualifications in the CEE region should not blind policy-makers to the necessity of continuing to prioritise human resources in all its aspects: education, technical skills, re-integration of the socially excluded, basic business research and training, etc. What matters in today's globalised economy is as much the "software" of human capital as the hardware of fixed investment. Optimising this "software" is probably the single most important act of any modern government.
3. Strategic regional economic policy design needs to be linked with industrial and service sector strategic policy thinking, and every effort made to ensure that they are mutually reinforcing. Within the EU there are dramatic differences between the approach adopted by the successful small Nordic states (e.g., Finland, Denmark and Sweden) – based on building indigenous industrial strengths - and the path taken by Ireland – based mainly on success in attracting high quality foreign direct investment. CEE researchers and policy-makers need to engage in this European debate, rather than drawing mainly from narrower national regional policy agendas and experiences.

In the future, the most successful states will be those who learn to play a critical role in shaping markets by mediating connections between the local and global, and by influencing how local-specific assets are mobilized within the range of opportunities available in the global economy. O Rian (2004) has defined the concept of a *Development Network State* as one that is embedded in a variety of levels and types of governance institutions and works as a liaison or broker in creating networks and empowering non-state actors. But of course the only way that this approach led to success in Ireland (after thirty years trying) was that it eventually became embedded in such a *Network Development State* where all the other state actors worked to reinforce the development process. Arriving at the best way of promoting development is one of the very hardest things that government can do.

CONCLUSIONS: CATCH-UP STRATEGIES[6]

For illustrative purposes, we take Estonia as an archetypical small CEE state that faces serious development challenges. Estonia has likely achieved most of the productivity gains from the post-liberalisation massive decrease in employment and the growth gains from privatization and associated real estate and construction boom. Where can the productivity and growth gains come from to replace these one-off sources? Estonia's economic fate is confronted with two powerful counteracting forces: peripherisation from premature integration into the EU and capability-developing integration with dynamic Scandinavian companies and clusters.

Integration into the EU pits inexperienced and standalone, mid- and high-tech companies against clusters or networked groups of specialist enterprises that benefit from long established regional advantages. Such advantages are a consequence of interactive processes of mutual specialization by which clusters are formed and by which regionally distinctive technology capabilities are cumulatively and collectively built up over many product generations. Thus, these competitors tap into a heritage of regionally specialized business and technology environments, often referred to as 'external economies' which can not be readily quantified. Consequently, we should not be surprised of evidence that rapid liberalization of markets associated with entry into the EU can be destructive to the most knowledge-intensive sectors of the accession economies.[7]

Against this threat, is a major opportunity for Estonia of which most technology catch up countries can only dream. It is a close neighbour to the Scandinavian economies, which regularly feature among the top performers in competitiveness rankings. The challenge in Estonia is to develop a catch-up strategy that leverages this locational advantage. Can it, for example, be used to foster the transition of existing local companies into entrepreneurial firms as well as the creation of new ones?

[6] This material draws on joint work with Mike Best (Best and Bradley, 2006).

[7] The timing of Estonia's entry into the European Union was not determined by economic calculations alone. Furthermore, a small country, especially, must be part of a larger economic union and the timing of entry is dictated by the larger entity.

The Scandinavian countries have in relative abundance what Estonia lacks: globally competitive industrial clusters. The opportunity for Estonia is that while these innovative clusters act as incubators for new firms, at the same time they tend to be located in urban areas which translates into high costs for expanding firms. Nearness to R&D centres, markets, skilled labour pools, and a range of specialist business service resources, are all advantages of an urban environment in the early stages of company life-cycles. But as companies scale up operations the congestion costs of the urban environment can dominate the location benefits from the company formation phase. Therefore, the nearness of Estonia to a number of highly innovative and congested Scandinavian urban areas offers a considerable opportunity for attracting fast growing, globally competitive companies.

The goal in targeting this cluster-spillover form of foreign direct investment is not the immediate creation of jobs but, in combination with local firms, creating a critical mass of companies to stimulate local cluster dynamic processes. For many industries, Estonia's small size would suggest a more realistic goal of extending cluster boundaries into Estonian industrial space. This would reduce barriers to entry for new firms within Estonia as local firms could focus on core capabilities and partner for complementary capabilities within the cross national cluster.

Successful catch-up strategies do not just happen; they are enacted or administered by technology-based economic development agencies under the authority of government enactment. For example, the Irish Industrial Development Authority (IDA) was established as part of a catch-up economic development strategy based on foreign direct investment (FDI). One element was to create an attractive environment for business and the second was to negotiate deals with foreign-headquartered high technology companies as part of a process of local capability development. The IDA pursued this strategy to great effect. It identified and attracted fast growing, electronics companies. DEC was attracted in 1971, Ericsson in 1974, followed shortly by Mostek, Fujitsu, Wang, Apple in 1980, Motorola, Intel, NEC and Philips. DEC was particularly strong at advancing complex product development capabilities and skills in Ireland. Over time a number of fast growing 'complementary' sectors have emerged stimulated by the success of the foreign-headquartered electronics sector. Examples include Europe's biggest software industry, a telecommunications infrastructure, manufacturing applications of IT, and IT applications in the services sectors.

The 'Finnish model' for catch-up, in contrast, does not rely on FDI. The Finnish Tekes (National Technology Agency) was established as a semi-autonomous public agency to plan and execute a strategy for global marketplace success based on national technology programs and indigenous technology capability development. The strategy is similar to that followed by Japan, South Korea and Taiwan and many American state governments. State governors in the United States work closely with educational institutions and the private sector to build competitive advantage based on distinctive and high-level skills and technological capabilities. Semi-autonomous, government-sponsored agencies leverage public research funds by coordinating with educational institutions and industry to nurture science and technology infrastructures. The most effective university and public research programs have occurred in the application-oriented science and engineering fields guided by the technology needs of well defined user communities.

The FDI-led and the indigenous technology capability development catch-up strategies are not mutually exclusive. In fact, they share two key elements. First, both strategies have been implemented by semi-autonomous public agencies that have intentionally or inadvertently triggered cluster dynamic processes to generate sustained growth. The IDA, Tekes, and their American state government counterparts, are agencies for an industrial development vision in which cluster dynamics figure prominently. The idea is that while the initial location of a cluster may be serendipitous, clusters have powerful self-organizing, feedback dynamics that, once set in motion, can provide the region with competitive advantage in the associated technologies for long time periods. The technology agency's role is to be a handmaiden for cluster emergence and, in the same process, to extend and deepen national technology capabilities.

Second, both strategies require a major public sector commitment to tertiary and technical education in science and technology. Sustained growth depends upon product development and technology management capabilities in an ever wider range of companies which must be matched with the requisite human resources.

The challenge for Estonia to transition toward knowledge-intensive sectors is compounded by the early, possibly premature, integration into the EU and the collapse of its science and engineering educational infrastructure. However, the opportunity for Estonian policymakers is not simply in the knowledge-intensive

area. Given a significant level of unemployment and the comparatively low level of production capabilities, the challenge is to increase production and upgrade business organization in all sectors. There are obvious opportunities for value-add up-grading of raw-material intensive industries. Peripheral regions within Estonia can offer opportunities for labour-intensive operations of companies located abroad and within Tallinn.

Government leadership in developing a production modernization agency with the authority, resources and skills to transform traditionally organized companies into learning companies could have a step-change impact on productivity. Such advances in production capabilities would establish the organizational foundation for the diffusion of new product development and technology management capabilities.

Entry into the EU has created the opportunity for Estonian policymakers to leverage EU regional investment aid to achieve its capability development goals. Here again Ireland and Finland have shown the way. The composition of Irish Structural Funds shifted from over half going to direct aid to productive sectors (marketing, design skills, R&D) in the first period (1989—93) to only about 15% in the third period (2000-06). The share going to human resources increased steadily from a quarter to over a third over the same period and physical infrastructure followed growing from less than one-fifth to nearly a half. Astonishingly, Irish GDP per head as a percent of the EU-15 average went from 66% in 1986 to 122% in 2002.

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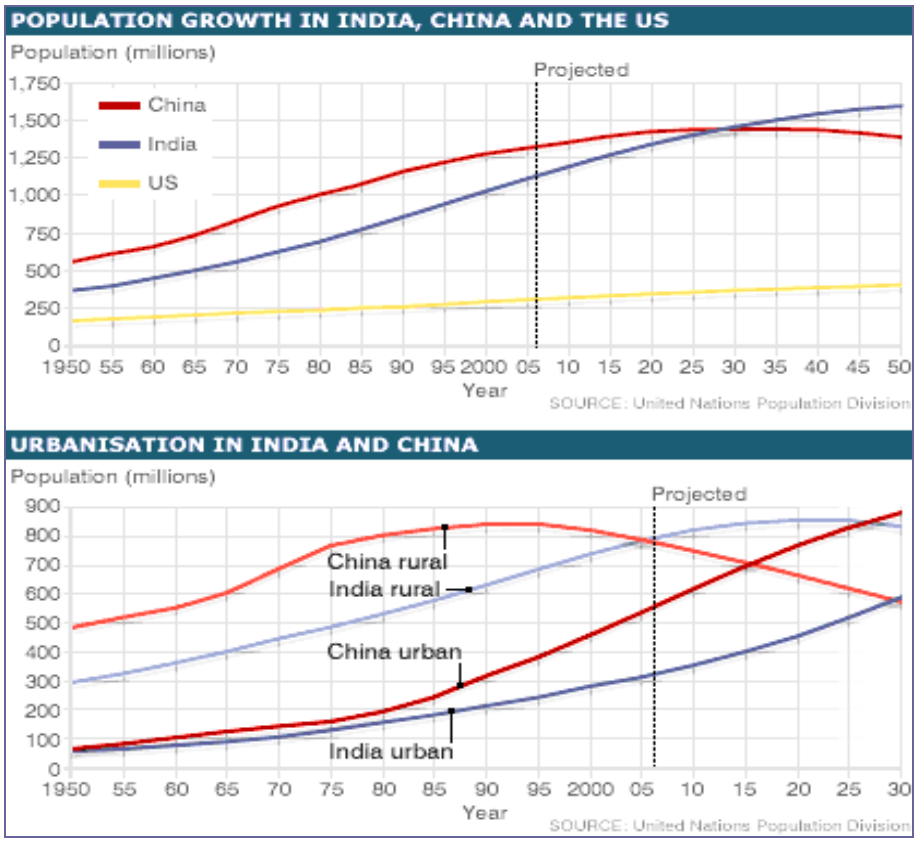
ANNAFLAVIA BIANCHI[8]: ASIAN GROWTH: PATTERNS AND CHALLENGES FOR EUROPE

INTRODUCTION

Asian growth attracts our attention to ways of facing the huge threat it may represent for the European economy, and also to the potential for joint growth.

Looking at population and economic growth of both China and India, the emerging picture leaves no Western country indifferent.

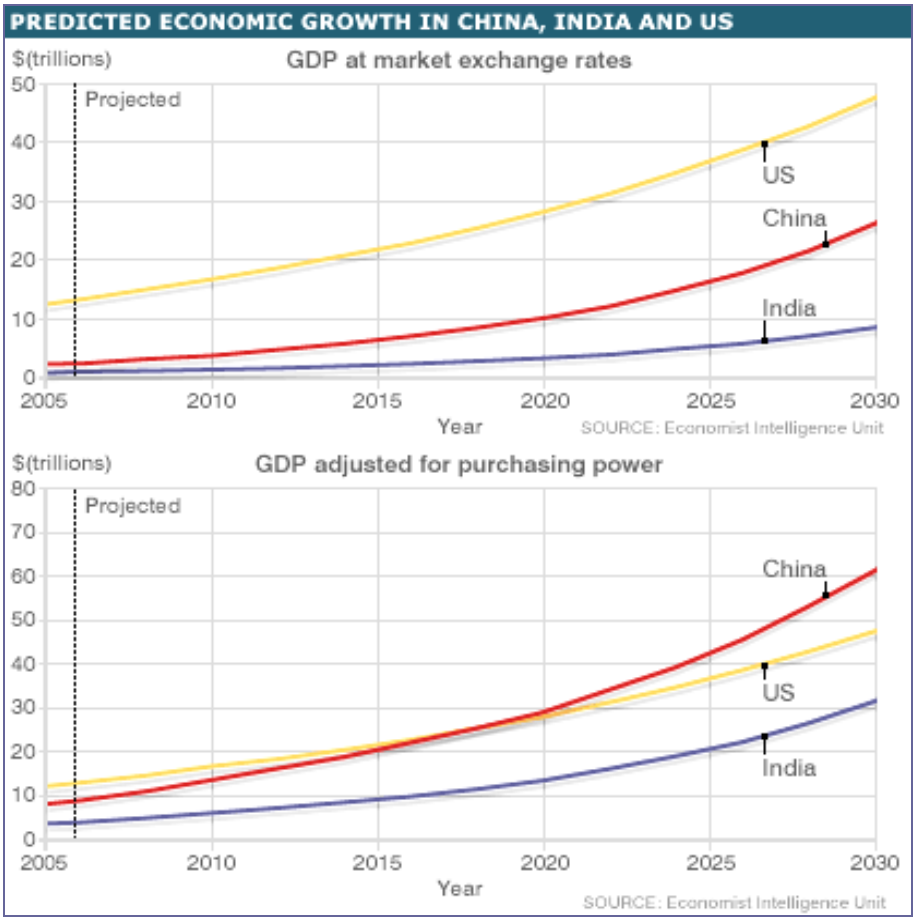
Chart 1. Population Growth in India, China and the US
Chart 2. Urbanisation in India and China



Source: Economist Intelligence Unit

[8] Senior Scientist, IPTS, DG JRC, European Commission, EC, DG JRC, IPTS ICT Unit. The views expressed by the author are not necessarily those of the European Commission.

Chart 3. Predicted Economic Growth in China, India and US

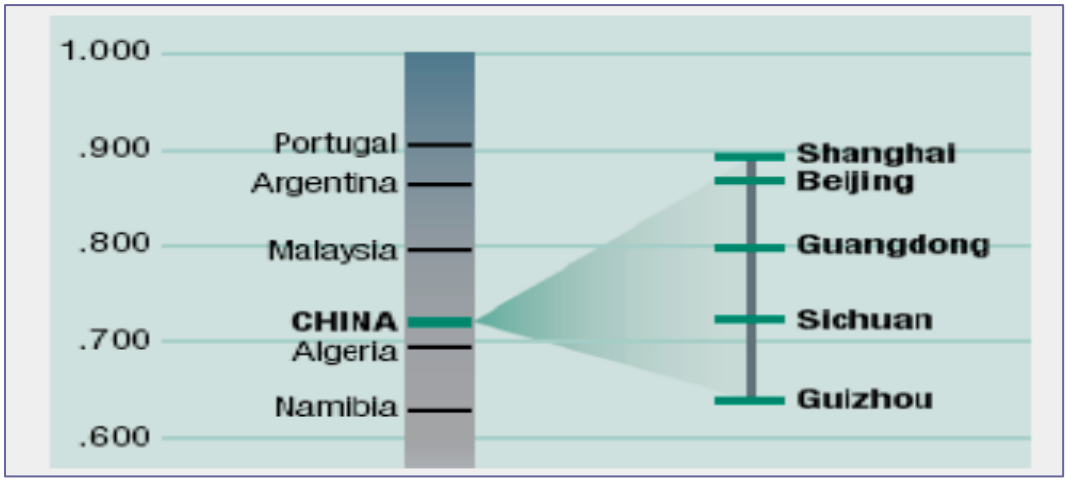


Source: Economist Intelligence Unit

CHINA IS THE FASTEST GROWING ASIAN COUNTRY

In the following pages we will focus on China because of its size and its prolonged economic growth. The Chinese and Indian populations together represent 40% of the world's population. Even minor changes in their domestic market potential, demand for resources, and pressure of their products on the global market will therefore have considerable consequences. China has been accumulating GDP growth of nearly two digits year on year for over ten years. These positive economic results have happened in parallel with an increase in the Chinese share of international trade and also with the rise in income of a large share of the Chinese population. Wide differences within China's huge and varied territory still exist, as the Regional differences in Human Development Index (HDI) of the UNDP 2005 have indicated. Though the most developed regions of China – like Shanghai and Beijing - have an HDI at the same level as Portugal, other regions, like Guizhou, have an HDI at the same level as Namibia. This remarkable difference has potential consequences in terms of social tensions and geographical conflicts, which are seen as possible factors for a decrease in the current growth of the Chinese economy.

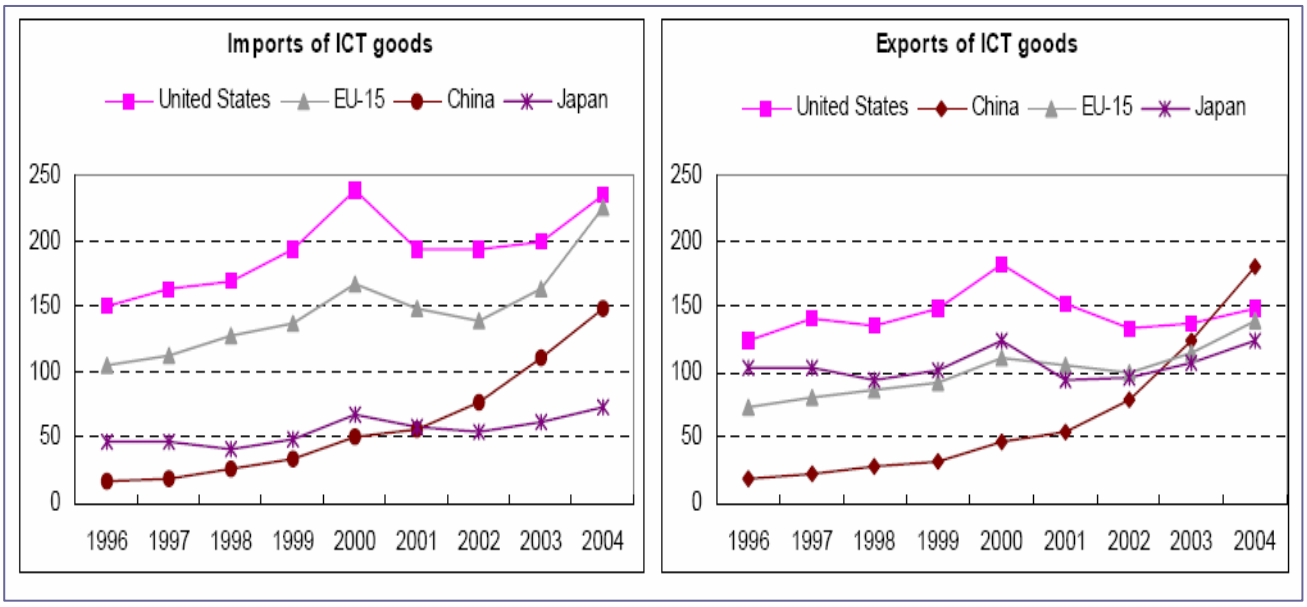
Chart 4. Regional differences in Human Development Index



Source: UNDP 2005

China's contribution to international trade is no longer limited to low value added products. Since 2004, China has risen to the first position as a global exporter of ICT goods, showing a similar trend in imports of the same group of products, although at a slightly lower level. This result is heavily supported by wide Foreign Direct Investments (FDI) in the ICT industry in China, nevertheless it is interesting to note that Chinese companies and related brands have started to be recognised in Europe. These results seem to be increasingly rooted in larger efforts in research.

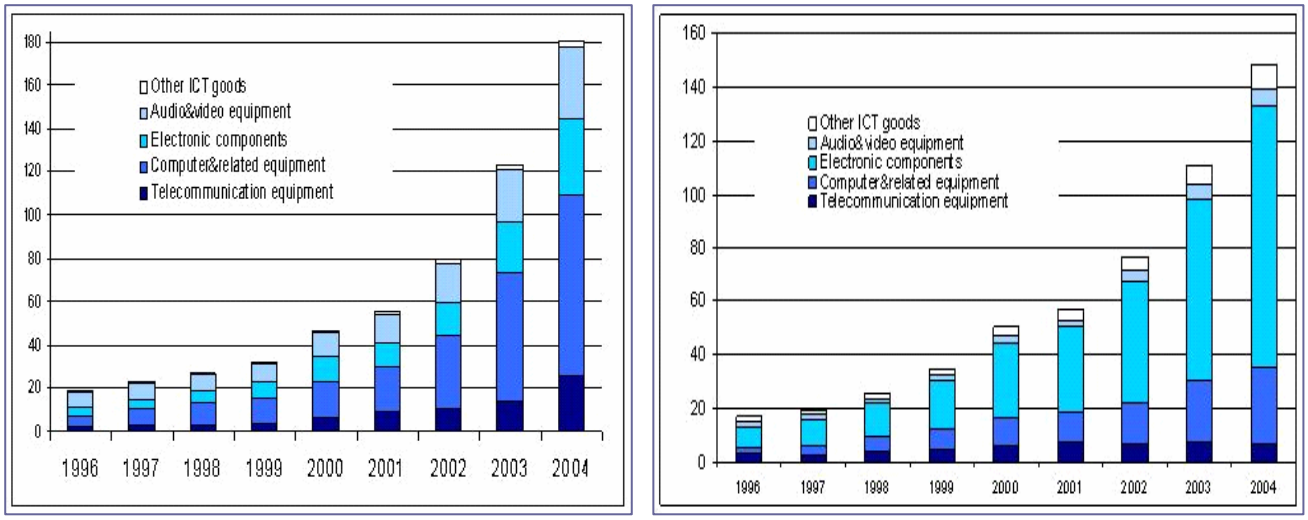
Chart 5. The ICT Exports and Imports of China



Source: OECD. ITS Database, 2006

Chart 6. The ICT Exports and Imports of China: sector composition (1996-2004, current USD billion)

Exports **Imports**



Source: OECD ITS Database, 2006

WHAT IS NEW IN ASIAN GROWTH?

We have outlined above the relevance of both the size and the dynamics of some Asian economies. Several other elements capture our interest towards Asia.

We are observing the rise of a world region rather than a set of separate countries, as the interdependence of the industries of each country has strongly increased over the last decade. Economic interdependence – based on growing outsourcing of full portions of the production cycle to neighbouring countries within Asia - is supported by FDI, cooperation in Research and Development (R&D) and by a set of Preferential Trade Agreements (PTAs), negotiated between pair countries which consolidate the economic relationships between them. The regional dynamics within Asia seem to be based not only on low wages but also on a process of specialization which has generated an intra-regional organization and global networks of Asian-based production. This coexists with the global role that Asia and especially China is playing in the economy, as a major global exporter, as a business partner and a financial player within the strongest global economies, as a strategic player in the Southern hemisphere, with a predominant role in the African continent. The third Forum on China-Africa Cooperation, held at the beginning of November 2006, showed the interest of governments on both sides: China seeks, above all, oil and other raw materials: metals, minerals and wood. In exchange for a guaranteed flow of these materials, China offers consistent investment in African infrastructure and energy. China also exports to Africa all sorts of goods at very competitive prices, filling the market and putting pressure on local producers. On the other hand, it provides the opportunity to large shares of the local population to buy consumer goods for the first time. On their side, African countries also have a variety of interests: from hopes of securing development support, to finding a financial partner who doesn't impose heavy political and economic conditions.

Thus, China is imposing itself as a global economic player with Chinese multinational companies taking a growing role. The Chinese economy is rooted in Asian regional dynamics, based on intra-regional organization of production networks. China has put in place development strategies which foresee an increase in high-tech and higher value-added activities, more and more extended to service activities. It is also increasingly mobilising and energising the knowledge base of the country, which affects education quality and extent, R&D and patents, and innovation in general, which has become the leitmotiv of the current political phase.

We are also observing accelerated benefits linked to improved infrastructure and the increase in high tech activities, ICT included. China is following, to some extent, a different path from other Asian countries.

Some countries, like South Korea, are following a determined path toward the knowledge economy, with remarkable results in terms of the diffusion of high quality broadband infrastructure and with a clear commitment to enhancing the education level of the country (in the 2006 OECD ranking on education, S. Korea jumped to third position).

Other countries like India, still benefiting from cheaper and quite highly qualified labour, are widening their contribution to the value system by getting involved in higher value-added service activities and in generating new products, related to, or based on, the services themselves.

China shows a growing commitment to enhancing its innovation capabilities. Recent official speeches have stressed concepts such as "innovation", "sustainable development" and "a resource-saving, environment-friendly society", as well as "harmonisation". Chinese leaders are planning the future years of growth of an "innovation-based economy." Paul Krugman's 1990s critique of East Asia's export-based economies is now top of the policy agenda in China. How to run away from the "embarrassing" situation described by the Minister of Commerce of having to export 800 million shirts to pay for a single imported aeroplane? How to increase the value of the production activity which will stay in China? How to promote indigenous, self-driven innovation, that does not depend on foreign technology, but still to co-operate with others?, The aim of this would be to both decrease the payment of standard royalties, and also to increase the value added to Chinese production. Only 1/5 of the value of products processed in China, like DVDs, stays in China. China gets money only from labour.

In order to pursue this goal, the following actions have already been identified: increase and select investment in economic activities; change Chinese institutions: from a planned economy to a market economy; recognise that talent needs a position, a professional career, and money; and smooth the way for new companies, in terms of administration, land, and access to money, especially in the main cities.

This strategy is seen as essential for enhancing innovation in the country. The consequent development will be good for China and also for developing countries, which will benefit from cheaper and better products.

The goal is to create an "innovation economy" within 15 years, through the invention of their own technologies and an increase in State R&D spending from 1.3% of GDP today to 2% in 2020.

RESEARCH POLICY

In March 2006, China launched its 11th five-year plan for economic and social development for 2006-2010. Some key measures aim to help spread wealth and improve the lives of 800 million rural people. China will aim for a growth in gross domestic product (GDP) of about 8% this year and an average growth of around 7.5% over the next five years.

The road to new economic growth chosen in China is based on a medium and long-term S&T strategy - the long term one is from 2006 to 2020.

The main areas where action should be taken have been identified as the following:

- The government should develop S&T for persons, environment, water, natural resources.
- Indigenous innovation capacity should be stimulated/promoted in industry, equipment, information, etc.
- The biology industry should be encouraged to invest in and promote bio-technologies, products for health, agriculture, food.
- New materials should be developed.
- Marine technology should be developed to find more efficient ways of extracting oil from the ocean (12K km of coast)
- Attention should be paid to education and training of talent. Chinese students who studied abroad should be encouraged to come back and build companies. Lack of talent is a threat to the development of new technologies.

A first range of specific actions accompanying those aimed at general innovation are:

- Increase the money devoted to research from less than 1.3% of GDP today to 2% of GDP in 2020.
- Lower taxes for enterprises which invest in R&D.

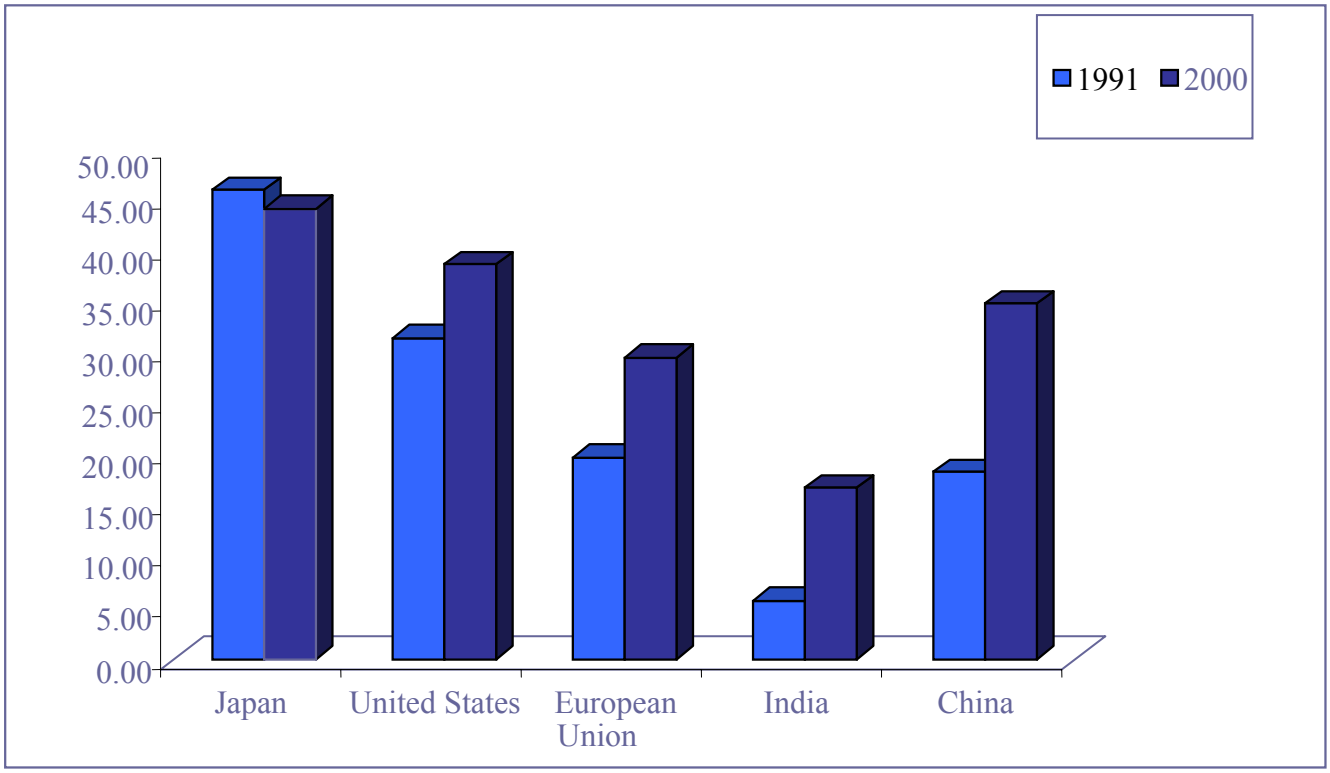
- The government should encourage risk investment, to develop and support ideas on technology. Young people should have access to risk investment from government or banks.
- Encourage areas of investment in research. The quality of research in the existing 53 high-tech national parks, and the more than 100 provincial ones should be promoted and new high-tech enterprises attracted into them.
- Strengthen international co-operation, develop big projects like Galileo. A project, for example, could build on the 3000 year old Chinese medicine, by doing research and co-operating with scientists abroad.

Where does China wish to get, as regards the information industry, by 2020?

- Integrated Circuits: Now more than 80% of the ones used in Chinese products come from abroad. China wants to develop its own microchip production.
- Software: The ability of Chinese researchers to design office software should be exploited and Linux encouraged,
- International standards/patents for the information industry: The goal is to reach 50% of Chinese patents in Chinese industry. Now fewer than 30% have been invented in China. In some sectors like the information industry or machines Chinese patents are only 1%.
- Key technologies: the ones to focus on are key applications, software technology, mobility, digital TV, next generation networks, and RFID
- Industry: the main ones will be electronic components, machine electronic products, security.

A sign of the expansion of the knowledge base towards specialisation in innovation in ICT can be seen when looking at ICT patents as a percentage of the total Chinese national patents, as shown in the following figure.

Chart 7. ICT patents as % of total national

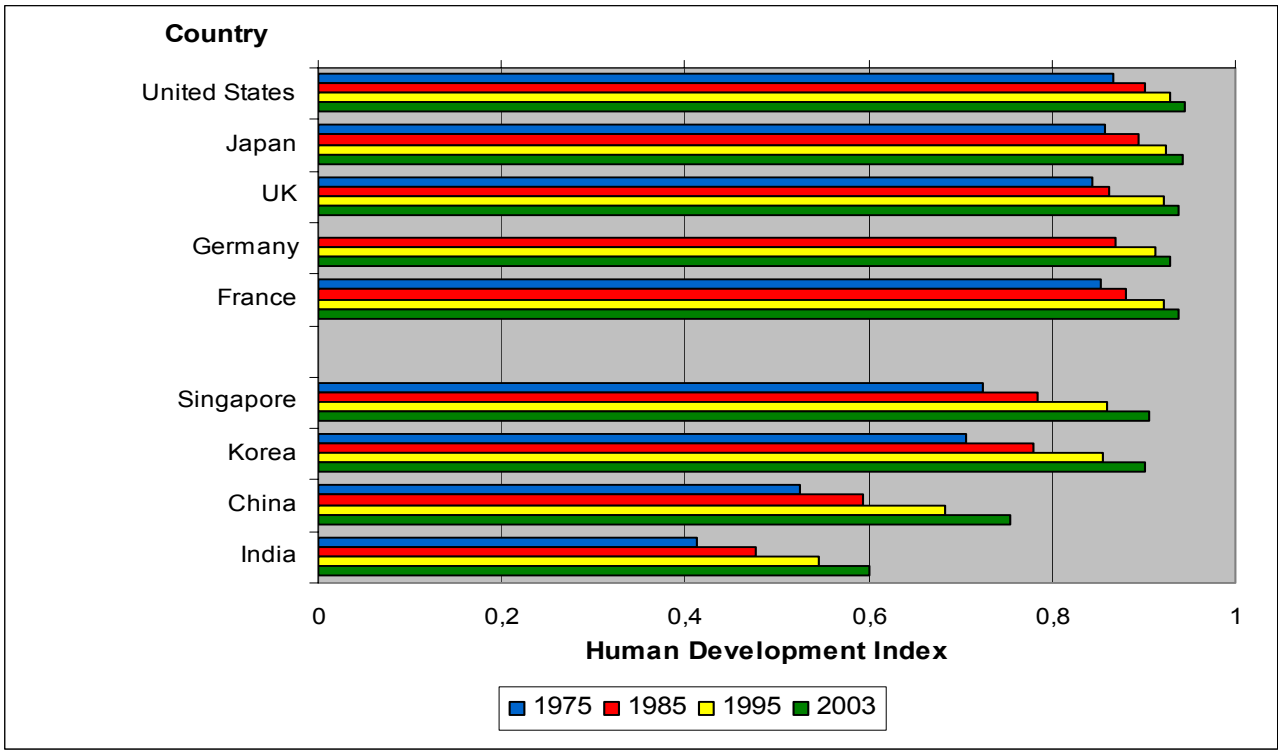


Source: OECD

China is improving as regards all four pillars of the Knowledge Economy Index (KEI), part of the Human Development Index of different countries provided in 2005 by the World Bank, although it still lags behind in

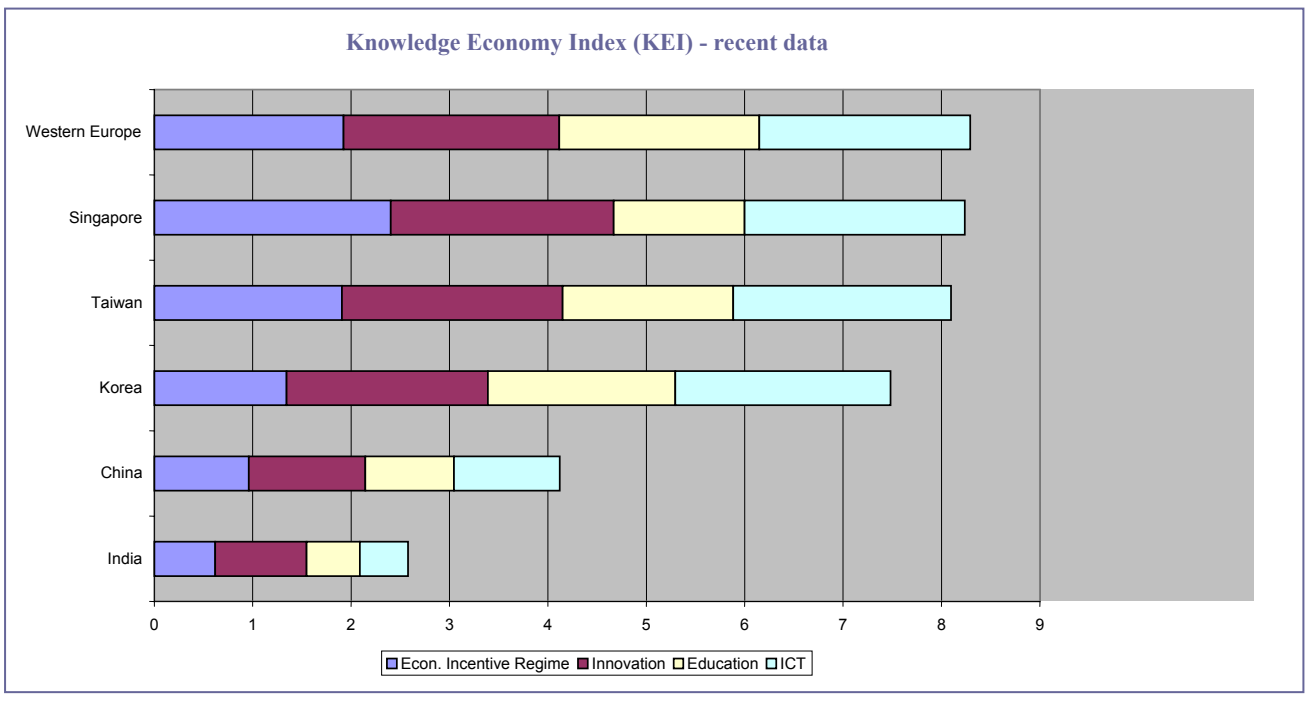
absolute terms. Lower growth is seen in the share and quality of educated and skilled labour force, and in the economic and institutional regime, while better results are recorded in both the innovation system and in modern infrastructure.

Chart 8. Human Development Index in some countries



Source: World Bank, HDI and KBE, 2005

Chart 9. Knowledge Economy Index – Cross Country Comparison



Source: World Bank, HDI and KBE, 2005

The Information Society is, of course, an issue in this framework. Priorities of the 15-year Informatisation Plan, though still to be detailed and substantiated, are:

1. Economy informatisation
2. eCommerce and eGovernment
3. Advanced culture
4. Infrastructure, informatisation and the social aspects of the Information Society
5. Enhancement of citizens "quality", i.e. skills and attitude towards informatisation.

These policies – both the industrial and commercial ones, and the research, education, innovation and "informatisation" ones (proposed as a translation by the Chinese politicians and academics) seem to be consistent with supporting the opening up of the market through trade agreements, the coordination of a fragmentation of production along global value networks, and the growing competitiveness and presence in the service sector, increasingly based on innovation and knowledge.

WHICH STRATEGY FOR EUROPE IN THIS CONTEXT?

In the short term, European countries and, especially at the aggregate level, the European Union needs to prepare for cooperation with stronger partners and competitors in China by:

- Cooperating in education: Welcome more Asian students, for sharing common cultural and organisational framework
- Cooperating in building on our expertise in services, applications and content
- Increasing dynamic interactive capabilities: produce the right goods and services on time, use the window of opportunity offered by China's current rise
- Improving the alignment and cohesion in research policy and development strategy: Considering Asian market requirements in European R&D.

In the long term, a new modus operandi has to be defined. Europe has to reposition itself, through competition or co-operation, or probably a mix of the two: co-opetition.

EU-CHINA COOPERATION IN RESEARCH

Why is the EU interested in research cooperation with China, and what will each side gain?

- Awareness and knowledge of the Chinese context and rules. For this it is necessary to encourage the flow of EU researchers to Chinese universities and research centres, and vice versa
- Interest in accessing Chinese human resources, to pave the way to market access, and accelerating results in the projects and to position companies as global players. However, the EC needs to insist on market access and standards and respect IPR.

The following actions should be taken at European level: refine conditions for cooperation in research; analyse the conditions of market access and IPR; define the concept of reciprocity: a broad approach is preferable.

As they are forced to face a policy towards IPR and a daily practice by Chinese companies, which are not fully cooperative, European companies and research institutions must contribute to close management of IPR in research cooperation projects. Their main tool is the consensus agreement, signed within the cooperation research project by all partners. Complementary measures for the enhancement of cooperation could be common workshops, coordination of activities, and participation in projects on a case by case basis.

The main aspects, which emerged from a debate among European companies on the future of cooperation with China in research, can be synthesised in the following points.

Knowing the Chinese legal and practical framework for research

- European companies and institutes need to know and understand the Chinese context and rules better (the unwritten ones too) before starting cooperation with Chinese organisations.

- The framework for research and standards is complex, as several intertwined institutions are involved. It is also changing, and is especially influenced by the China's recently announced main goal of increasing its contribution to innovation (indigenous, internal, independent innovation).
- Due to the Chinese political structure, the ownership of an IPR can shift from a commercial company to a state-owned entity. As a result, European partners have to prepare in advance for these eventual occurrences, within the project contract by signing appropriate agreements.

Preparing for research cooperation

- Personal relationships and mutual knowledge of each others' contexts can help enormously when setting up cooperation and opening the sharing and communication channels. In China, personal networks play a critical role in the economic and political spheres.
- Extension of the duration of cooperation will dramatically improve the results.
- Cooperation in research, common research activity, opens the door to establishing business in China.

Managing the IPR issue within the project

For IPR generated within a research cooperation project, mutual reciprocity, or IPR partial access rights, would be the solution. The research lab set up in Europe (Germany) by Huawei will be a testbed. European companies would like to participate in Chinese standard certification committees.

Acting as one economic and political subject

In Europe, countries and companies are promoting many standards, national champions and national knowledge. In both the US and Japan the national approach is stronger. China does not understand our multiplicity. The EU needs to speak a single language with a single European standard. Even if we have to proceed case by case, we should build coordination on all the experiences.

One company with established research cooperation in China says: “We are still far from a unique view in the EU. And we are again designing isolated projects, and developing cooperation privately as in the past. Thus, we Europeans are not collaborating to face China as one country/region.”

Further systematic assessment of research cooperation

Individual research cooperation experiences need to be analysed in more depth, in order to identify the most favourable initial conditions and behaviours, and to isolate the critical aspects which need specific attention and/or negotiation for more satisfactory results and benefits for all partners.

Are European companies ready to calculate the technological and economic feasibility of a double standard in their products?

Areas of future research

How can Europe position itself with respect to China in the medium term: Competition? Cooperation? Co-opetition?

If the future is web2.0 type or Internet 2 – i.e. blogs, search engines, auction websites, games, VoIP, podcasting, wikis, social networking websites, peer-to-peer services -, where is Asia positioned with respect to Europe?

China's indigenous innovation policy strongly supports participation in the science and knowledge-based global economy. First of all, it is counting on its domestic market which is big enough to justify separate standards, and it is open to competition. Secondly, developing countries will be ready to buy Chinese brands as long as they are cheaper. This will also be the case with several European consumers. The EU must face this potential trend, setting all possible premises of cooperation. This trend should be validated by further research.

Starting from the IPTS-ESTO Asia project (forthcoming) conclusions, is the E-M-U (Electronic, Mobility, Ubiquitous) model in technology being adopted in China too? This will go along with:

- a shift in emphasis from supply to demand drivers
- a shift in emphasis from high-tech sectors to economic systems at large
- the use of informatisation (e-paradigm) to improve social conditions – 'mosaic society'

These research issues should be clustered and selected on the basis of a priority list of urgent answers required for EC policy-making.

CONCLUDING REMARKS

Understanding China's new research and innovation policy and setting the scene for an enlargement of the cooperation opportunities both in traditional economic activities and in high value-added, advanced ones appear to be the two main directions for cooperation policy and for co-evolution of the economic systems of Europe and China.

There are still important gaps in the information about the Asian Growth models, and specifically the Chinese one, as well as deep disagreements on how to assess these. Nevertheless, when analysing the nature of growth models across Asia, the changing technological base is a shared analysis by most experts and politicians, and points at immediate and strong impacts on the competitiveness of European ICT industries, including those at the top of the production chain. The debate is still open when it comes to the deeper interpretation of the major factors of the recent growth in Asia. While some give prior importance to the strong top-down industrial policies, others observe the effects of changing patterns in demand and demand policies (the forging of new advanced societies), or the driving force of new types of trade arrangements favouring the emergence of an interdependent Asian continent, as a new global entity, rather than the emergence of specific countries or industries.

In-depth, systematic research, conducted in close cooperation with Chinese scholars and in alliance with Chinese institutions and policy makers, will shed light on the best ways to use current European qualities in research, production, institutional setting and cooperation, in order to strengthen the opportunities for the present and to build cooperation in the future.

PETER LOVELOCK[9]: THE CHINESE ICT MARKET – INNOVATION & INTERNATIONALISATION

According to OECD statistics, in 2004 China became the world's leading exporter of high-tech goods like laptop computers, mobile phones and digital cameras. China exported US$180 billion worth of ICT goods in 2004, compared with U.S. exports of US$149 billion[10].

China's Electronics and IT market was worth US$480 billion in 2005 with the revenue of the top 100 Chinese manufacturers reaching US$120.5 billion – a year-on-year increase of 18.2 percent (Table 1). MII Vice Minister Lou Qinjian has forecast that the market will hit US$870 billion by 2010. However, despite healthy revenue growth, the profit margins of the top 100 players have been fading, the average profit margin falling to a five year low of 2.5 percent.

Table 1. 2005 Electronic Communications Industry

Sector	Revenue (RMB mln.)		%	Profit (RMB mln)		%
	2005	2004	change	2005	2004	change
Computers	1,064,400	874,900	21.7	20,900	15,900	31.7
Radio Communications Equipment	613,200	47,270	29.7	24,400	28,800	-15.4
Electronic Components	573,500	409,200	40.2	30,900	23,200	32.7
Home Entertainment Equipment	376,200	343,300	9.6	6,400	1,400	361.7
Broadcasting & TV equipment	30,700	15,800	94.9	1,100	400	140.7

Source: Ministry of Information Industry ***http://www.mii.gov.cn/art/2006/02/28/art_941_7107.html***

But one of the strengths of China's larger companies is their ability to mobilize substantial resources for R&D in line with China's national priorities, as spelt out in the 11th Five Year Plan (2006 – 2010), to focus on innovation, the development of Chinese standards and the registration of Chinese patents. The top 100 players in 2005 had 93,600 people working on research and development (R&D) activities, accounting for 9.6 percent of their total employees. The annual R&D spending of the top 100 in 2005 was US$445 million, accounting for 3.7 percent of total revenue, compared to the industry average of just over two percent, and a national average of under two percent.

[9] Deputy Director of Telecommunications Research Project, Centre of Asian Studies at the University of Hong Kong
[10] OECD ITS database url: http://www.oecd.org/document/8; See also 'China topples US as world's top high-tech exporter', *Reuters*, December 12, 2005.

CHINESE ICT MARKET GROWTH DRIVERS

China's ICT objectives are two-fold: sustainable domestic development and international competitiveness. In other words:

- a Chinese market for Chinese companies – no economic sector, and certainly no strategic sector, is to be dominated by foreign companies; and
- The creation of a leading international brand in each sector – e.g., a Chinese Microsoft, a Chinese Cisco, a Chinese Ericsson, a Chinese IBM, a Chinese Accenture, and so on.

China's strategic approach to these objectives has been compellingly simple: use the size and potential of the domestic market to attract the necessary capital, technology and expertise; use state guidance and the scale of the domestic market to create (or enable) national champions to dominate each key sector of the domestic economy; and provide state support to promote these national champions internationally.

This should not be seen as mere imitation, as it is often characterized. The focus upon skills acquisition and knowledge transfer that comes from working with leading multinationals is predicated on continuous development up the value chain, rather than simple market protection (or IP theft). Lenovo's domestic partnership with Compaq in the 1990s leading to its recent acquisition of IBM's global PC division provides one of the foremost examples. Moreover, for the strategy to be successful, and vigorous growth to sustain, requires a continuous revision and outward shifting of the goalposts.

Thus, where it was enough previously to use China's domestic market to attract foreign investment and technology, the focus now is a dual growth strategy – driving domestic growth by expansion and integration westwards away from the coast, on the one hand, and driving international expansion and growth outwards from the coastal Tier 1 cities, on the other.

It is within this context that ICTs have transitioned from not only being a "pillar" sector of the economy to also becoming an underlying enabler and driver of overall economic growth. As such China is specifically seeking to:

1. Create a "harmonious society" by driving technology adoption so as to address economic disparities;
2. Move from rapid development to "sustainable development" by adopting ICT systems to improve efficiency and reduce waste;
3. Promote indigenous innovation by promoting the creation of technologies, products and standards for which China owns the intellectual property rights (IPRs);
4. Change the composition of ICT investment from low value-added activities such as assembly, testing and packaging to intermediate- and high-technology goods and services;
5. Promote overseas expansion of trade and investment in high-technology areas by encouraging Chinese manufacturing and services enterprises to 'go global' including investing overseas in R&D, manufacturing and service networks;
6. Move up the value chain by developing core technologies and improving systems integration in important industries;
7. Focus upon a fair, reasonable and non-discriminatory (FRAND) regime of IPRs;
8. Transition from state-driven to enterprise-driven adoption of ICT systems.

This last point is important. While China is the world's largest telephony market, the world's second-largest Internet market, and the world's fastest growing major broadband market, the enterprise IT market is still comparatively small. But with the aggressive ongoing privatization of the SOE sector, and the booming SME sector, it is this enterprise market rather than the mass market that is now seen to be at the forefront of the government's strategy to increase value, dissemination of usage and indigenous innovation.

Four key drivers of ICT adoption are apparent over the next five years:

1. Market Growth

- The shift in focus from networks (and manufacturing) to usage means that network economies are now fuelling further growth, creating a self-reinforcing 'virtuous cycle', and a demand for new development and innovation;
- Continuing privatization and fragmentation of the SOE sector has resulted in a booming SME sector, and it is this sector rather than the corporate sector which is driving much of the rapid growth in mobile telephony, Internet connectivity and intra-company networking.
- The consolidation of the 'traditional' ICT markets (e.g. screens, batteries, electronics goods) is promoting R&D investment by the largest enterprises into higher margin sectors, providing multiple opportunities for smaller innovative firms to leverage off these funds as well as the disbursements from the government;
- Somewhat similarly, the outward expansion of national champions (Huawei, Legend, TCL, etc) is leading to opportunities for smaller, nimbler firms to supply and service them;
- The development of an ICT production capacity beyond low value-added activities such as assembly, testing and packaging is resulting in the growth of a domestic intermediate goods and services sector.

2. The shift from state-driven to enterprise-driven

- In the 1990s the government focused on devolution of fiscal responsibility to the provinces to fuel demand, in the 2000s it is devolution of economic control from the state sector to the corporate sector;
- This has already fuelled the rapid emergence of a private SME sector, which is foreshadowing the explosion of a corporate services sector;
- This in turn will lead to the rapid adoption of corporate IT systems, and services agglomeration;
- Banking, finance, insurance, travel, real estate, education, health services… the emergence of these industries is going to exponentially increase both the investment and consumption of IT networks and services.

3. Government Promotion

- The role for ICTs in building a harmonious society arises at two very different levels. ICTs will play an important role in advancing the availability of health care, education, access to e-government, and so forth. ICTs are also mentioned in terms of strengthening the military to "raise the army's overall ability to fight a defensive war fought using IT" and to "improve defence-related research and development of new and high-tech weapons and equipment".
- By 2010, the MII aims to have every rural village connected to the telecommunications network and to bridge the digital divide by providing ubiquitous Internet access
- The Government will continue to provide "guidance" through financial support for R&D, tax incentives, funding for SMEs, government procurement policies and grants for technology applications, etc. (This is all part of the effort to "strengthen the national innovation system", according to Premier Wen Jiabao.)
- And, of course, the government is placing great emphasis upon the need for a fair and reasonable and non-discriminatory (FRAND) regime of IPRs for the ICT sector.

4. Internationalization

- The expansion of Chinese vendors overseas is still overshadowed by the dominance of foreign-invested companies exporting ICT products from China, but in certain key areas Chinese companies, such as Haier, Huawei, Lenovo, TCL, Konka, can already compete on global terms
- They have several distinct advantages.
  1. low costs locally;
  2. good access to lines of credit and the support of state policies;

3. they are also investing in overseas R&D and production facilities, in some cases as joint ventures or partnerships
4. Chinese multinationals are beginning to emerge, and Chinese telecom carriers and banks and other support service industries will follow them.

DEVELOPMENT DIRECTIONS

Many of China's ICT markets, such as the making of PCs and consumer electronics (such as analogue TVs and DVDs), are already mature. Even though China produces around 25 percent of the world's LCD screens most of these are at the lower end of the market and are not highly competitive with the larger and more advanced screens coming from Korea and Japan. China simply lacks the R&D and skill-sets at this stage to compete in this market.

But one area in which China is determined to grow is in its capacity to produce ever more sophisticated integrated circuits (ICs). In 2005, China represented 21 percent or approximately US$40 billion, of the world's US$192.4 billion in IC consumption, up from six percent in 2000, making China the world's largest consumer of ICs, and MII's forecast demand for IC chips is US$124 billion by 2010. China-based IC production amounted to about US$2.6 billion in 2005, around 1.3 percent of world production, and is expected to grow at an annual rate of 36 percent to US$12.1 billion by 2010, still only 10 percent of China's forecasted demand and only 3.8 percent of world production. Nearly 40 percent of demand in China comes from the computer industry. In China's semiconductor value chain, China's top ten IC design companies received 45.2 percent of the total IC design industry revenue in 2004. Traditionally, test and packaging revenue accounted for over 70 percent of the total semiconductor industry revenue. However, as new international grade foundries like SMIC and GSMC build up, semiconductor manufacturing is gradually becoming the main force behind China's semiconductor industry.

These developments will show up internationally in two ways. First, China will increase its exports of ICs to third country markets, such as the ASEAN states where in 2004 exports were already US$2.4 billion. Some of these exports will go to Chinese-invested factories in countries such as Malaysia, Thailand and Vietnam, taking advantage of low costs and hedging against the revaluation of the Chinese Yuan and also against trade restrictions in the US or the EU against Chinese exports. This is an important feature of the new economic relations developing within the Asia-Pacific region. The fear that the rise of China would simply suck out trade and investment from Asia's emerging economies is proving too simplistic, at least in the ICT sector. Trade and investment are two-way affairs, and Chinese investment can be expected to continue to rise. Insofar as investment is a substitute for trade, as assessment of the economic power of China should take both into account. Second, China's enhanced capabilities in IC applications chip design and manufacturing will show through in China's electronic products exports. This is probably already most advanced in the telecommunications equipment sector, led by Huawei.

An area of slow but steady growth is to be expected in China's software sector, an area in which China has lagged behind countries such as India. Off shoring and BPO are aspects of this. Outsourcing revenue worldwide, which encompasses processing bills and credit-card applications to managing entire human-resources operations, is forecast by the Gartner Group to reach US$24 billion by 2007, and an estimate for the Asia-Pacific region for 2009 is a market value of US$14 billion by 2009, growing at a compound annual rate in excess of 20 percent. One estimate suggests China currently has around US$2 billion (RMB16 billion) of the outsourced-services market. Other estimates are lower. Most of that activity occurs in Dalian, a north-eastern city where, for reasons of history and geography, many locals speak Japanese and Korean, and which therefore handles back-office functions for companies from Japan and South Korea.

Another area of growth is likely to be in the demand for software systems and applications in civilian life and domestic industries. The 11th Five Year Plan and subsequent economic policy statements make it plain that China's Government wants to shift the distribution of national income away from excessive capital investment and more towards consumer spending and income support for the lower-paid, especially in rural areas. This policy will result in a rising demand for health, education and housing and in each of these areas global best practice is extensively employing ICT. For example, patients' health records will be digitalized for easy access by doctors, ICT-assisted distance learning is already a major initiative in China, and energy-saving IT systems in housing developments are becoming state-of-the-art.

On the other hand, state enterprise reform has been slow to create a demand for the outsourcing of domestic IT services. While most MNCs are content to outsource their IT services to specialized providers, many Chinese firms prefer to keep IT in-house. Yet that is set to change over the coming years. China's IT outsourcing services market reached RMB3.13 billion in 2005, increasing about 16 percent over the previous year and market growth is expected to average a CAGR of over 20 percent for the coming four years to reach US$1 billion by 2009.

The real test for China will be its ability to move from comparatively low-end value assembly, testing and packaging of items such as PCs and TVs to high-end value design and manufacturing of components, such as microprocessors, digital signal processors and ASICs (application specific integrated circuits) in which China can file applications for patents.

For example, China is putting resources into the development of semi-conductors, led by companies such as SMIC which operates China's largest foundries. China is also pursuing the development of its own national ICT standards in areas such as 3G (TD-SCDMA), WiFi (WAPI) and WiMax, RFID, audio-visual standard (AVS) and so on. One of the strengths of China's larger companies is their ability to mobilize substantial resources for R&D in line with China's national priorities, spelt out in the 11th Five Year Plan, to focus on innovation, the development of Chinese standards and the registration of Chinese patents. The top 100 players in 2005 had 93,600 people working on research and development (R&D) activities, accounting for 9.6 percent of their total employees. The annual R&D spending of the top 100 in 2005 was US$445 million, accounting for 3.7 percent of total revenue, compared to the industry average of just over two percent, and a national average of under two percent

The other important aspect of China's national ICT strategy is to encourage its larger more successful companies to 'go global' in line with overall national economic policy. Companies like Haier, Lenovo, Huawei, ZTE are already well known internationally. For example, Huawei has established cooperation ties with 28 of the world's top 50 telecom operators, including U.K.-based Vodafone and the U.S.-based AT&T. It has set footholds in 14 European and American countries including Germany, France, Britain, Spain, Portugal, the United States and Canada. A senior executive predicted that Huawei's overseas sales in 2005 would reach US$5 billion.[11] This will be the first time that Huawei's overseas sales would surpass domestic sales.

China's telecom service companies are also bidding to enter overseas markets. In 2002 China Telecom opened offices in North America and is building a CN2 NGN network. According to Telecom their Tier 1 companies include AT&T, Sprint, SingTel and Malaysia Telekom and in 2004 opened an office in London 'aimed at businesses related to Chinese companies overseas'. Telecom has also made unsuccessful bids for a licence in South Africa and a stake in Excelcomindo, a mobile operator in Indonesia. Although China Unicom lacks the resources and market position to go overseas, China Mobile has both. After unsuccessful bids in Uzbekistan, Pakistan and India, China Mobile was recently on the verge of buying Millicom, a Swedish company registered in Luxemburg that specializes in emerging markets in low income developing countries in Africa, Asia and South and Central America. In Asia this would have given China Mobile access to markets in Cambodia, Laos and Pakistan. In 2006 China Mobile also purchased Peoples Telephone, a mobile operator in Hong Kong that was already owned by Mainland Chinese interests. An interesting aspect of China Mobile's purchase of Millicom would have been to have given the carrier entry into emerging markets comparable to the company's home market and an opportunity for China Mobile to further provide business for Huawei and ZTE in these third country markets.

China Netcom's foray into international investment was to buy Asia Global Crossing's submarine cable network as a distressed asset in 2001, only to sell the loss making venture in 2006. In January 2005 CNC bought a 20 percent stake in PCCW (Hong Kong), currently the subject of offers for its core assets from two non-Chinese investment banks who may or may not reach an agreement with CNC which may or may not result in CNC increasing its share of a restructured PCCW. The big question mark is will China allow a non-Chinese ownership of Hong Kong's dominant fixed line, broadband and Internet operator? In theory neither the Chinese Government nor the Hong Kong, SAR Government has powers to intervene, but in practice no one totally believes this. This underscores a general problem of the growing trend for service operating companies to enter new markets. As far as telecom operators are concerned, national governments are often reluctant to see their carriers being sold to foreign interests, and China is the same in this regard. In its turn China has come up against resistance to its companies entering overseas markets. For example, Huawei's efforts to build factories in India have been

[11] 'Huawei Blocked off in India', SinoCast China IT Watch, 24 April 2006.

thwarted for the past two years by the Indian government's reluctance to give the required permissions and without manufacturing investment in India, Huawei is finding itself disqualified from bidding on GSM projects for India's incumbent carrier BSNL.

As part of its global expansion strategy, China's leaders have undertaken numerous overseas trips to Asia, Central Asia and Africa to sign deals securing energy resources and offering soft loans for infrastructure projects including telecommunications. The principal strategy of recent years has been for Chinese vendors to secure contracts in developing country markets, such as Huawei in Tajikistan and Libya, but as noted above these vendors have already reached the point where their equipment can compete on price, if not always on the range of functions and user friendly designs, in any market in the world.

In summary, China's ICT sector is shifting up the value chain as its R&D capabilities grow, supported by state policies and the 11th Five Year Plan. The expansion of Chinese vendors overseas is still completely overshadowed by the dominance of foreign-invested companies exporting ICT products from China (nearly 90 percent of China's ICT exports), but in certain key areas Chinese companies, such as Haier and Huawei and Lenovo and TCL and Konka, can already compete on global terms. They have several distinct advantages. First, low home costs and, second, good access to lines of credit and the support of state policies, but third, they are also investing in overseas R&D and production facilities, in some cases as joint ventures or partnerships. Chinese multinationals are beginning to emerge, and Chinese telecom carriers and banks and other support service industries will follow them. But as the evidence from Asia suggests, this is not a zero-sum game. On the contrary, these developments open up more opportunities than they pose threats, but only if foreign companies can adjust and adapt accordingly.

CHINA'S INCREASING GLOBAL ICT MARKET SHARE

The rise of Chinese manufacturing has given rise at times to fears that industry, trade and investment would be sucked out of other developing countries. With ICTs the picture is more complex than that. In the ASEAN countries trade and investment has been two-way and Chinese investors have become a major engine of growth for ASEAN countries. ICTs were one of the five priority areas identified at the 5th ASEAN-China Summit 2001. China is reinforcing its presence in the newer ASEAN countries by championing and part-funding the Greater Mekong Subsystem (GSM) infrastructure project of the Asian Development Bank that includes a major telecommunications backbone proposal linking Yunnan (China) with Myanmar (Burma), Laos, Vietnam, Cambodia and Thailand with China Telecom taking a leading role and Chinese vendors supporting it.

Singapore:

ASEAN countries divide between Singapore and the rest. First, Singapore is a springboard to reach out to India, the rest of South Asia and ASEAN countries. For example, in January 2006 Shinco entered into a tie-up with Future Techno Design of Singapore to market its high-end portable DVD players in India. Second, Singapore also offers Chinese ICT companies to list on the Singapore Stock Exchange. Chinese companies now account for 10 percent of SSE listings. For example, in September and December 2005 China-based Memory Devices Ltd and foundry HeJian Technology (Suzhou) Co. launched their IPOs in Singapore.

Malaysia, Brunei and Thailand:

For the rest, Malaysia and to some extent Thailand attract Chinese investment and vendors because local production costs are low, local markets are attractive and exports are competitive. For example, Chinese companies grabbed a 30 percent share of Malaysia's 29-inch television-set market, up from nine percent in 2001, while Haier was reported as aiming to become one of the top three brands in the electrical appliances industry in Malaysia by 2008. Established in 2004, the local Haier unit had 450 dealers nationwide. Inevitably, Huawei and ZTE have both secured numerous telecom equipment contracts. For example, Huawei is building 100 3G W-CDMA sites in Penang for Telekom Malaysia and was cited as offering 3G equipment at prices 25 percent below its European competitors. In Thailand, Huawei won a contract with CAT to provide 51 provinces with CDMA 2000 equipment that was 60 percent of the benchmark price of Baht10 billion. These levels of prices from Huawei, and to a lesser extent from ZTE, are widely cited by operators around Asia. To what extent they are loss-leaders to build up a Tier 1 and Tier 2 customer base and to what extent they factor-in customer care and long-

term service support remains unclear, but what is clear is that no European vendor can compete on price alone. In the tiny oil-rich state of Brunei, Huawei in particular has won contracts for 3G W-CDMA.

Indochina:

China has been particularly active in this region, partly for geo-political reasons and partly for raw materials, for example to secure access to Burma's extensive forest timber. China Telecom has been assigned a lead role in promoting the GSM telecom infrastructure project, but also Huawei and ZTE and UT Starcom have won numerous telecom equipment projects in Cambodia, Laos and Vietnam, sometimes based upon soft loans from China and supported by China's Exim Bank. China's IT companies, Lenovo and TCL are also active in Vietnam where TCL occupies second place behind Samsung of Korea. Alcatel Shanghai Bell also has a strong presence, building upon traditional ties with France.

Indonesia and Philippines:

Despite their size, these markets are fraught with country, regulatory and currency risk which has held back their development. The usual Chinese brand names of Huawei, ZTE, Haier, TCL, Shanghai Bell are all active in Indonesia, in particular the sale of fixed-wireless CDMA and SCDMA technologies for the local loop. TCL and Lenovo are present in the Philippines, but Chinese telecom equipment vendors have not had very much presence up to date. In fact, the Philippines is one case where the shift of production to China does seem to be a threat, due in large part to the country's instability and lack of reliable infrastructure.

NICK VON TUNZELMANN[12]: THE NEW ASIAN GROWTH DYNAMICS: LESSONS FOR EUROPE

This report summarises the findings of the ESTO-funded project, 'Towards Knowledge-based Societies – ICT for Growth and Cohesion in a Global Knowledge-based Economy: Lessons from Asian Growth Areas'. The 'lessons' that it draws are not so much cases of copying policies or structures in place in East and South Asia but rather one of understanding the drivers of the 'new' growth dynamics and then making inferences about how Europe might go about reacting in a positive vein to those drivers. The first part of the report summarises the elements of recent Asian growth experience that seem relatively 'new'. The second part draws the 'lessons' of this kind, following the same layout as the first part.

The period covered is the years from the financial crisis of the late 1990s, when countries already well on the route to technological and market ascendancy (such as South Korea) were to find that new trajectories allowed them rapidly to reconnect with high growth performance, or, for those countries relatively unscathed by that crisis, the turn of the millennium. The study spans a range of the developed and developing countries of East and South Asia, but inevitably is unable to be comprehensive. The five 'new' characteristics of the growth dynamics are taken on the basis of a preliminary survey to be: 1) the contextual base, of a 'Global Knowledge-based Economy'; 2) the technological base, of a growing 'convergence' between technologies and markets; 3) the geographical base, of the rise of China and India and implications thereof; 4) the political economy base, of a coexistence between competition and cooperation, including new roles for the state; 5) the policy base, of mobilising and energising 'knowledge-based societies'.

In the course of the rise of the 'Global Knowledge-based Economy', knowledge is becoming seamlessly interwoven with all other activities, especially production. It is not just a question of 'knowledge', whether we are thinking of inputs (knowledge as compared with capital, resources, etc.), or of functions (e.g. organization, logistics, marketing), but the context of full integration of that knowledge with those other inputs and/or functions: in supply (including technology but also other forms), in production and in consumption The more advanced Asian countries are moving into high value-added service activities, and displacing their lower-end production to China etc. However even the latter countries are embracing knowledge accumulation. Examples include the new ICT-based services that are emerging in Singapore, the shift from traditionally low value-added software in India towards software R&D, Business Process Outsourcing, etc. in and around that country, or the beginnings of 'modular design' in China.

Old international divisions of labour are becoming outmoded, as what were termed 'value chains' dissolve into complex and overlapping 'value networks'. This involves new and much more complex 'alignments' of interaction in multiple dimensions than was the case under hierarchical 'value chains'. This further suggests that, although patterns of specialisation continue to exist, the view confidently held a decade ago that most knowledge was produced in just a few developed regions (including Western Europe) is now in question. A 'third wave' of globalisation in recent times involves the interchange of knowledge, partly embedded in production – the comfortable belief that the 'old' industrial countries produced most of the technology was reaffirmed by scholars a decade ago but already appears out of date. The reasons lie both on the supply side of costs – the availability of 'cheap' research labour in countries like India and China – and on the demand side of their huge internal markets. Yet we would stress the need to integrate the supply and demand sides of the coin, and this is where organizational ands institutional factors to be further developed below play a key role.

While much remains to be done to bring about the 'convergence' between technologies and markets, what is new is a vision of the 'knowledge-based society', going under the neologism of 'informatisation' across the Asian countries. This vision is indeed the main 'lesson' for Europe, in the sense of its shared take-up across all interested parties. We describe this as the E-M-U paradigm, adopting the terminology of successive government policy programmes. It goes beyond the E-paradigm (of electronics) into the M-paradigm based on complete 'mobility', and ultimately to the U-paradigm of 'ubiquity', according to which 'anyone, anytime, anywhere'

[12] Freeman Institute of Innovation, SPRU, University of Sussex

ought to be digitally connected, with full security. It involves extensive cross-sectoral and cross-functional R&D. In its intended realisation, old distinctions between high-tech and low-tech sectors, and between manufacturing and service production, will be eroded. It involves moving on from ICT production (hardware) to the production of information content, infrastructure and 'informatisation'. Around 'informatisation' there has grown up a new complexity of interactions. The bridge between supply and demand – the new applications and the new functions – has to be provided by a range of new institutions and organizations. Of very considerable significance are the organizations responsible for implementing and indeed advancing standards, like the China Association for Standardisation (CAS), or patenting, like China's State Intellectual Property Office (SIPO), or such public authorities as the Info-comm Development Authority (IDA) in Singapore and the Institute for the Information Industry (III) in Taiwan.

'Digital convergence' in fact involves the growing interdependencies among all four components of the 'information society', namely i) ICT production, ii) information content, iii) ICT network infrastructure, and iv) 'informatisation'. More broadly it implies the dissolution of traditional industry boundaries as ICTs permeate the economy and society at large – older ways of thinking about industry structures cease to hold good.

In geo-economic terms, China and India represent a different pattern from the earlier emergence of Japan, Korea and others, in that they each now account for over one-sixth of the world's population. This makes it possible for them, even in comparatively early stages of their catching-up, to be major world players in the sense of partly setting the 'rules of the game' in economic, technical and political terms, including new standards. These are being implemented in part through the kinds of organizations already noted.

Much concern has been raised in western countries about the competition offered in terms of cheap labour, but the role of informatisation here remains unclear. On the supply side, their growth in modern activities partly stems from availability of 'cheap' cognitively skilled labour, directed towards 'time-saving' technical change (speeding up, including the use of ICTs). On the demand side, their expansion is rooted in the huge absolute size of their middle-class markets, where such customers seek 'modernity', including electronics-based gadgetry. The other countries of the region have to adjust to the new dominance of China and India, whether ahead of or behind them in the development stakes. This tends to take the form of growing inter-dependencies rather than competition, in a context of rapid upgrading of capabilities in order to escape any threat from cheap unskilled labour.

Similar patterns are occurring within the larger countries at a regional level. At this level, knowledge gaps are probably widening. What can be seen at these levels is the refocus on knowledge bases in the core industrial districts. Established regions are de-specialising in low-end production but retaining or upgrading the high end, and with that intensifying the supply of technologies generated within the local region. Demand factors of high-end users consolidate these regional differences. In China the regions compete actively with one another, though at the same time the strengths of the three leading districts remain somewhat distinct, so one can also talk of a co-evolutionary process alongside the rivalry. The regional part of the China case study emphasises the key role played by local governments in maintaining and driving this process. For the foreseeable future, the digital and social divides seriously threaten stability.

For some time the governance pattern in these countries has proved able to combine the seemingly irreconcilable features of both competition and collaboration. The somewhat erratic spread of knowledge bases is blurring the boundaries still further. By western standards the role of the state is still very strong in these countries, whatever their political stance; despite the conventional view that – like western countries but in different ways – they are steadily moving towards 'liberalisation'. The governments of these countries display a lack of apparent concern (perhaps except Singapore) with issues of social and environmental divides, despite the apparent boost any state attention would give to social welfare and equity. Most forms of state intervention thus aim to be market-creating or market-compatible. The specific policies adopted tend to go beyond what is allowable in the EU, for instance, despite the growing membership of international bodies like the WTO that aim to restrict favouritism towards domestic resources and organizations. The acceptable face of this state aid, to European eyes, is the growing incorporation of high-value and complex functions like design and R&D into the knowledge-based production, since these have a degree of exemption from the rules restricting state aid. However the extent to which such activities can be claimed as pre-market in a context where, as already described, technology or knowledge-based development and production march closely together can be doubted.

In commercial terms, the role played by governments has been shifting from straightforward export promotion to support for integration into regional and global production-knowledge networks. At the same time, the role of their companies is becoming more assertive on the international front. As the entrepreneurial firms from these countries catch up, they become potential partners of western (including European) firms for collaboration, as well as being more serious competitors. They also become opportunities for taking over western companies as well as being themselves sometimes taken over.

In policy terms, the countries involved are aware that 'informatisation' is an ever-moving target, expressed in the succession of E-M-U programmes. The U-society is at one level an extreme manifestation of the convergence of technologies and markets, but its intentions go much further, "to build up a totally new country in technologies and culture", as the current Korean plan IT839 puts it. To realise this ambitious vision requires much more joined-up governmental thinking than these countries – or indeed their western counterparts – have hitherto managed. Though ministries are being rearranged and recombined, it seems likely that a diversity of approach will persist, in view of the complexity of interactions between demand and supply implicit in the U-society concept; in which case it is the unanimity of vision that is critical. The process extends well beyond the confines of states to 'align' states with markets, in ways touched on above. Institution building and growing responsibility for IPRs and standards play key roles. China puts considerable stress on open source software and on licensing technologies from MNCs (if need be compulsorily). As all countries become knowledge-based they do however need to countenance international reciprocity, such as the move to make IP piracy a criminal offence in Singapore. Again, it is international cooperation that matters at least as much as international competition. While a high degree of consensus between government and industry seems to have been achieved, the role of academia remains somewhat unclear. The interlinkages being promoted in western countries have instead decamped to science parks such as Hsinchu in Taiwan and other intermediate or bridging organisations.

Underpinning our analyses of these new and complex systems there run elements of several schools of thought, including 'new growth' theories, 'systems of innovation' thinking, and 'governance' approaches. However none of these capture the full texture of what we are observing. To do so we have instead resorted to the more encompassing perspective of the French 'regulation' school, and their concept of 'social systems of accumulation'. Though somewhat ill-defined, this permits us to interlink the rise of high-valued resources for production with the rise of higher-valued products, and establish a Schumpeterian role for Asian governments of instituting 'virtuous circles' through innovation-led growth. However many serious problems remain to be resolved, of which the most acute are the intense and widening social divides between those equipped for the Global Knowledge-based Economy and those not so favoured. These divides are expressed in terms of socioeconomic class, labour markets, demographic structures, regional contrasts and so on. They put a brake on drawing very specific 'lessons' from the Asian experience.

The implications of the new contextual base in Europe are driven by parallel conceptualisations of the future Global Knowledge-based Economy and the 'information society', but at present lack the coherence of vision in Europe that we found in the Asian countries. The EU has the opportunity in principle to try to compete with the Asian prospects ('beat it') or complement it through collaboration and cooperation ('join it'). The Lisbon agenda of 2000 paid little or no attention to the possibility of other countries catching up on Europe in regard to such futures, being concerned solely with EU catching up its fellow Triad members. The former thus takes the EU into new territory.

The shift of emphasis from production to knowledge, albeit tied into each other, raises some hopes for Europe to benefit from these new developments through collaboration with the 'new Asia'. Knowledge production of its very nature tends to be cumulative and collaborative; moreover Europe has a distinguished record in relevant fields of knowledge production. The recombination into emerging economic systems involves new forms of 'integrative capacities' that the EU must target. Its record in one specific area, at least – that of 'importing' students for higher and further education and training from Asia into Europe – is unimpressive. The dominant role in this arena continues to be played by the USA.

In terms of technology, while there is no necessity for Europe to copy the specific language of the Asian vision that we have labelled as E-M-U there is an equivalent need to overhaul the Lisbon process in at least three respects. The first is to shift the emphasis from the supply drivers to the demand drivers of sustained change, through promoting conditions for sponsoring new applications and services. The second is to shift the emphasis away from 'high-tech sectors' to the broad range of user sectors. This in no way invalidates the advance of the high technologies, but their application across the board of user activities has to be the main objective. Thirdly,

supply and demand need to be linked through using 'informatisation' – and other technologies – to improve society at large. Despite the support for market-based approaches, European governments – unlike some of their Asian counterparts – tend to leave the demand side and the bridging infrastructures largely to fend for themselves.

The geographical diversity of countries and regions across South and East Asia is reflected, although on a lessened scale, in similarly heterogeneous patterns across the EU, including its new member states. These confront issues of 'alignment' and 'cohesion' at local, regional and national levels, in conjunction with the supranational level of the EU. Member states would be expected to share patterns of technological accumulation while differentiating themselves in terms of product sales and markets. Such patterns are indeed found across the Asian countries but there is less indication of any common technological 'convergence' across the EU.

There are certain characteristics of the Asian growth dynamics which European countries would probably wish to avoid, especially the creation of deep social divides. This lies behind our caution in suggesting copying Asian practices as opposed to more general 'lessons'. Nevertheless there are aspects of Asian performance that appear attractive to being embodied in European practices. These include the resilience of those economies to macro-level fluctuations, like the financial crisis of 1997/8, in contrast to (say) the struggles of Central and East European economies after 1989. One relevant factor may be the greater control exercised over MNCs and FDI flows in the Asian countries – this applies even in small countries such as Singapore. This leads to greater autonomy for local companies and MNC subsidiaries, while not cutting themselves off from the potential benefits of FDI. It will require tougher stances from national or regional administrations than is usually the case in Europe.

While many of the individual policy measures adopted in the various Asian countries would repay some consideration from member states' governments, we pay more attention here to a need for a 'new agenda for innovation'. This goes beyond the already significant shift in the EU from R&D or technology policy to innovation policy, to re-conceptualising the nature of 'innovation' itself and its likely impacts. It will probably entail directly or indirectly fostering 'dynamic capabilities', or more explicitly 'dynamic interactive capabilities', in the guise of the ability to produce the 'right' new goods and services on time. This involves building on existing strengths, whether they derive from 'high-tech' or other activities, and projecting them strategically into the demands of the future, which may include basic social and environmental needs. Governments and other organizations also need to possess and inculcate 'dynamic capabilities'. They are in addition active agents for boosting the 'alignment' of systems at varying levels, including using government demand itself for growth purposes, and by way of external (re)-alignments.

All of these may involve a new 'social system of accumulation' for Europe as well as for Asia. The E-M-U trajectory in technology policy programmes seems barely compatible with the cautious macroeconomics of the EMU in Europe (European Monetary Union). In principle the EU could choose between what we might term a South Asian model, involving largely incremental differences from the current situation in Europe, and an East Asian model of much more radical change, in pursuit of accelerated 'informatisation'. The former helps to shed light on many current policy debates in the EU, especially the Directive on internationalisation of services, but may already have been bypassed in Asia more generally. Both models however imply changing courses in Europe: moving away from quantity issues of spending more on R&D, as in the Barcelona target, to quality issues of 'spending smarter'; moving on from 'high-tech industries' to high value-added information-based services; and building infrastructures etc., ahead of demand. Europe has established a tradition of building education ahead of demand, as have many of these Asian countries, but the suggestions here go much further, without however transgressing principles as old as Adam Smith about an appropriate role for government. While the particular Asian strategies may not be 'sustainable' in an EU context, the aspiration of using the information society to better social standards and conditions of living would seem to be highly desirable.

Although there are some areas even with ICTs and hardware in which European companies and countries might continue to compete successfully with the emerging Asia, on the whole the arguments push us to recommend greater collaboration and cooperation. Our project has not allowed us much scope to investigate what those collaborations might consist of, which ought to be the focus of a future study. In any event, complementarity cannot be expected to go very far unless there is a shared vision of the future that such a Global Knowledge-based Economy holds out, and this is our main message about what Europe can learn from recent growth dynamics in East and South Asia. Only to a degree does it seem appropriate for the EU to 'pick and mix' – the

strength of the new Asian growth dynamics does not lie in any one ingredient whether new or old, but in the totality of its component characteristics – this is the 'package'.

II. CEE GROWTH PATTERNS

MICHAL MEJSTŘÍK[13]- JULIE CHYTILOVA[14]: EUROPEAN SOCIAL MODELS AND GROWTH: WHERE ARE THE EASTERN EUROPEAN COUNTRIES HEADING FOR?

A BRIEF HISTORY OF THE EUROPEAN SOCIAL MODEL

Many authors share the view that the idea that Europe is an inherently peaceable place of social harmony would have seemed fairly absurd in the first half of the last century (Wickham, 2002). At that time a big part of the world had still been dominated by the European nations, their administration being based on military forces. Unsurprisingly, after the devastation during two world wars where the Europeans formed the armies fighting against each other, the desire for peace, tranquillity, freedom and prosperity emerged as one of the strongest ideas common to all Europeans. At the end of the Second World War, millions of refugees were homeless, the European economy had collapsed, and 70% of the European industrial infrastructure was destroyed.

Within Europe, the social model is therefore said to be derived from the political settlement at the end of the Second World War. Across all the European countries a political consensus had emerged based on those forces which had opposed fascism, or at least which wanted no longer to be identified with it - this meant both the political left (the trade unions, the social democrats, the communists) and also Christian Democracy (Wickham, 2002). As the essential aim of the post-war Europe common to everybody was the necessity to avoid the social conflicts, which took place in the time and between the wars and therefore both extreme cases of governance – dictatorship and pure capitalism – were criticised and reprobated. Moreover, in order to prevent Europe from tensions possibly ending in fights, the idea to attempt to integrate and interlink Europe and create some form of European federation with united interests was supported from many sides.

Since the European Community had arose from the European Economic Community, its early aims and goals were strictly economic and social dimensions had remained out of its competition, national member states being utterly responsible for social policies based on which welfare state features happened to be adopted within Europe.

Balance between economic growth and development in social sphere was to be maintained by all EU member states. According to the Treaty of Rome from 1957, member states will support balanced development of economic activities and at the same time high level of employment, social security, increase in the standard of living and quality of life, economic and social cohesion and solidarity between member states. However it is important to notice that emphasis on economic matters outweighed the social ones for quite a long time, despite new documents dealing with social issues being adopted.

The European Social Charter – a document of the European Council from 1961 – formed a starting point of the social model. All main principles of the model were defined in the document. General rights to protection of health, social security, rights of the family as a fundamental unit of the society, working conditions and rights to education were laid down. Another wave of activity came with the Social Action Programme of 1974 after the enlargement of the Community to include Ireland, the UK and Denmark (particularly important were the three directives outlawing gender discrimination in pay, employment and social insurance).

The term "social cohesion" is said to have been first used in the Single European Act (1987). In a socially cohesive society people share a commitment to retain social order and take some responsibility for each other even if they do not share any personal links. Cohesion is therefore somewhat as the opposite of individualism. In a socially inclusive society people might be integrated or included rather than excluded.

For much of the 1980s subsequent attempts by the Commission to develop a more active social policy were limited, not least by the UK government's determination to veto anything what undermined its deregulation of the UK labour market and UK's return to Anglo-Saxon model. From the late 1980s European integration was revitalized by the drive to create a single European market in 1992. As a reaction to this process the Social

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[14] Researcher at Institute of Economic Studies, Charles University in Prague and EEIP, a.s.

Charter was adopted in 1989. If Europeans were going to be exposed to European-wide competition, then they also tried to be protected from the excesses of the market at European level (Wickham, 2002).

The term European social model as such is said to have emerged at the beginning of 1990s when the Maastricht Treaty came into force. It was used first in the Green Paper (1993) and later in the White Paper (1994) on the future of social policy. There it was defined in a rather normative way as a set of common values such as personal freedom, social dialogue, equal opportunities and solidarity towards the weaker individuals. Its essence and characteristics have not been clearly defined yet and in various sources related to this topic rather general features of the model were provided. In the words of Jepsen and Serrano Pascual (2005): *"One of the fastest growing European catchwords at the present time - the "European Social Model" (ESM) - is used to describe the European experience of simultaneously promoting sustainable economic growth and social cohesion. ..... A clear definition of what constitutes its essence seems to be lacking in most documents on the subject, while a review of some of the most important of these documents reveals that, insofar as definitions are to be found, they do not necessarily converge."*[15] Furthermore, an extreme view on the not very precise definition was presented by Diamantopoulou (2003): *"The European social model: many claim that it is not really a model, it is not only social, and it is not particularly European."*

Also after the signature of the Maastricht Treaty in 1992 the European Union policy was focused on the single currency issue and the consolidation of the single market, while most of the social and economic rights of EU citizens have remained at the level of their individual member state. Although high level of employment and social protection are presented in EU's documentation as important aims, there are no associated criteria for their enforcement, in contrary to the extensive acquis communautaire in the economic area (de la Porte and Deacon, 2002). Within EU-25 people's health, transport, pensions, education and other public services have been determined almost entirely by national governments. Since different models are financed and regulated at national level, regulation, taxation and redistribution level vary widely across the Union. For details on differences in redistribution levels see Table 1.

[15] In their article Jepsen and Pascual aim to analyse and deconstruct the concept of the model in order to identify the main understandings and its various dimensions. They classify and discuss the ways in which the model is most frequently construed and propose a new approach to understanding this polysemy when they argue that the different dimensions of the concept can be seen as rhetorical resources intended to legitimize the politically constructed and identity-building project of the EU institutions.

Table 1: Redistribution level in European countries

	Total taxes			Indirect taxes		Direct taxes		Top statutory personal income tax rate[1], %	Effective top statutory tax rate on corporate income[2], %
	as % of GDP			*as % of total tax burden*					
	1995	2001	2003	1995	2003	1995	2003	2004	2004
EU25	**40.5**	**40.8**	**40.3**	**33.8**	**34.8**	**31.5**	**32.7**	**41.7**	**27.4**
EU15	40.5	41.1	40.6	33.6	34.6	31.6	33.1	46.2	31.4
BE	45.1	46.2	45.7	29.5	30.1	37.9	38.3	50.0	34.0
CZ	36.2	34.5	36.2	33.9	31.4	26.5	27.1	32.0	28.0
DK	49.0	49.8	48.8	35.0	35.7	62.4	61.1	47.6	30.0
DE	40.8	40.7	40.3	30.1	30.7	27.5	26.7	45.0	38.3
EE	37.9	31.6	33.4	36.6	39.4	28.9	26.2	26.0	26.0
EL	32.6	37.0	36.2	44.1	39.8	23.8	24.8	40.0	35.0
ES	33.4	34.8	35.6	32.7	35.1	31.4	30.9	45.0	35.0
FR	43.7	44.7	43.8	37.1	35.5	20.7	26.8	49.6	35.4
IE	33.5	30.2	29.9	43.9	43.5	41.1	41.2	42.0	12.5
IT	41.2	42.5	42.9	30.9	34.5	37.4	35.6	45.0	37.3
CY	26.9	31.5	33.3	42.7	49.6	32.9	29.2	30.0	15.0
LV	33.6	29.0	28.9	40.7	39.7	23.2	29.3	25.0	15.0
LT	28.6	28.8	28.5	43.0	41.6	30.6	28.4	33.0	15.0
LU	42.3	40.7	41.3	31.9	33.8	41.6	38.6	38.0	30.4
HU	41.6	39.3	39.1	42.8	42.4	21.3	25.0	40.0	17.7
MT	26.9	31.1	33.6	46.0	42.6	31.4	37.1	35.0	35.0
NL	40.6	40.0	39.3	29.3	33.9	31.2	29.3	52.0	34.5
AT	41.3	44.7	43.0	35.8	35.1	28.3	31.1	50.0	34.0
PL	39.4	35.4	35.8	40.1	42.8	32.4	20.1	40.0	19.0
PT	33.6	35.7	37.0	43.5	43.0	26.6	25.3	40.0	27.5
SI	40.8	39.1	40.1	39.5	41.8	17.7	21.1	50.0	25.0
SK	40.5	32.0	30.6	38.6	37.6	28.6	23.6	38.0	19.0
FI	46.0	46.0	44.8	31.0	32.3	38.2	41.0	53.0	29.0
SE	49.5	51.8	50.8	32.8	34.5	40.8	37.4	56.0	28.0
UK	35.4	37.3	35.7	39.9	38.3	42.7	43.7	40.0	30.0

1) Top statutory personal income tax rate reflects the tax rate for the highest income bracket without surcharges. For Denmark, Finland and Sweden also the municipal income tax is included.
2) Effective top statutory tax rate on corporate income reflects the non-targeted rate including surcharges and averages of local taxes. For Estonia the rate refers only to distributed profits; as from 2000 the tax rate on retained earnings is zero. The rate for Italy includes 'IRAP' (rate 4.25%) a local tax levied on a tax base broader than corporate income.

Source: Eurostat

The question thus remains to which extent it is advisable to harmonize various EU policies. In this respect, it is important to realize that the prevailing forms of the European social model are only made possible because Europeans accept the importance of the welfare state, including many public goods provided by state, which are necessarily accompanied by significant public sphere and relatively high redistribution level.[16] However, here another question arises what we should understand under the term public goods and who should be accountable for their provision in today's gradually internationalised world.

[16] Wickham (2002) provides an example of some media being considered too important to be run purely for profit, since citizens have a right to good quality entertainment and impartial news which the market cannot be trusted to deliver. The state should also play a major role in providing education and health, since these involve notions of equity, which it would be difficult for a commercial company to apply.

Scharpf (2002) argues that within the European integration a constitutional asymmetry between policies promoting market efficiencies and policies promoting social protection and equality has been created. *"National welfare states are legally and economically constrained by European rules of economic integration, liberalization, and competition law, whereas efforts to adopt European social policies are politically impeded by the diversity of national welfare states, differing not only in levels of economic development and hence in their ability to pay for social transfers and services but, even more significantly, in their normative aspirations and institutional structures."*

As a response to this fragmentation the so-called "Open Method of Coordination" emerged and is now being applied in the social-policy field. It leaves effective policy choices at the national level, but tries to improve these through promoting common objectives and common indicators and through comparative evaluations of national policy performance. According to Scharpf, these efforts are useful but cannot overcome the constitutional asymmetry. *"Hence there is reason to search for solutions which must have the character of European law in order to establish constitutional parity with the rules of European economic integration, but which also must be sufficiently differentiated to accommodate the existing diversity of national welfare regimes."* Scharpf therefore discusses two such options, "Closer Cooperation" and a combination of differentiated "framework directives" with the Open Method of Coordination."

Different tax rates and national regulations give rise to the superficial criticism regarding so-called „social dumping". This concept suggests that lower tax rates or more favourable labour market restrictions in particular countries may create incentives strong enough to attract the enterprises to be active there. Moreover, „social dumping" is sometimes connected to the "race to the bottom", where the countries compete with each other to have the lowest tax rates and less heavily regulated markets in order to allure new investors. While critics such as Wickham (2002) are afraid of loss of social cohesion at the end, we would accentuate other questions:

i) Should not be lower taxes and reasonable deregulation connected with the "race to the top" from development point of view subject to the relevant national social strategies?

ii) Do excessive regulations and redistribution resulting from prevailing social model adopted in different countries secure social cohesion Europe wide in the face of current challenges? Is that in fact compatible with a competitive and dynamic knowledge based economy in a gradually globalizing world?

THE EUROPEAN SOCIAL "(SUB-)MODELS"

As mentioned already above, the European social model has never been clearly defined. As Salais (2005) puts it: *"European politics in social matters is too much complex, multifaceted and full of internal contradiction to be easily grasped with general concepts such as European social model."* Usually, when politicians, economists or researchers talk about it they have in mind two distinctive features of this broad concept: its dissimilarity to the "American model" and the emphasis on economic growth being accompanied by the development in social sphere. Furthermore, another important feature of the model is seen it its predominantly normative character (Jepsen and Serrano Pascual, 2005), i.e. its bases are formed by never-empirically-established assumptions, which leads to a lack of serious analysis in further discussions.

While the European social model as such has remained a rather general denomination for above-mentioned ideas, a variety of more specific national models of social provision have been identified. The most important difference among the countries can be found in transfer system, tax-benefit system, welfare policies, more generally in the share of state intervention and individually based insurance in the matters of pensions, health care, education, etc.

Several types of distinguishing criteria have emerged and the (sub-) models have been compared from many viewpoints. Nowadays four types of European social (sub-) models are usually distinguished: Scandinavian (Nordic) social democratic, Continental corporatist, Anglo-American (Atlantic) liberal and Mediterranean model. All of them (including only Great Britain from the Anglo-American model) differ significantly from the American socio-economic model. While the rights to education, social security and health care form an inherent part of all social systems in Europe and these services are available for everybody, in the USA individual responsibility is emphasized. Furthermore the employment rights including unemployment and sick

benefits, maternity leave, regulation of working hours, etc. are much more generous in European countries in comparison to the USA.

This disparity between the two continents can be clearly shown on the **Anglo-American liberal model**, which comprises of two versions. The first one is more radical and is represented by the USA, Australia and New Zealand. Benefits are focused almost exclusively on those most in need and are aimed at preventing poverty rather than ensuring certain level of standard of living. Taxes are relatively low and labour markets not heavily regulated. Continental version of the model is represented by Great Britain. This version of the model is located somewhere in between American version and other types of European models. For example active labour market policies and support for families with children have been introduced.

Scandinavian model (Denmark, Finland and Sweden) can be characterized by active employment policy, significant role of the state, high level of taxation, which is clearly progressive and high level of women' employment. In contrary to the Anglo-American model the role of the charity is negligible. The social system is almost entirely financed from the tax revenues.

Within the Scandinavian model, specific features of the Danish (sub-) model have been recently pointed out[17]. A long-term, sound and stable macro-economic policy is its essential pillar. The second feature of the model is the **Danish speciality – flexicurity**, which is based on a belief that flexibility and security are not contradictory, but can be mutually supportive (Madsen, 2006). Therefore, flexicurity consists of a flexible labour market with easy access to both hiring and firing, high level of social security and an active labour market policy. Decentralised labour market with responsible social partners is the last specific element of the Danish (sub-) model.

The idea that the trade-off between flexibility, stability and security on the labour market does not have to necessarily exist was further supported by the International Labour organization (2005), which claimed that there were several Western European countries which have managed to balance all these factors. Countries with more flexible labour markets such as Denmark, Finland or the Netherlands thus experience higher employment rates than for example France, Germany, Greece, Italy and Spain, where more rigidity are present on the labour markets.

Continental corporatist model is represented mainly by Germany and France. Strong emphasis is put on the role of labour law, which is elaborated in very detailed way. Working conditions of more than 90% of German employees are determined by collective bargaining. The employees also participate in quite a large extent on the decision making of the enterprise. Another characteristic of the model is the principle of subsidiarity – public services are often provided by non-state institutions. The role of women in the society is different from the Scandinavian model – their employment is very low and their role has been described by the term familism (e.g. Ostner, Reif and Turba, 2003).

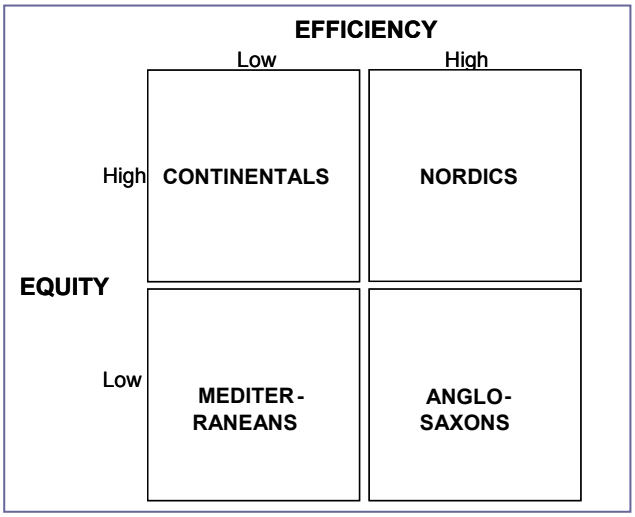
Mediterranean model represented mainly by Italy accompanied by Greece and Spain was until recently considered as a part of the group of continental models and many characteristics are very similar. Financing of social services is based on the employees' payments. There is no comprehensive protection system, i.e. no guarantee of minimal income. Relevant decisions are made at regional level and consequently there are large regional differences.

Sapir (2005) in the report of the Independent High-Level Study Group established on the initiative of the President of the European Commission distinguishes above-mentioned four types of social models and in addition argues that the notion of a single European social model is largely misleading since particular types of

- [17] Flexicurity was one of the main issues discussed at the European Regional Meeting of the International Labour Organization held in February 2005 in Budapest - Hungary.
- Danish Prime Minister Anders Fogh Rasmussen had a speech on the Danish model at the UMP conference on economic challenges held in September 2005 in Paris - France.
- Per Kongshoj Madsen from the University of Aalborg presented his paper on flexicurity as a new perspective on labour markets and welfare states in Europe at the Informal meeting of EU employment and social policy ministers held in January 2006 in Villach – Austria.
- In January 2006 French Prime Minister Dominique de Villepin proposed a new set of measures based on „flexicurity" model.

social model have different performances in terms of "efficiency" and "equity". The model is considered efficient if it provides sufficient incentive to work and equitable if it keeps the risk of poverty relatively low. Based on these two aspects, Sapir depicted the typology of European (sub-) models. According to Sapir's conclusions, Continental and Mediterranean models, which together account for two-thirds of the GDP of the entire EU-25 and 90% of the GDP of the 12-member euro zone, are inefficient and unsustainable to comply with the opportunities offered by globalization. On the other hand, he considers both Nordic and Anglo-Saxon models efficient, but only the former manages to combine both equity and efficiency. However, model that is not equitable may be sustainable in contrary to inefficient models.

Chart 1: Sapir's typology



Source: Sapir (2005)

Differences in indicators, which quantify the role of the state, inequality and economic performance of countries representing particular above-mentioned (sub-) models, are provided in Table 2. Data for the USA and the Czech Republic are also included. While the indicators' values vary greatly across particular European states, non of them reaches the value in the USA, where significantly lower level of redistribution and higher inequality go hand in hand with better performance of the economy.

Table 2: Selected economic and social indicators

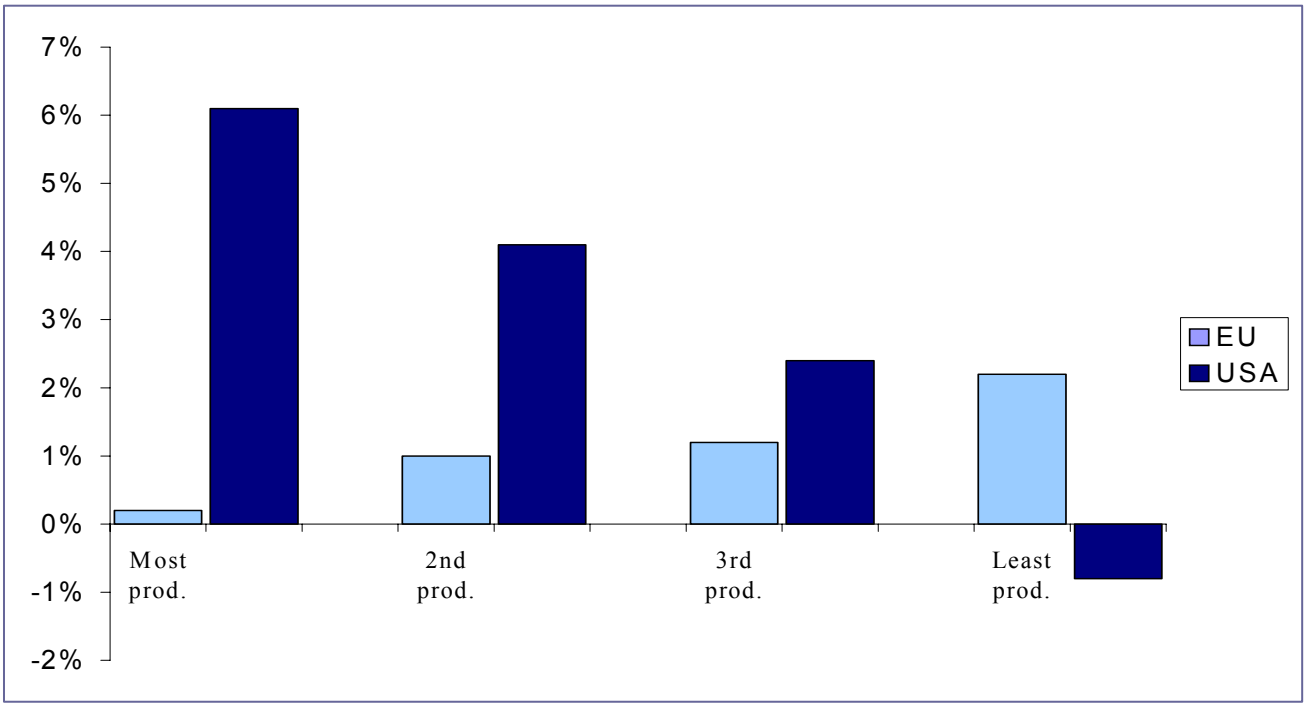
	Governmental expenses (2003; % of GDP)	Share of poorest quintile in income (The most recent year available; 2002)	Share of public health expenditures on total health expenditures (2002; % of GDP)	GDP growth (1990-2003; average annual % growth)	Gini index (2000, 1999 UK, 1996 Czech R. %)
Sweden	37.2	9.1	84.8	2.3	25.0
Germany	32.8	8.5	78.9	1.5	28.3
Italy	39.6	6.5	75.3	1.6	36.0
UK	39.7	6.1	83.1	2.7	36.0
Czech Republic	38.2	10.3	91.4	1.4	25.4
USA	21.0	5.4	45.2	3.3	40.8

Sources: World Bank – 2005 World Development Indicators; United Nations – Human Development Report 2005

Whereas in all European countries with the social model of whatever type and high level of redistribution the inequality indicators are more favourable, public health as well as other services more available, the USA perform economically better and also the deep structural changes on the labour market are obviously much more growth-enhancing as depicted in the Chart 2. Going back to the history, during the 1970s unemployment

in the USA increased however in Western European countries it increased even more. In 1980s and 1990s American unemployment went down and at the same time wage inequality increased significantly. In contrary to this vital development, European unemployment fluctuated without any important changes and wage inequality also changed only slightly. Throughout the 1980s and until mid-1990s Europe experienced higher growth in labour productivity than the USA. However, starting in late 1990s the productivity in the USA began to accelerate and rapidly overtook Europe, which might have important consequences for the future development of European economies. These disparities can broadly be explained by technological progress and the diffusion of innovation, which has been in Europe lagging behind (Trichet, 2006). But why?

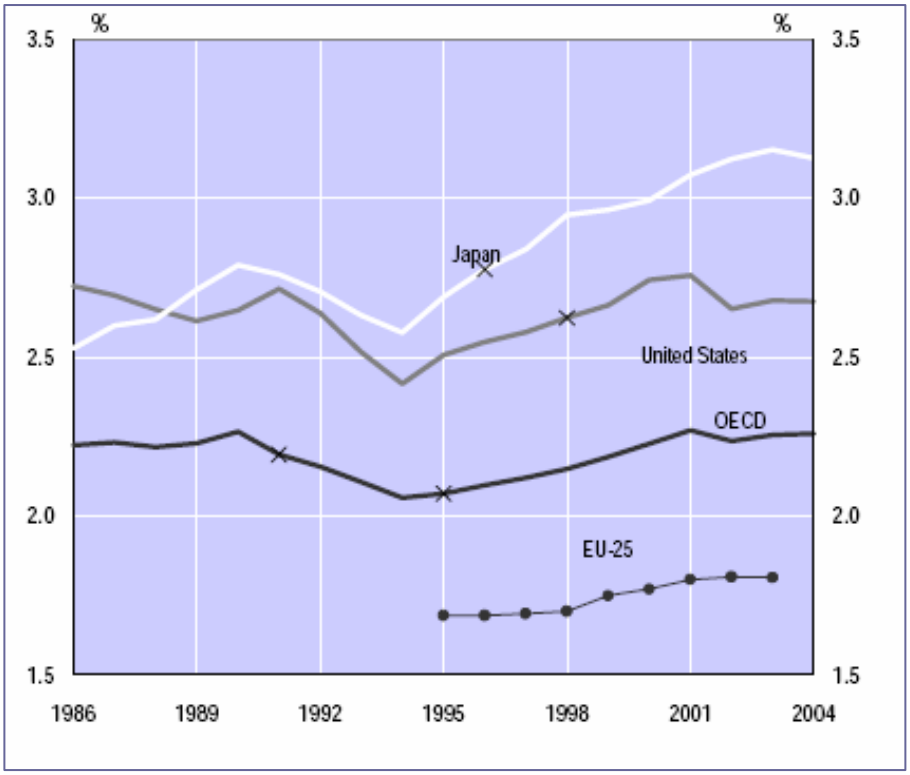
Chart 2: Growth of Employment by Productivity Quartiles



Source: Gretschmann (2006)

In many cases European labour markets need more flexible rules, which would support their competitive behaviour and forward looking structural changes. Studying the chart 2 one can notice the European "comfort" protecting and developing the least productive sectors the most, while the US tendency is just other way round. To remain competitive with fast economically growing countries such as India and China are, the advantage of solid human capital basis should be used and education, research and innovation supported more extensively in order to increase productivity. According to the OECD data from June 2006, European Union countries spend on average two thirds of the proportion of their GDP on research and development that the USA, while Japan spends even more (see Chart 3). At this place it is worth noting an interesting opinion, which is in contradiction to the strict necessity of investing into research and development. As Svejnar (2004) argues, unlike the USA, which has eliminated most of its inefficiencies and must now look to inventions and innovation for growth, Europe still has considerable unexploited possibilities that can propel it rapidly forward.

Chart 3: Gross Domestic Expenditures on R&D as a percentage of GDP



Source: OECD, Main Science and Technology Indicators, June 2006

EUROPEAN SOCIAL MODEL AND THE NEW EU MEMBER STATES

Although the approach to social role of the state differs importantly between particular Western European countries, which are taken as representatives of above-mentioned social (sub-) models, the contrast is even more significant when Western and Eastern parts of Europe are compared. In words of Bohle and Greskovitz (2004), the European social model *"has not travelled to the East"* yet.

In 2001, social expenditures in all the new member states remained below the EU-15 average. The Baltic countries (together with Ireland) followed by the Czech Republic, Hungary and Slovakia had the lowest social expenditures in the EU (see Table 3).

Table 3: Social expenditure in the new member states and EU-15 (2001)

		Structure of social expenditure (% of total)						
	Total social expenditure (% of GDP)	old age and survivor pensions	sickness	family benefits	disability pension	unemployment	social exclusion	housing
EE	14.3	42.6	31.0	14.6	7.8	1.3	2.2	0.6
LV	14.3	56.4	19.1	10.1	9.6	3.6	0.6	0.7
LT	15.2	47.5	30.0	8.3	8.8	1.9	2.3	1.2
SK	19.1	38.2	35.0	8.2	8.1	3.6	6.5	0.4
CZ	19.2	42.5	34.6	8.2	8.5	3.1	2.7	0.6
HU	19.8	42.4	27.5	12.9	10.3	3.4	1.0	2.5
PL	22.1	55.3	19.2	7.8	13.3	4.3	0.2	0.0
SI	25.5	45.5	31.4	8.9	8.7	3.7	1.8	0.0
Average	18.7	46.3	28.5	9.9	9.4	3.1	2.2	0.8
EU-15	27.6	46.1	28.0	8.0	8.2	6.3	1.5	2.1

Source: Keune (2006)

When the people in European countries were asked, how satisfied they were with their life, a significant difference between EU-15 countries and the new member states emerged. While the satisfaction index for EU-15 reached 7.3 (out of 10), citizens of the new member states valued their well-being only to 6.1 (European Foundation for the Improvement of Living and Working Conditions; 2003). Not surprisingly, unemployment level emerged in the research as one of the most important factors affecting the level of satisfaction.

Moreover, the workers in the Eastern countries also work more hours per week, work safety is often lower as well as union density. On the other hand it is necessary to add that social benefits applied in the labour market very often undermine and don't comply with the incentives of the unemployed to find a new job. The more targeted the benefits to the poorest groups are, the more they interfere with work incentives (Schneider and Jelínek, 2001). Also other policy measures such as increasing minimum wage and subsistence level affect employment development in a negative way. Therefore generous social benefits can contribute to higher unemployment and block needed structural changes.

Slow incorporation of the (continental) social model can be caused, besides others, by subjective perceptions and inclination to individualistic approach, which followed a breakdown of socialist era. According to Večerník (1993), people were trying to escape socialist paternalism and enforced social entitlements such as unified corporate housing or corporate holidays. Generally, perception of the word "social" became rather negative. However, the attitudes change in the course of time and the beginning optimistic approach of the people towards capitalism and individualism was slowly mitigated. Although working and living conditions have not deteriorated considerably for majority of the population, an increasing number of citizens are again being attracted by state protection of jobs and rents and control of prices. A large number of people have also been attracted by the "social market" model, the desirability of which was growing, and the percentage of people supporting a return to "real socialism" more than doubled in the period between the 1992 and 1998 elections (Večerník, 2004). Only recently some Eastern European unionists have started to defend their requirements by a reference to the European social model having in mind its inefficient continental form.

Nevertheless, it still remains valid that people in Eastern European countries are a bit distrustful of political slogans due to their total failure in the case of Marxist ideology. Citizens of these countries might perceive some elements of the debates on the European social model in slightly similar way. According to Singer (2005), in response to increasing economic problems of socialist countries, genuine Marxists experienced the following ideological development during the last century. Singer suggests that we are situated between the points 4 and 5.

1. Our idea is right (the best one).
2. The idea is right, but some errors occurred.
3. The idea is right, but wrong people implement it.
4. The idea is right, but the conception of the policies is wrong (when we change them, everything will be all right).
5. Everything is wrong, but the idea is (in principle) right.

6. The idea might not be as good as it initially seemed to be.
7. The idea itself is wrong.

As an interesting example of a slogan, which recently proved to work, the French billboards of the "Polish plumbers" can be mentioned. As a part of their campaign, opponents of the new European constitution struck in May 2005 fear into the hearts of French voters by conjuring the image of invading armies of low-wage "Polish plumbers" who would wrench jobs from hardworking locals. Although there is a chronic lack of plumbers in Paris, the voters overwhelmingly rejected the constitution.

As a response, the Poles have turned insult into opportunity. The Polish National Tourism Office launched a billboard campaign in France featuring a blond Polish dressed in plumber's overalls, who declares: "I'm staying in Poland. Come visit." The ad campaign has been a huge success, according to the tourism office. The publicity campaign was "a humoristic wink to get people to visit Poland, but also a political wink at the Polish plumber ... who stands for the xenophobic feeling" said Pierre Lequiller, head of the French parliament's delegation to the European Union. In addition, the campaign of the Swiss Socialist Party in favour of the free circulation of people in the contest of European bilateral deals also features the character, with the slogan "Plumbers of all countries, unite!", in reference to the famous slogan and last words of the Communist Manifesto, "Working men of all countries, unite." Finally, reflecting empirical data on excess demand, French "plumber sector" has been recently included among the first service sectors to be open to international competition. This "volte-face" illustrates well the paradoxical development around ESM.

Rather than promoting phrases and slogans, which lead to, to a large extent historically justified, suspicion from the side of citizens, deeper analysis of the impacts of social model elements and relevant policy measures should be applied. Deeper public discussion of the pros and cons of the various social models and approaches should be triggered taking into account also resulting past and future country competitiveness. Let those models compete to open opportunities based on forward-looking approach with full respect to the minimum harmonized standards (such as social safety net etc.) instead of fixing the past.

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PAOLO GARONNA[18]: WHAT IS NEW ABOUT NEW EUROPE'S VIEW OF THE FUTURE OF EUROPE[19]

1. A MOST RELEVANT QUESTION FOR THE FUTURE OF EUROPE

Is there a "New Europe" approach to growth and competitiveness? And, if there is such an approach, is it significantly different from the "Old Europe" one? Are the experience and the outlook for Eastern Europe, in particular the new member countries of the European Union, relevant for Europe as a whole? What can Eastern Europe teach in relation to the severe crisis Europe is facing? The European Union is going through a crisis in the early 2000's of unprecedented gravity; I believe that it is one of the most serious of the post-war period. This crisis has many dimensions, but the main one is its economic dimension, i.e. the "economic disease" that has slowed down growth, investment and competitiveness in the EU. Due to sluggish growth and lack of competitiveness, Europe has not been able to keep pace with the rate of growth in other regions, particularly the US and the dynamic emerging market economies of Asia; it has lost market shares in exports; it is lagging behind in innovation and in the knowledge economy; and therefore it cannot sustain a significant improvement of the standard of living for its citizens, and cannot stimulate economic expansion in the neighbouring regions and in the world economy. It is therefore of the utmost importance to see whether New Europe, i.e. the new members of the EU after the latest round of accessions, which is experiencing a much higher rate of growth and has achieved a remarkable improvement in its economic conditions and prospects, can represent an alternative to ossification and decline. East Europe has developed new and more promising patterns of development, and therefore can bring new perspectives and hopes to the future of Europe.

Even tough some of the current speculation over the so called "New Europe" is misleading and not founded on a sound analytical basis, I believe that in the experience of Eastern European countries we may find a distinct and original approach to innovation and competitiveness that represents a significant departure from conventional policy thinking, i.e. old Europe, and provides a fresh and inspiring new perspective on the future of the European integration process. This perspective is based on promoting liberalisation, market competition and economic reforms, on the search for a more credible and sustainable European social model, on much greater openness towards Trans-Atlantic cooperation and partnership with Russia, the Caucasus and the other countries born out of the collapse of Soviet totalitarianism, and on a vision of Europe that is being built as part of a wider process of pan-Euro-Atlantic cooperation and integration.

I will discuss this emerging and fledgling new Europe perspective starting with the possible misunderstandings and false promises that the concept has sometimes inspired, and concluding with the formidable economic and above all political challenges that new and old Europe are facing on this endeavour.

2. THE ORIGINAL SIN OF NEW EUROPE.

The "Old Europe"- "New Europe" dichotomy is a two-sided coin: one side is inspiring and suggestive; the other is instead outdated and misleading. We must remember that the distinction was introduced in the midst of the divisive and antagonistic discussion on the Iraq war that split deeply the European countries and created a fracture that has weighed heavily on the ability to give substance to a common external and security policy in Europe. Fortunately, much water has gone under the bridge since then, and many efforts have been made at mending fences and presenting a more consistent approach. Nobody should want then to go back to the dark ages of intra-European divisions and confrontations that the origin of the "new Europe" concept evokes.

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There are other reasons, however, more analytical ones, that suggest using this concept very cautiously in the context of the on-going reflection on the future of Europe. I will focus on three of them:

a) If "New Europe" is there to propose an over-optimistic view of the economic growth potential of the eastern European countries, then it can become a dangerous and potentially misleading concept. It is undeniable that the recent record of economic performance of these countries has been remarkably positive; their recent relatively strong economic performance compared not only to "Old Europe" but to the United States is shown in figure 1. However, we cannot, and should not indulge in a self-complacent approach. First as shown in figure 2, a lot of the late spur in growth has been a bounce back from the depths of the transitional recession. In other words there has been a period of catch up growth that has followed a difficult period of contraction in output, employment (as can be seen in figure 3) and in their standard of living. Indeed a correlation can be established between the strength of the most recent performance and the severity of the transitional contraction: those countries that suffered most, like the former Soviet republics, are the ones that have recently registered the highest pace of recovery and expansion. Second, the relative size of the economies of eastern Europe (see figure 4), even if we include the Eastern Europe superpower, Russia, is not sufficient, and will not be sufficient in the future to pull the rest of Europe and the world economy into a self-sustained growth process. In fact, Eastern Europe will remain dependent on the rest of the world, and in particular on Western Europe in order to sustain a non-inflationary recovery with further economic expansion. Eastern Europe alone cannot be a locomotive of global growth, and not even of European growth, at least for the foreseeable future. Third, what matters is not the quantity, but the quality of growth, and its sustainability for the medium term. On this score, however, there remain several considerable vulnerabilities that threaten the growth potential of these countries. Thus, not all that shines is gold in new Europe. Some of the Eastern European economic tigers may well turn out to be paper tigers.

3. STRUCTURAL VULNERABILITIES AND SUSTAINABILITY

b) "New Europe" sometimes is meant to suggest that the economies of Eastern Europe are not affected by the European disease, i.e. slow growth and structural rigidities. This picture is only partially true. In reality Eastern Europe shares with continental Europe rigidities and structural obstacles to sustainable growth. For example, as shown in figure 5 the overall flexibility of its labor markets is not appreciably different from those in Western Europe. It is confronted with daunting challenges of economic reform and structural adjustment, if it wants to make its present growth sustainable in the longer term. Some of the structural weaknesses are due to the legacy of the command economy that have not yet been worn off, or to the incomplete transition to a market economy. But others are new, linked to emerging difficulties and constraints. The list of structural rigidities is long. However one should distinguish between different countries, sub-regions and economic contexts. In many countries inflationary pressures are still not under control. Debt, both public and private, denominated in foreign currency remains high, increasing the risks of financial instability and possible runs on the national currency. The picture is such that the prospects of the new EU member states joining the Euro are being postponed, except for Slovenia. Fiscal consolidation is finding great resistance, and therefore public deficit and debts are escalating in many countries. The tax wedge is in general quite big, representing a heavy toll on employment and incomes, and creating an incentive for tax evasion and working in the informal sector. The efficiency of the public administration leaves much to be desired. Indeed, in some cases red tape is becoming worse with institution building and the strengthening of regulation. It is well known that the attractiveness of the flat tax in Eastern Europe derives also from the high level of institutional rigidity and the poor state of the tax and social security administration. Another undesirable trend has been the increasing levels of inequality throughout the region as shown by their growing Gini coefficients in figure 6. Inequality in some of these countries is now greater than in the EU-15 (see figure 7). In sum, not everything is new in the new economy, or there is much of the old in the new economy.

c) If one looks for "models of economic performance", even limiting oneself to the European framework, the countries who stand out as being the best on the basis of their record of growth and competitiveness are not the countries of so-called new Europe, or at least not only those ones In the most widely known competitiveness and innovation indicators (such as the World Employment Forum indicators), the

performance of the Nordic countries rank figures well above that of Eastern Europe. The Anglo-Saxon European economies, like those of the UK and Ireland are also performing remarkably well. Then there are the small dynamic economies in Europe, like Austria, the Netherlands or Denmark, who are doing relatively better than many countries in the East. The differing performances of these economic models are shown in figure 12.

4. THE NEW EUROPE PERSPECTIVE ON THE FUTURE OF EUROPE

The arguments above are enough to cast doubt on the mechanical link between the so-called New Europe and economic competitiveness. We cannot afford to be ideological about the New Europe "model" of economic regeneration and European renaissance. However, this is not to say that New Europe does not have something very important to teach and be proud of. I believe that there is a distinct approach to innovation and economic restructuring that represents a significant departure from conventional policies, the "old Europe" model, and that we may well call a "New Europe" perspective on the future of Europe. There are four main features of such an approach: 1) promoting liberalisation, market competition and economic reforms; 2) searching for a new European social model; 3) increasing openness to Trans-Atlantic and Pan-European cooperation; 4) visualizing the EU as part of a wider process of Pan-European integration.

I will briefly discuss these aspects below.

5. PROMOTING LIBERALISATION, MARKET COMPETITION AND ECONOMIC REFORMS.

The success of New Europe is by-and-large explained by economic reforms establishing a market economy through liberalisation, the enhancement of competition and economic restructuring. These economies have adopted a development model based on openness to foreign trade and competition (see figure 8), the attraction of foreign direct investment (see figure 9), the free movement of people and skills, and the promotion of entrepreneurship. With the accession to the EU, an important goal was achieved for these countries: it is widely acknowledged that they have now acquired a market economy status and that they have eliminated most of the rigidities inherited from the past.

However, this does not mean that the "transition" is over. The overall competitiveness of the transition economies including the New Member States as estimated by the World Economic Forum are provided in figure 11. Their index of competitiveness is based upon rankings of over one hundred indicators. Within this framework, clearly the richer countries are ranked as more competitive since a number of indicators are highly associated with the level of economic development. What is significant, however, is how a country ranks after controlling for per capita income. Ideally a country would like to be to the right of the line in the figure, that being, given their per capita income, they would like to have the highest ranking possible. Other than Estonia, most of New Europe has a ranking lower than the average country with their per capita income. Thus the message is that although these economies have performed quite well recently, there is still a need for further reforms.

A summary measure provided by the EBRD of the pace of structural adjustment in these economies, as shown in figure 10, demonstrates that much remains to be done. Indeed, the experience of New Europe shows that the transition to a functioning market economy is a long and painful process that goes through several stages and needs to be pursued with persistence and determination in the longer term. In some sense, they have taught us that the transition is never over! This is an important message also for Old Europe where strong obstacles remain towards privatisation and liberalisation. This is particularly the case in the much needed and often delayed liberalisation of the service sector, e.g. the distributive trade, the financial sector, the utilities or the sectors of the knowledge economy –research, education, infrastructures, etc.-. This is where Europe in the global competition exchequer lags behind North America and the emerging market economies of Asia.

The transition agenda and problematique is therefore of great importance for all European countries, not only those in Eastern Europe. Their experiences with economic reforms, including the failures and half-successes, have much to teach the EU countries engaged in the Lisbon agenda process as well as the other European countries.

6. SEARCHING FOR A NEW EUROPEAN SOCIAL MODEL.

Since the start of the transition, and more in the course of it, it became clear that the heavy and rigid social model of continental Europe would not be applicable to Eastern Europe. Its fiscal costs, in terms not only of its burden on the public budget, but also of its inherent rigidities, inefficiencies and disincentives to employment and restructuring, meant that transition economies simply could not afford it.

Searching therefore for viable and sustainable safety net mechanisms, that are cost-efficient and capable of stimulating mobility and industrial reconversion, has been one of the main worries and undertakings of the economies coming out of the wasteful and bureaucratic state social systems of the command economy.

In the course of the 1990's however, a parallel process of erosion and decay of the conventional "European social model" has taken place. Social reforms have figured highly in the policy agenda of "Old Europe" albeit with mixed results and much resistance. It has become widely acknowledged that pension and health insurance systems, unemployment benefits, income maintenance schemes and public subsidies need a major overhaul. Much of the Lisbon agenda, and its failings, have had to do with facing up to this challenge.

The European model has imploded leaving only among the broken pieces a few cases of excellence, like some aspects of the Nordic experience (e.g. Denmark), or the limited success of some neo-corporatist mechanisms (Austria or the Netherlands), whose performance however is highly dependent on specific local and cultural conditions. As sources of inspiration for the New Europe social agenda, there have remained only the Anglo-Saxon models (UK and Ireland, or the US), and the Asian unfettered competition system with virtually no welfare.

As the "Old Europe" social model can be considered basically dead, and given the reluctance of eastern Europeans to import non European models, New Europe has had no other option than trying to find their own way to social reform based on trial and error and some fresh new ideas. At the same time, this search has become of wider interest and relevance, because increasingly in Old Europe, and elsewhere, the New Europe experimentation has attracted keen interest as a possible reconstruction for a "reformed" European social model.

It would be premature to identify a single and coherent Eastern European approach to social reform coming out of Eastern Europe. We have instead rather different and often diverging routes. Likewise it would be naïve to predicate wider applicability across the whole European space of what has apparently worked in Eastern Europe. However, it is undeniable that the most interesting and original contributions to social reform, and the new ideas, are coming from New Europe.

With a leap forward of political imagination, I would say that the now emerging "New Europe" social model has the following basic traits:

a) **Hiring and firing flexibility**, borrowed from the Nordic and Anglo-Saxon experience. Lowering hiring costs through lighter regulation and flexibility in labour contracts and organisation are considered to be the best way to down-size the large and wasteful labour hoarding inherited from the command economy. Shaking out surplus labour from sheltered sectors and decaying industry is a precondition for creating jobs with higher productivity in emerging and promising branches of the private sector; this will further stimulate competition and market discipline. It also reduces concealed unemployment and underemployment. Finally it provides incentives to maintain the high level of labour market participation, or limit "discouraged labour", i.e. people dropping out of the labour force because of lack of opportunities; this phenomenon affects particularly older workers, youth and women, the so-called secondary segment of the labour supply. Naturally it is necessary to put in place active labour market mechanisms (retraining, job search, reform of labour exchanges) to accompany and support displaced workers and first job seekers in their competition for more and better jobs. Experience has shown (particularly in the Nordic countries) that the good performance of such schemes is in general quite difficult to obtain. However, the new European social model is likely to take shape around some combination of active labour market measures, guarantee of support and solidarity, particularly to the most vulnerable, and flexible labour arrangements, providing incentives for mobility and employability. IN a nutshell, the objective should be to protect workers, not specific jobs.

b) **Support for self-employment and entrepreneurship**. New firm formation is a powerful mechanism for stimulating innovation and creativity, and getting out of the wide-spread culture of dependency that decades under the command economy generated. It can also be a way to reintegrate displaced labour into the mainstream of economic activity and provide support for people in difficulty in a manner that is consistent with a dynamic and competitive industrial economy. In economies that have rapidly and successfully caught up in the post-war period, like Italy Spain and Ireland, small firms, clusters of micro-enterprises, industrial districts, networks of outsourcing and subcontracting have proved to be powerful mechanisms for regenerating a viable and wide-spread culture of industry and entrepreneurship. Support programmes for start-ups, particularly in the new technology sectors and/or linked to higher education and training, have been in several cases not only an effective tool of industrial and innovation policy but also of employment and social policy.

c) **Providing springboards of opportunities**, rather than income transfers for the promotion of equality and the provision of solidarity. Several methods have been experimented with or proposed in Eastern Europe to reduce the redistributive role of the tax and social spending systems. Introducing flat taxes, cutting the tax wedge, reducing payroll taxes and social security contributions, doing away with wasteful subsidies and protectionism is one side of the coin. The overall lower rate of taxation in the New Member States relative to the EU-15 average is shown in figure 13. The other side consists of investing in education and training, employment creation programmes, the infrastructures of a knowledge economy, and R&D, as a way to promote social mobility, strengthening the middle classes, consolidating the production and productivity potential of the market economy, and enhancing skills and adaptability, etc. In New Europe, the choice of this paradigm has been induced, and almost imposed, by the poor state of the public administration, the high degree of public sector ineffectiveness and sometimes corruption which was inherited from the past, the considerable tax evasion and elusion, the spurious redistribution generated by subsidies and public services, etc. However, the search for similar mechanisms has now become quite usual in the whole of Europe confronted with the non sustainability of the old welfare system and the need to restore competitiveness and pursue structural reforms. The case of Sweden is in this context quite illustrative of the need to get away from tax-spending redistribution, even in systems that have a great tradition and culture of public sector efficiency and integrity.

7. Openness to Trans-Atlantic and Pan-European cooperation

It is well known that Eastern European countries are more open to transatlantic cooperation, transatlanticly, and with Russia, the other non-EU eastern European countries in the Caucasus, the Balkans and Central Asia, than the core of Old Europe. This is due to obvious historical, cultural and geo-strategic reasons. The idea that Europe should be built as a new fortress, or a competitive superpower, capable of challenging the US or Russia in their hegemonic aspirations, and aiming at a multi-polar global governance architecture, is quite foreign to New Europe's vision and practise of international relations. These countries understand very well that without a strong transatlantic partnership and a broad alliance with Russia on a wide range of fronts Europe cannot play its role on the regional level or globally.

European integration can represent an anchor for stability and prosperity and a beacon for democracy and human rights, not only for its citizens, but also for its neighbours and the world. But this can be achieved only if Europe is capable of engaging both the US and Russia in a long term sustainable partnership.

This argument stands also in relation to the challenges facing economic cooperation. The process of EU construction with its successive rounds of enlargements and its efforts at consolidating and deepening the political and institutional infrastructure can, and should, be seen as part of a wider process of Pan-European and Trans-Atlantic economic cooperation and integration. The two processes are obviously different and distinct, but should be seen as mutually consistent and re-enforcing to each other, rather than interfering with one another.

There are several areas, particularly in the field of external economic relations and the economic aspects of security where Eastern Europe can play a leading role in promoting a broad dialogue at the Pan-Euro-Atlantic level: for instance energy, and in particularly energy security, or transport infrastructure, or trade liberalisation, particularly in relation to re-launching the Doha process, or the environment. In all these fields, a Pan-Euro-

Atlantic approach would be highly beneficial and would not have to undermine, create obstacles for, or even interfere with efforts aimed at deepening intra EU economic integration or further enlargement.

8. VISION OF A WIDER AND MORE OPEN EUROPE.

At a time when the discussion on the future of Europe seems to drag on without major break-through which is creating much anxiety, the peoples of Eastern Europe are showing more openness and vision. On the whole there is much less fear in New Europe of engaging with the EU neighbouring countries in a process of economic cooperation and integration. There is also much less reluctance in considering the opportunity of further enlargement of the EU towards the East, relying on the direct experience in these countries and the extraordinary success that the latest round of enlargement has brought about.

Whatever the future of the EU may be, the future of Europe cannot fall short of continuing and strengthening the on-going process of Pan-European and Pan-Euro-Atlantic economic cooperation and integration. This process may take on different institutional forms (variable geometry and reinforced cooperation) and proceed at different speeds. It should cover the whole of the Balkans, the Caucasus and Russia (a great European power), and reaching out towards all of Euro-Asia, including the Caspian and Central Asia.

To get out of the EU constitutional stalemate and project a credible perspective on the future of Europe we need a bold and new vision. New Europe, for reasons due to its history, geo-political position, cultural links and experience, is our only hope that such a vision will be put forward in a credible way that can mobilize mobilising new energies and inspire bold leadership.

9. CONCLUSIONS: THE CHALLENGES AHEAD.

We are now in the position of responding to the question we posed at the beginning of this paper. It does make a great deal of sense indeed to speak of a New Europe emerging out of the ashes of the failures of the communist block and the command economy.

Eastern Europe has to be seen in the middle of a complex and delicate phase of transformation and experimentation. It is a fledgling New Europe that is emerging; one based on innovation and competition, the search for a new social model relying on opportunities rather than subsidies, and promotion of Pan-Euro-Atlantic cooperation and integration.

Naturally the process leading to such a transformation cannot be smooth, free from uncertainties, and homogeneous in the various sub-regions of Eastern Europe. But there are, and there will be, many relevant lessons to be learned which will benefit the countries of continental Europe ("Old Europe") as well as the other neighbouring countries aspiring for further integration with Europe.

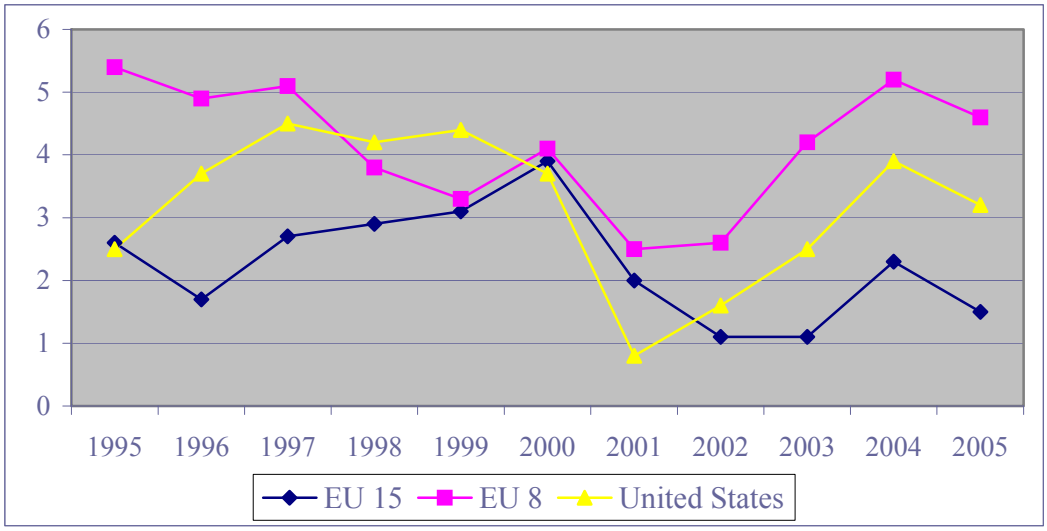
The major challenge ahead however is not in my view linked to the many different options and hard choices that the transition economies of Eastern Europe will have to face. The main challenge is not an economic one. It has to do with the politics of reform, rather than the economics of reform. It is therefore a political challenge, i.e. how to mobilise political support for economic reforms, how to win the resistance of the sheltered sectors and the other "insiders", how to counteract the strong lobbying of vested interests affected by the reforms, how to make the potential "winners" more vocal, engaged and supportive, how to compensate the "losers" and neutralise their active or passive resistance. A constituency for economic reforms, or at least a coalition of the willing, has to be built, strengthened and maintained throughout the entire process of change. Such a constituency should be drawn from the private sector including the small and new firms, the disadvantaged groups (the outsiders), the employees of the exposed sectors that are export oriented and have much to gain potentially from institutional reforms, the more skilled and educated labour force, the professionals, and the research and high-tech sectors.

The "political economy" literature has identified a few conditions for launching bold economic reforms, these include: a) distance from elections; b) wide parliamentary majorities; and c) a common perception in the polity and society of the threats posed by lack of reform and the need to sacrifice. It is now important that the political and economic leadership in the countries of Eastern Europe invest in creating a political environment conducive to reform. While the condition of wide and stable parliamentary majority is often a given, unfortunately it does not always correspond to the realities of these countries which are often characterized by

weak governments, instability, threat of nationalism and populism, etc.. Thus a determined effort can and should be made in speeding up reform in the initial period after an election and in conveying to the electorate the need of not shying away from the hard decisions that the times require.

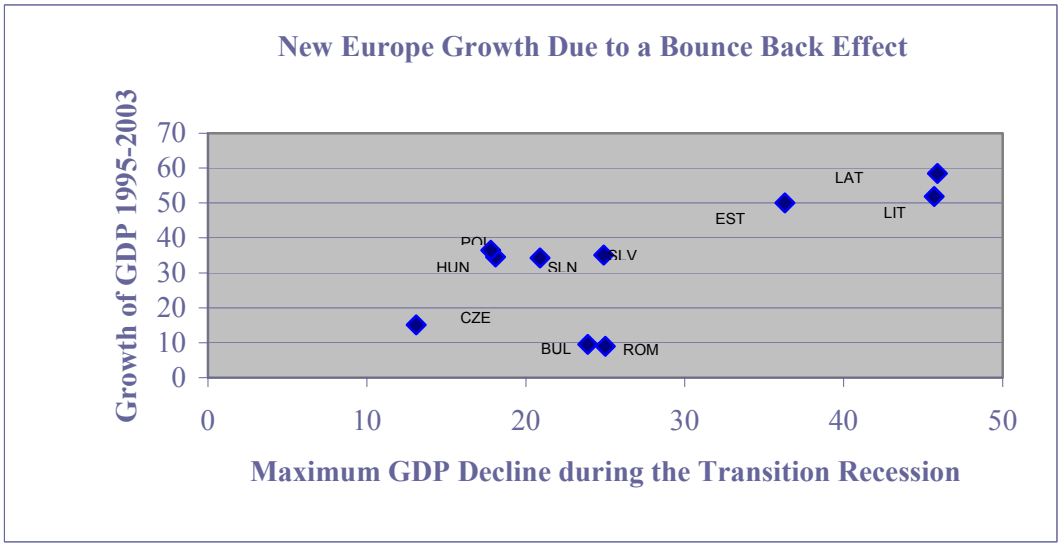
New Europe is at a turning point: while the ingredients for delivering a new model of economic integration and a new vision for the future of Europe are there, the chemistry for mixing these ingredients and accomplishing the objectives is far from completion. The economics of reform that New Europe promises for itself and the whole of Europe seems to be ripe for bringing about its expected benefits. But the politics of reform requires a leap forward in political will and leadership.

Chart 1. GDP growth rate at 2000 prices and PPP



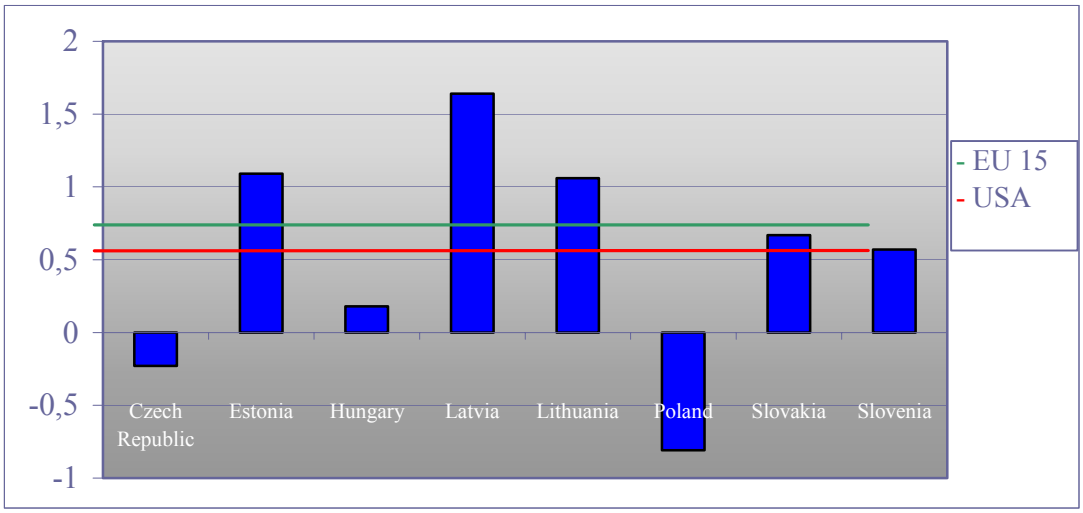
Source: UNECE Statistical Database

Chart 2. New Europe Growth Due to a Bounce Back Effect



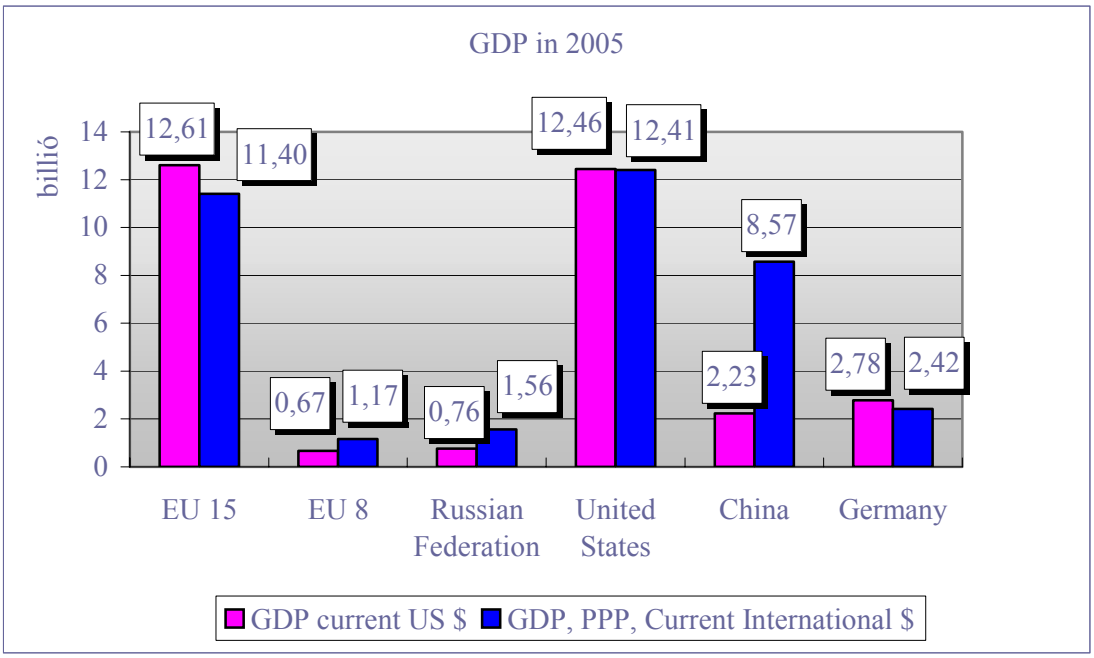
Source: UNECE

Chart 3. Employment growth 2000-2005



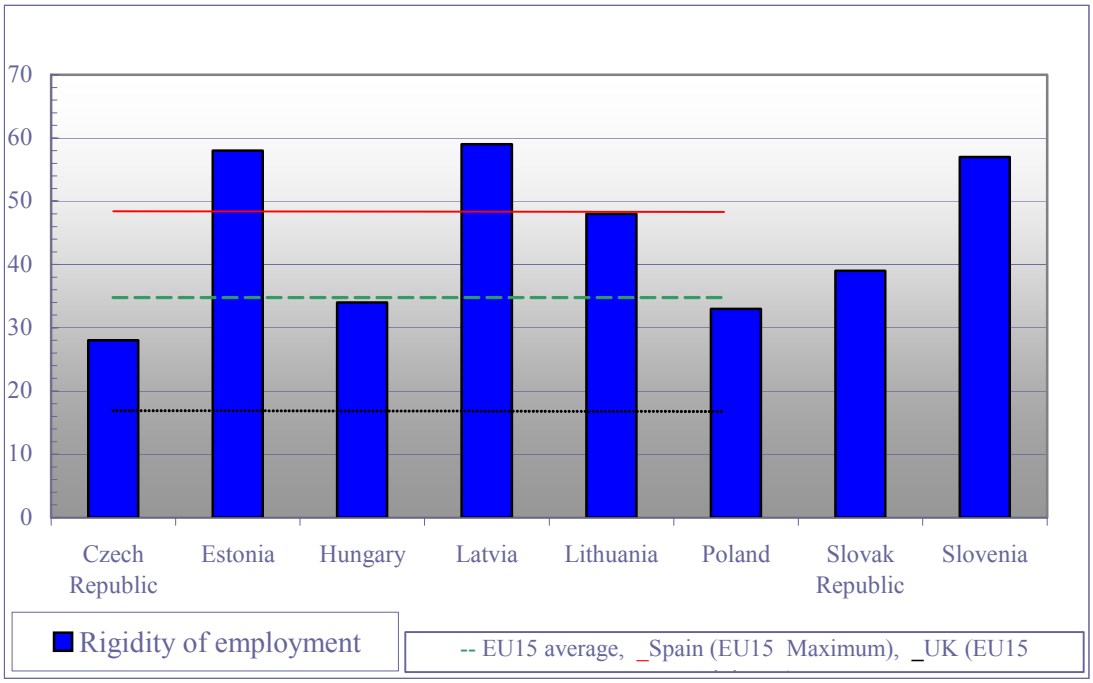
Source: UNECE Statistical Database

Chart 4. GDP in 2005



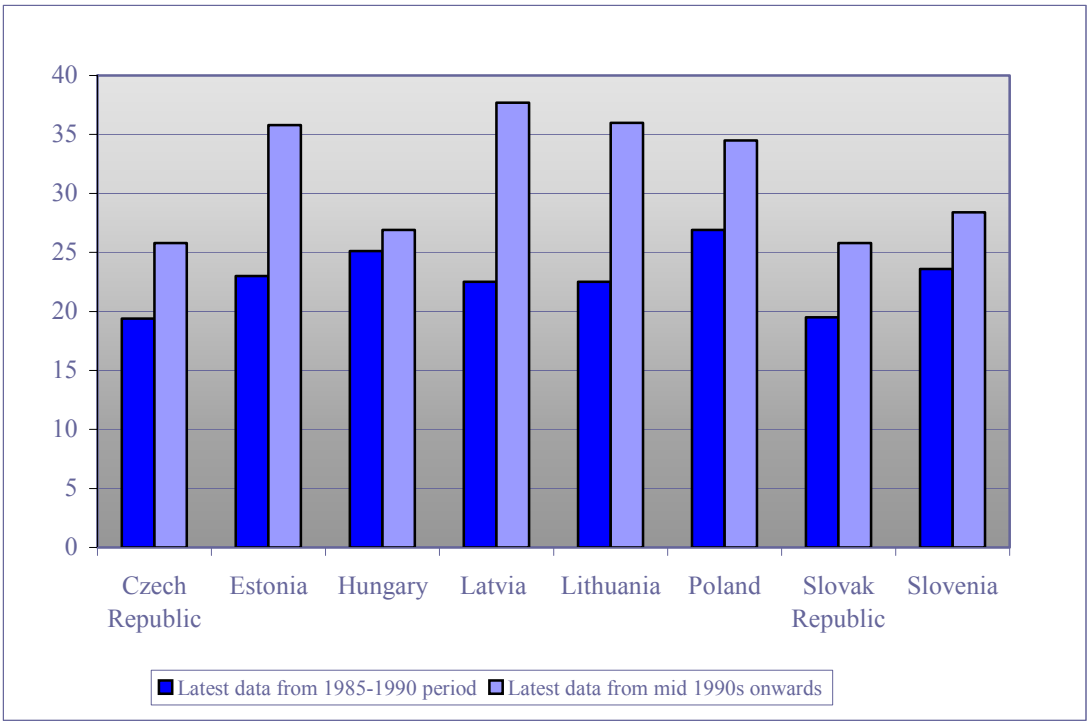
Source: World Bank

Chart 5. Employment Protection Legislation: Labour Market Flexibility



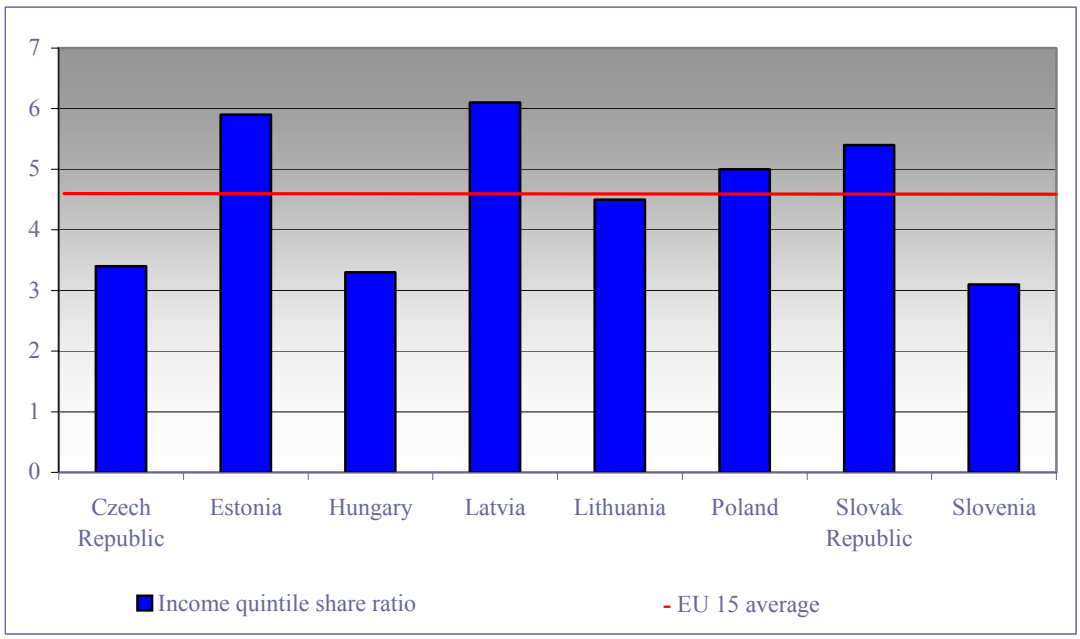
Source: World Bank

Chart 6. GINI Indexes for EU8



Source: World Bank

Chart 7. Inequality of income distribution (Ratio of top 20% to bottom 20%)



Source: Eurostat 2003

Chart 8. Geographical Trade Pattern of the EU-8

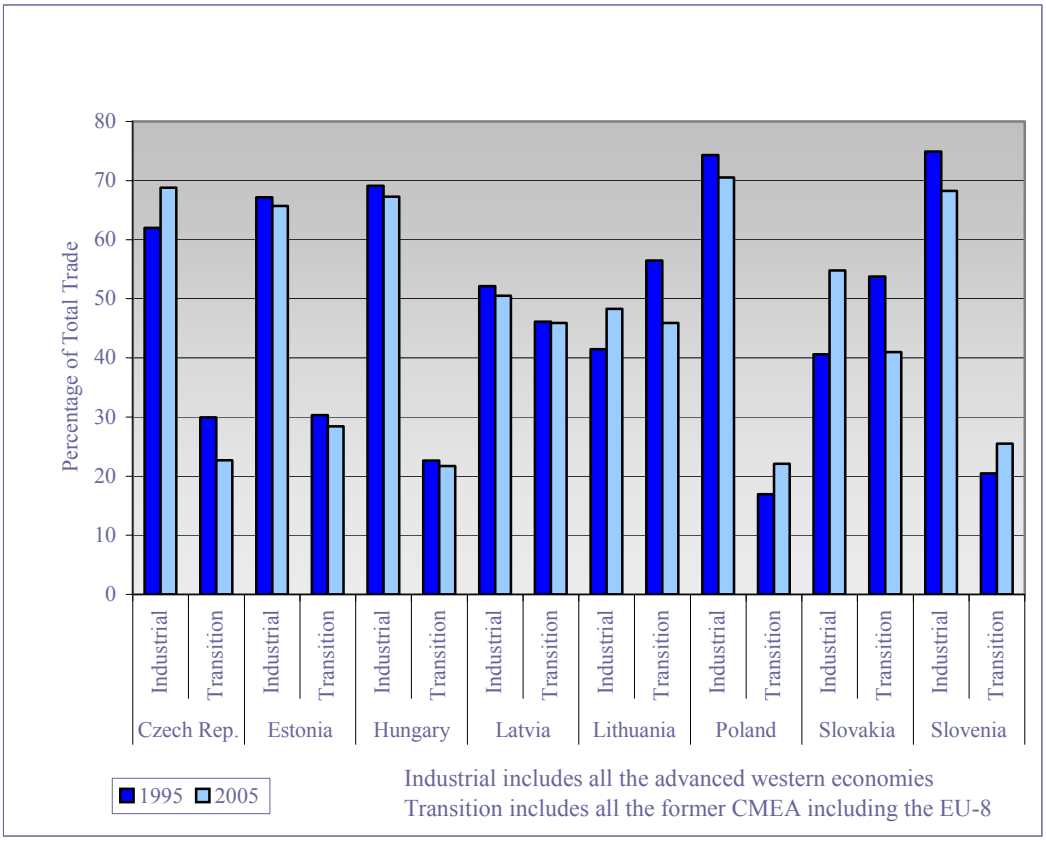
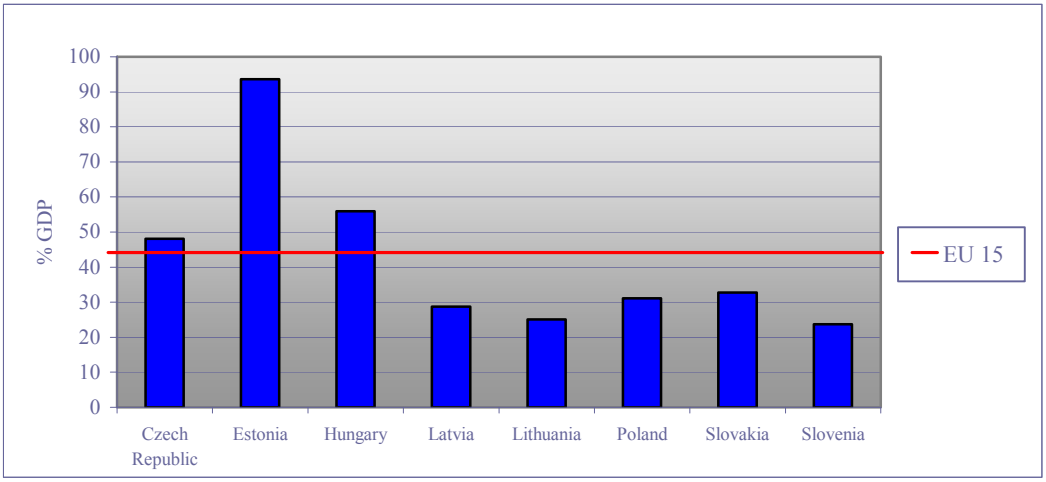
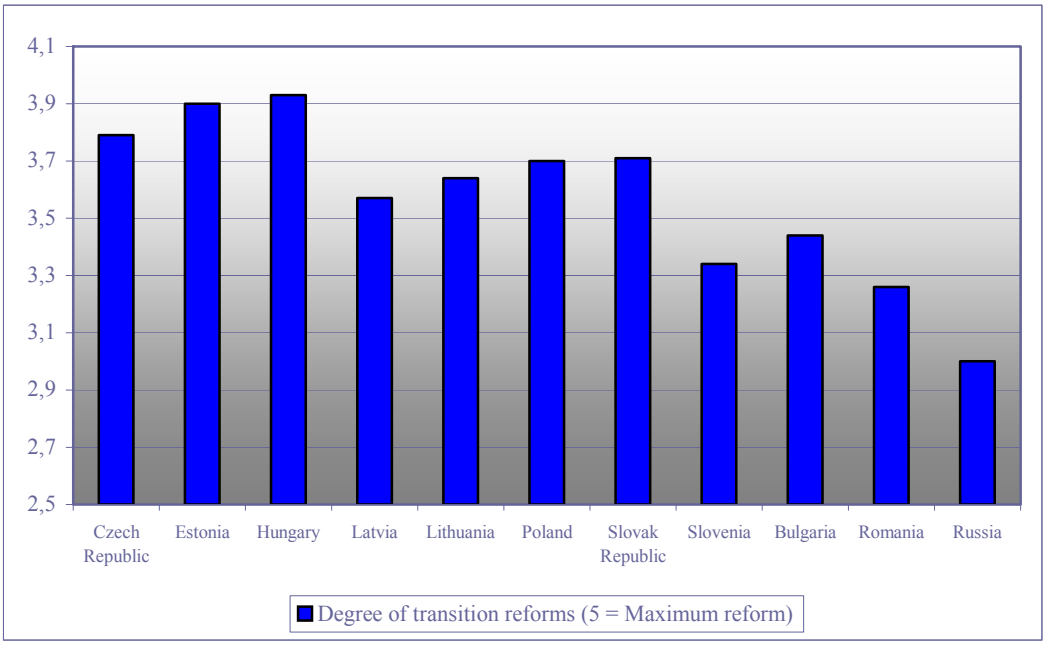


Chart 9. FDI Inward Stock 2005



Source: UNCTAD Investment Report 2006

Chart 10. Degree of transition reforms (Summary measure of EBRD)



Source: Transition Report 2006 EBRD

Chart 11. Transition Economies' Competitiveness World Economic Forum

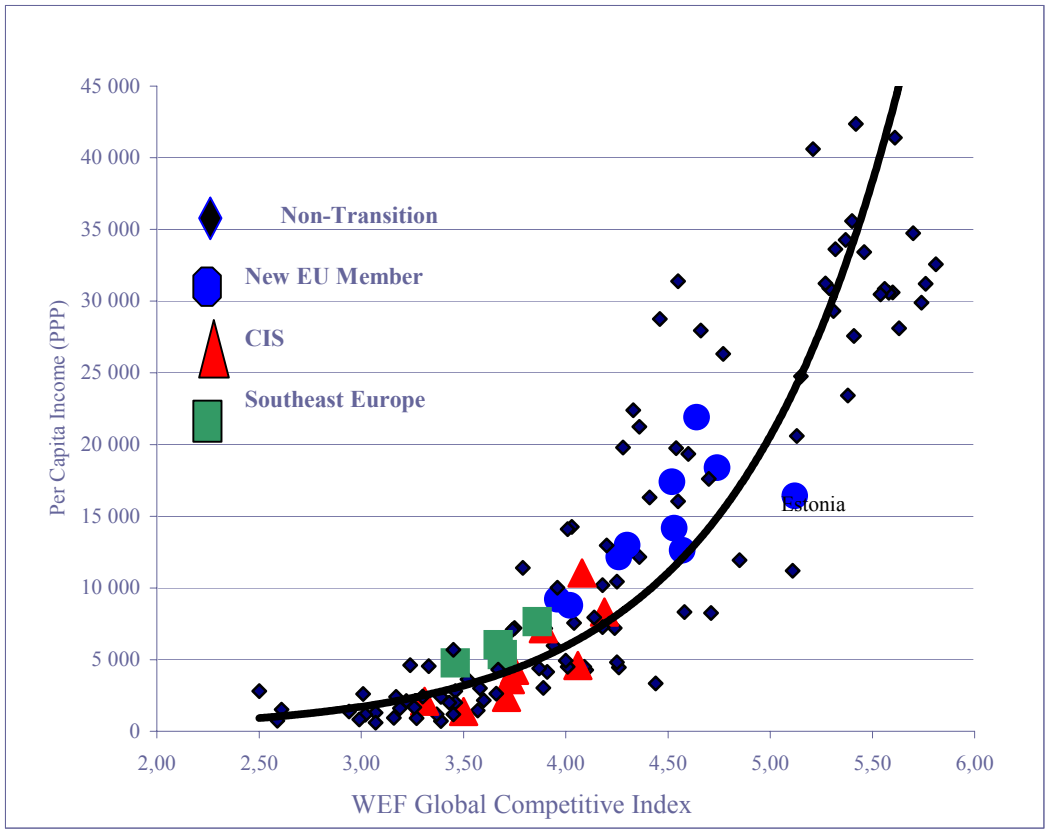
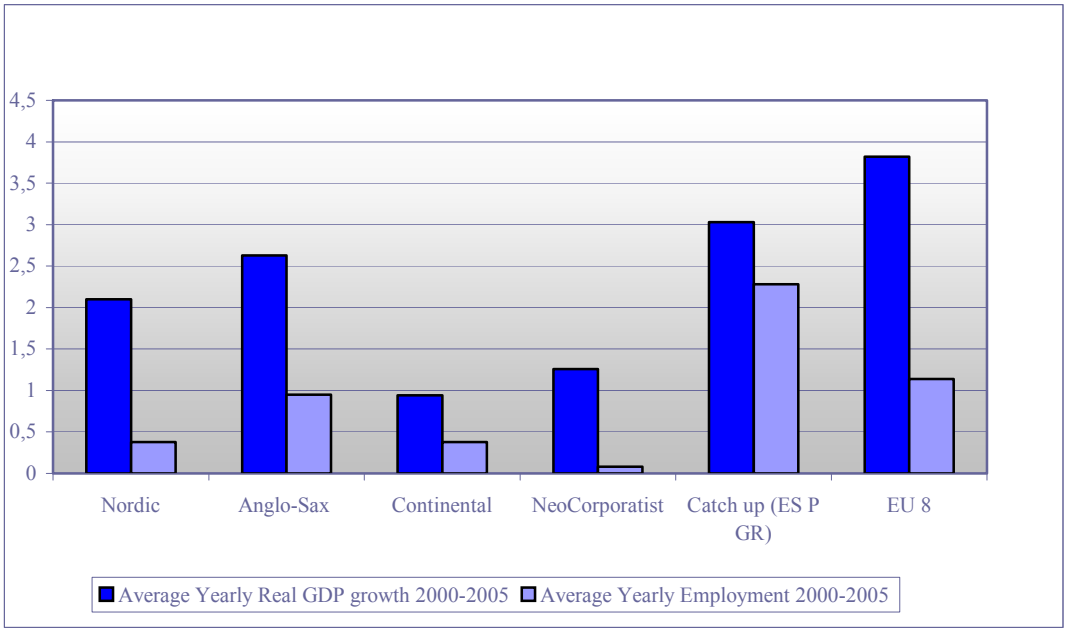
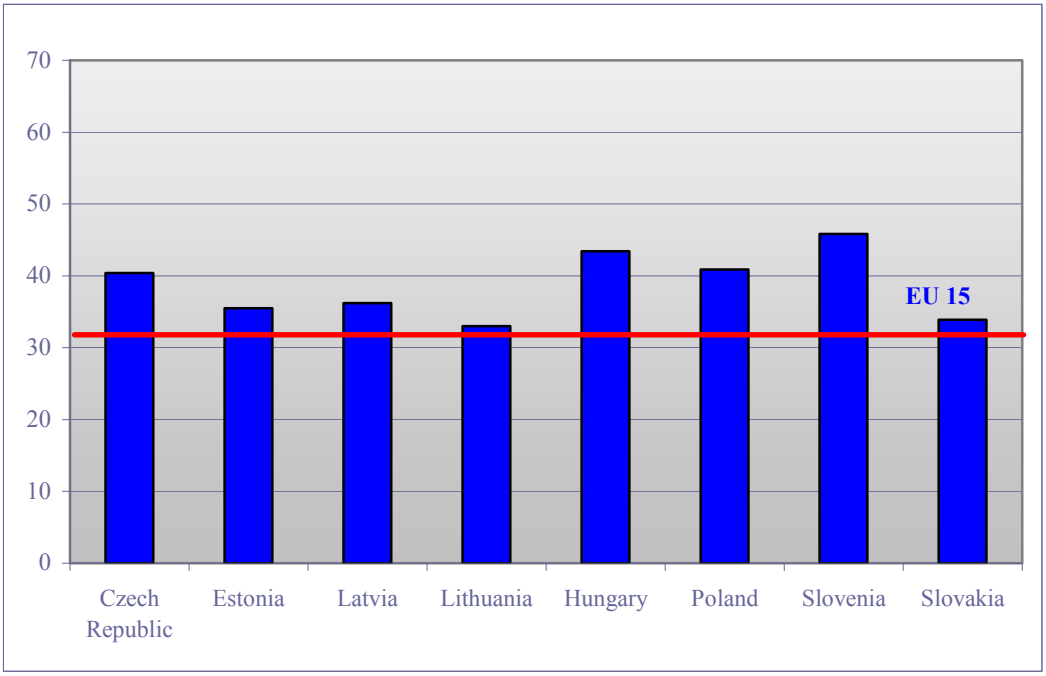


Chart 12. Growth in the EU, 2000-2005



Source: UNECE Statistical database

Chart 13. Total General Government Revenue in % of GDP in 2005



Source: Eurostat

THOMAS LAURSEN[20]: GROWTH IN CENTRAL EUROPE AND THE BALTIC STATES: RECENT TRENDS AND PROSPECTS

INTRODUCTION

The promotion of productivity and growth is on the policy agenda in almost all EU countries, including the New Member States (NMS) striving to catch up with income levels in Western Europe. While the NMS are currently enjoying rapid rates of output growth, little is known about the prospects for sustaining this pace and the role of economic policies in this regard. This may risk leading to complacency in the pursuit of the outstanding reform agenda in the region.

This study analyzes aggregate growth patterns in the EU8 economies, examining the main factors affecting growth as well as some of the policies that may help to sustain or enhance growth prospects. We supplement this analysis with a more detailed, sector-based examination of the largest country in the region—Poland. This will help shed light on whether the same key factors support growth at the sector level as at the country level and potentially strengthen the basis for policy directions.

The study is organized as follows: in section 1, we review sources of output growth and determinants of total factor productivity growth in the EU8 over the past decade; in section 2 we perform a similar analysis at the sector level for Poland; and in section 3 we summarize our findings and discuss their policy implications.

EU8 CROSS-COUNTRY ANALYSIS OF OUTPUT GROWTH

This section looks at patterns of growth in the EU8 in the period 1996-2004, performs a growth accounting exercise where output growth is decomposed into its main components (labour, capital, and productivity), and analyzes determinants of productivity growth. We find that rapid output growth in the region was driven by services and industry, with domestic demand playing a relatively larger role in the Baltic countries and net exports more important in the Visegrad countries. Total factor productivity rose rapidly in all EU8 countries, but capital accumulation was also important, notably in the Baltics. Openness to trade and competition, R&D spending, and shift of resources toward industry seemed to be key drivers of productivity growth in the region.

Patterns of growth 1996-2004

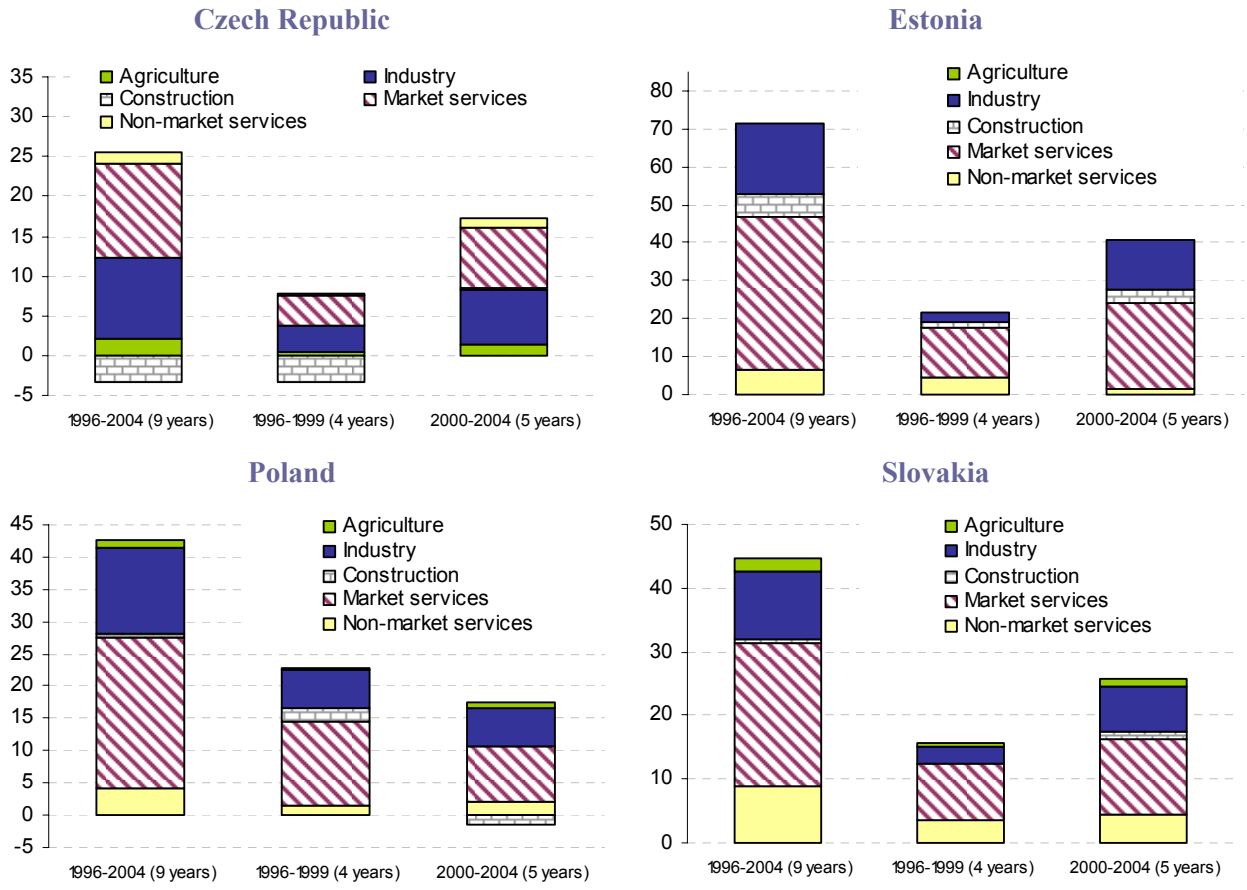
Following the initial output collapse induced by transition to market economies, the EU8 countries recovered gradually in the second half of the 1990s and output growth has gained further strength in most countries in the first half of this decade. In the first half of the 1990s, GDP and value added declined dramatically due to supply and demand shocks caused by the loss of traditional export markets, the break-up of existing supply chains and decision-making structures, sudden trade liberalization and restrictive macroeconomic policies. Economic recovery got under way from the mid-1990s, but most of the NMS experienced further growth interruptions owing to delayed structural reforms (e.g. corporate restructuring), financial crises (notably spillover from the Russia crisis) and/or macroeconomic imbalances related to unsustainable economic policies. The Baltic States were more affected by the Russia crisis in the summer of 1998 than other countries in the region but recovered rapidly from 2000 and in recent years have been among the fastest growing countries in the world. Growth also picked up in the Visegrad countries except Poland that suffered from a serious slowdown in 2001-02. Slovakia achieved an impressive acceleration of growth thanks to deep market-oriented institutional reforms and improvement of the business climate.

Services and industry were the main sectors driving growth in the region. All EU8 countries profited from external openness and closer economic integration with the EU. Thus, industry, as the most export-oriented sector, played an important role in sustaining high growth rates. Nevertheless, services—both market services (including trade and transport) and non-market services—were the major contributor to output (value-added)

[20] Lead Economist for Central Europe and the Baltic States, World Bank

growth across the region (Chart 1). Agriculture contributed marginally, but positively to overall VA growth, while the contribution from the construction sector was fairly small and even negative in the Czech Republic. On the whole, EU8 countries saw a clear tendency of adjustment towards the broad economic structures prevailing in the EU15.

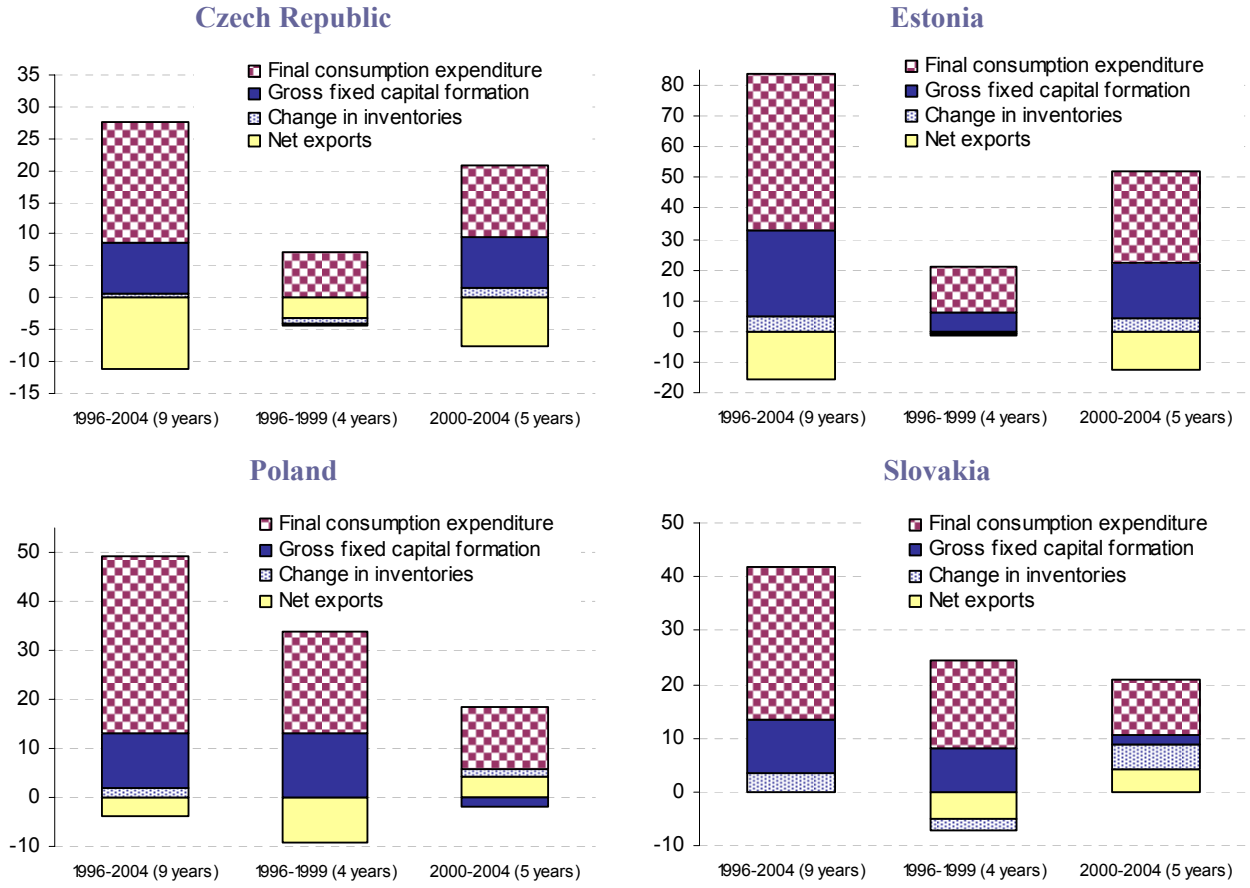
Chart 1. Sector composition of value-added growth in selected EU8 countries 1996-2004 (pp).



Note: comparability between countries is affected by methodological differences. Comparable data for Hungary, Latvia and Lithuania was not available. Slovenia was not covered by the quantitative analysis in this report owing to data constraints.
Sources: CSOs; and Bank staff calculations

Domestic demand led growth on the demand side, while the contribution of net exports was mostly negative. Both consumption and fixed investment expanded rapidly over the past decade, with the former the main contributor to growth owing to its much larger share in output (Chart 2). This was associated with a rapid expansion of imports, and—despite also buoyant exports—net exports generally contributed negatively to growth over the period as a whole (especially in the Czech Republic and the Baltic States). However, in the second part of the period (2000-04), net exports supported output growth in Poland and Slovakia. EU accession in May 2004 was associated with a further boost to foreign trade in the region, with exports in particular from Poland and the Czech Republic benefiting from better market access and pushing output growth higher. Growth patterns became more balanced in Slovakia and Hungary, while domestic demand continued to lead growth in the Baltic States resulting in large current account deficits and rising inflationary pressures. Large fiscal deficits also contributed to serious external imbalances in Hungary.

Chart 2. Demand-side decomposition of real GDP growth in selected EU8 countries 1996-2004 (pp).

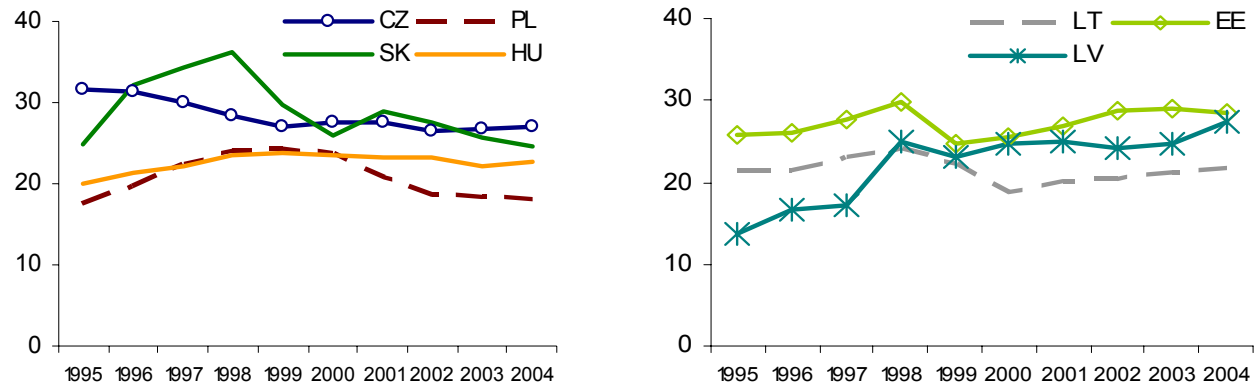


Note: comparability between countries is affected by methodological differences. Comparable data for Hungary, Latvia and Lithuania was not available. Slovenia was not covered by the quantitative analysis in this report owing to data constraints.
Sources: CSOs; and Bank staff calculations.

Growth accounting

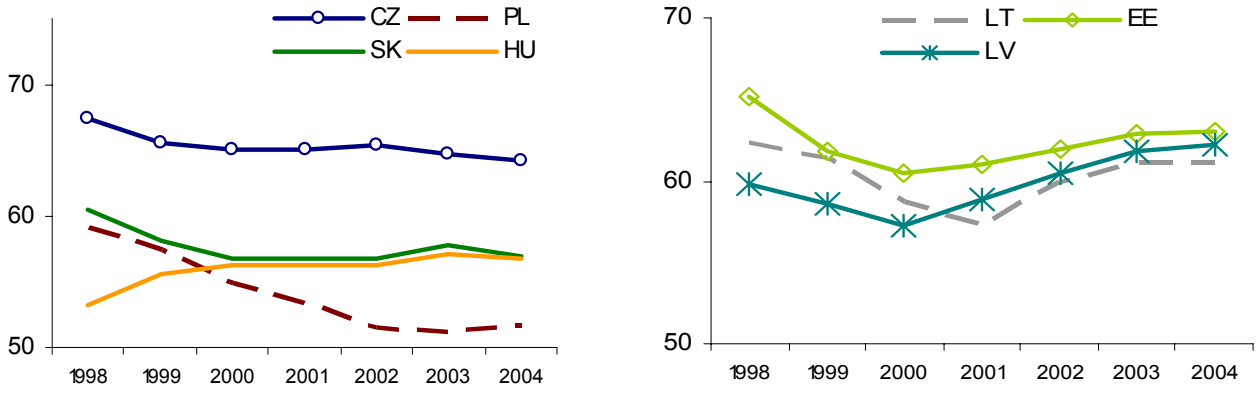
Investment and employment rates in the region have fluctuated significantly during the last decade, but employment rates—and in some countries investment rates—have been disappointingly low. Gross fixed investment rates in the EU8 countries have fluctuated in the range of 20-30% of GDP, with investments in Latvia accelerating strongly from a low initial level (Chart 3). Investment has been particularly weak in Poland, but also unimpressive in Hungary and Lithuania, while capital formation has been relatively strong in the Czech Republic, Slovakia, Estonia, and—in recent years, in Latvia. In comparison, investment rates in the rapidly growing Asian economies were significantly higher, mostly in the range of 30-40% of GDP. Meanwhile, growth has been largely jobless so far, again in contrast with the Asian experience. Employment rates mostly weakened in the second half of the 1990s in tandem with ongoing restructuring in industry and slow employment generation in the expanding service sectors, although Hungary managed to raise employment but from a very low level (Chart 4). While the growth acceleration in the Baltic States in the first half of this decade was associated with a gradual improvement in employment, the Visegrad countries were only able to stabilize the situation. Employment rates in the EU8 are now only around 60% (and in Poland even considerably lower), well below the Lisbon target of 70%.

Chart 3. Gross fixed capital investment (% of GDP)



Source: Eurostat

Chart 4. Employment rate (population aged 15-64 years)



Source: Eurostat

All EU8 countries have experienced rapid productivity growth over the last ten years, with this being the main driver of growth in the Visegrad countries. Using growth accounting, where output (value-added) growth is decomposed into the contribution of factor (capital and labour) growth and a "Solow" residual termed Total Factor Productivity (TFP) growth (Box 1), we find that output growth in the Visegrad countries over the period 1996–2004 is explained almost completely by TFP growth while the contribution of capital and in particular labour was small and in several years even negative (Chart 5). Capital is estimated to have contributed 25-35% on average to output growth between 1996 and 2004 in Hungary and Poland, but only about 15% in Slovakia and 5% in the Czech Republic. At the same time, employment made a small or negative contribution to growth in the Visegrad countries, the main exceptions being Hungary in 1999 and 2003 and the Czech Republic in 1998 where labour accounted for more than 30% of value added growth. In contrast, output growth in the Baltic countries was led by factor accumulation, notably capital formation, while TFP growth is estimated to have contributed only 20-40% on average to output growth in the period 1996-2003.

Productivity growth appears to have been particularly rapid in Slovakia and Poland. TFP growth averaged around 3½% during 1996-2004 in Slovakia and Poland, while productivity growth in Latvia and the Czech Republic was less than one half of this rate (Table 1). However, the Czech Republic—along with Slovakia and Poland—saw a significant acceleration of TFP growth in recent years. The results for the Visegrad countries are broadly in line with IMF estimates, but somewhat higher than those of the EC (while our result for Latvia is significantly lower than other national and international estimates) (Table 2).[21]

[21] The results are sensitive to assumptions regarding the production function and estimates of labour/capital income shares and factor inputs (notably the capital stock). In the case of Hungary, Benk (2005) finds more support for a Constant

Box 1. Growth Accounting Methodology

We used the standard growth accounting framework based on an aggregate production function (expressed in growth rates). This approach assigns little importance to demand, which is generally considered to be more relevant for cyclical behaviour, while focusing on the supply-side of the economy (i.e. the accumulation of labour and capital, as well as technical progress, as the drivers of any increase in output over time).

In line with common practice, we assumed Cobb-Douglas production functions with constant returns to scale as well as competitive factor markets. The key parameter, the income share of labour (capital) α (1 - α) was set to the benchmark value of 1/3 (except for Poland—see below) suggested by national income accounts of industrial countries (data on the income of self-employed was generally not available). The period of analysis (1996-2004) was based mainly on the availability of data on capital.

$$\mathbf{Y = f(L,M, K) P} \quad (1)$$

$$\mathbf{Y_t = (L_{L(t)}^{\alpha(L)} M_{M(t)}^{\alpha(M)} K_{K(t)}^{\alpha(K)}) P} \quad (2)$$

Where Y – output; L – labour; M – intermediate materials; K – capital services; and P – productivity of inputs.

Reflecting data availability, we used value-added instead of output time series. Therefore, intermediate materials were lifted from the right hand side of the equation. Moreover, the assumption of constant returns to scale implies that □ (L) = 1 - □(K) and P=TFP (Total Factor Productivity).

$$\mathbf{VA = (L_{L(t)}^{\alpha(L)} * K_{K(t)}^{1-\alpha(L)}) TFP} \quad (3)$$

$$\mathbf{ln(VA) = □\ ln(L) + (1-□)\ ln(K) + ln(TFP)} \text{ in logarithms.} \quad (4)$$

In terms of growth rates (indicated by lower-case letters):

$$\mathbf{ln(va) = □\ ln(l) + (1-□)\ ln(k) + ln(tfp)} \quad (5)$$

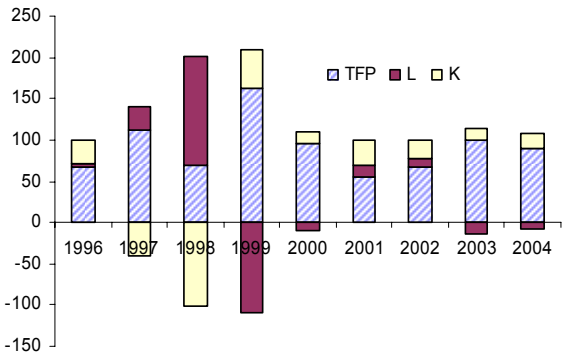
Thus, TFP growth is calculated as a residual (Solow's residual) using the equation:

$$\mathbf{ln(tfp) = ln(va) - □\ ln(l) - (1-□)\ ln(k)} \quad (6)$$

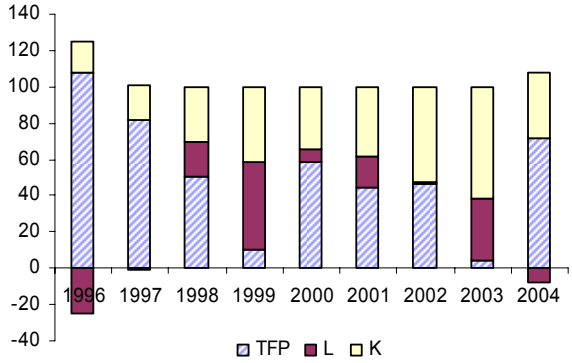
Elasticity of Substitution (CES) production function and estimate that TFP growth accounted for about one-half of output growth. The average compensation of employees in the EU8 accounted for roughly 50% of gross value added in the period under review (see e.g. Gradzewicz and Kolasa (2004) for Poland), but this likely underestimates the true labour income share in total VA due to the income generated by self-employed (who are usually classified within the households sector and treated in the national accounts as the part of the gross operating surplus). Our calculations for Poland suggest that the labour income share may be closer to 75% (see section 2). While using a lower income share reduces the contribution of TFP, it does not fundamentally alter the results.

Chart 5. VA growth decomposition (%; contribution of L, K and TFP sum up to 100%)

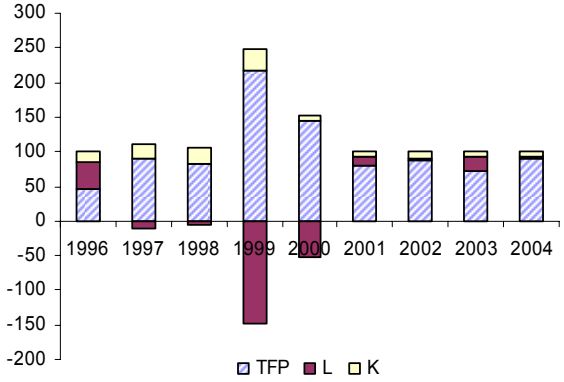
Czech Republic



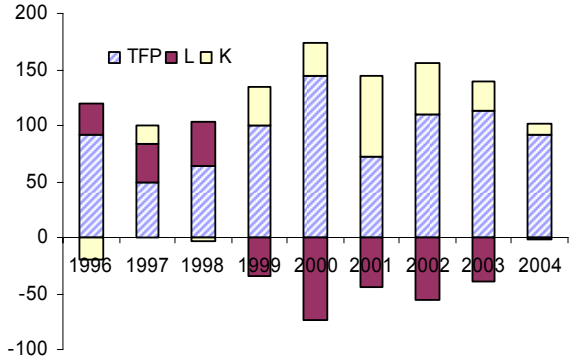
Hungary



Slovak Republic

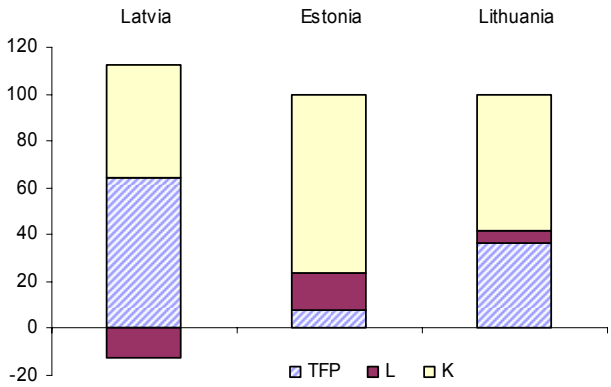


Poland



Note: L- employment; K- capital; TFP – Total Factor Productivity.
Source: Bank staff calculations.

Baltic States (2001-2003)



Sources: BICEPS (Riga); and Bank staff calculations.

Table 1. TFP growth 1996-2004 (%)

	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Slovakia
1996	2.3	1.8	2.4	-1.2	-0.7	4.8	2.7
1997	-1.9	4.3	3.8	0.6	-0.9	3.1	4.7
1998	-0.5	2.2	2.3	-7.5	1.0	2.9	3.5
1999	2.1	8.0	0.4	4.6	1.5	3.8	2.9
2000	4.2	3.8	2.8	0.5	17.3	5.3	2.6
2001	1.1	1.8	1.8	2.6	3.2	0.8	4.0
2002	1.2	0.0	1.5	6.2	2.0	1.4	3.5
2003	3.0	-0.3	0.1	4.2	2.4	4.1	3.6
2004	4.2	n/a	3.2	n/a	n/a	4.7	5.3
1996-2004	**1.7**	**2.7**	**2.0**	**1.3**	**3.2**	**3.4**	**3.6**

Source: various	*CZ*	*EE*	*HU*	*LV*	*LT*	*PL*	*SK*
1) capital stock	*CSO estimate*	*BICEPS*	*MNB estimate*	*BICEPS*	*BICEPS*	*CSO; WB*	*MOF estimate*
2) value added; labour	*CSO*	*BICEPS*	*CSO*	*BICEPS*	*BICEPS*	*CSO WB*	*CSO*
3) calculations assume:	*constant capital share - 0.35*	*constant capital share - 0.33*	*constant capital share - 0.35*	*constant capital share - 0.33*	*constant capital share - 0.33*	*capital share - 0.22*	*constant capital share - 0.35*

Note: The estimates of TFP reported here should be treated with caution due to methodological and data problems, in particular concerning calculations of the net capital stock and the assumed share of factors inputs in aggregate output.

Table 2. Other estimates of TFP growth in the Visegrad countries

	Czech Republic	Hungary	Poland	Slovakia
WB (96-04	1.7	2.0	3.4	3.6
WB (00-04	2.8	1.3	1.9	3.4
EC (96-05	0.6	1.2	2.2	2.0
IMF (00-04	1.8	-	-	3.8

Source: IMF Article IV Consultation Reports 2005; EC 2004

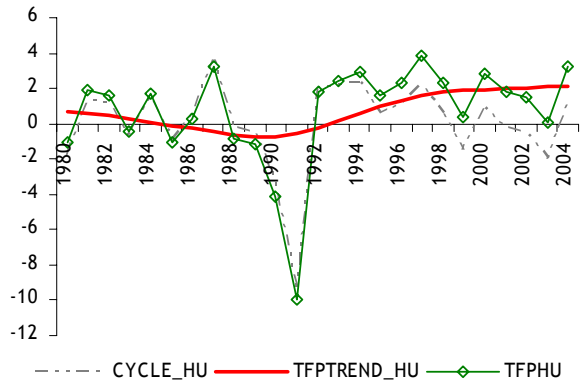
Medium-term growth prospects remain favourable in the EU8.[22] Using the growth accounting framework and assuming that the (net) capital stock grows in line with the average of the last four years, that employment grows in line with projected rates in recent Convergence Programs, and that TFP growth (cyclically adjusted) follows the trend from recent years (in all cases slightly higher than the recent 5-year average of unadjusted TFP growth), we project average growth rates of real VA for the period 2005-2008 at 3.8% in the Czech Republic, 4% in Hungary, 5.3% in Slovakia and above 5.5% in Poland (Chart 6 – Chart 8).[23] [24]

[22] Our focus here is on the Visegrad countries (growth prospects in the Baltic States were discussed in the January 2005 Quarterly Economic Report Special Topic).

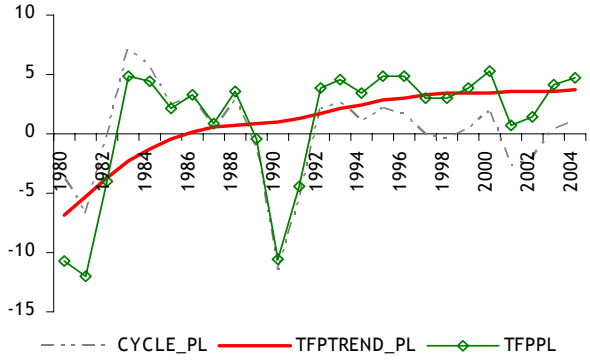
[23] In the case of Poland, employment growth is based on medium-term government projections prepared for the 2005 budget.

Chart 6. Decomposition of TFP into trend & cycle

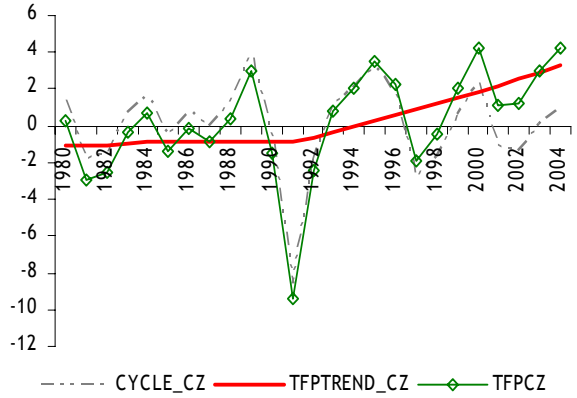
Hungary



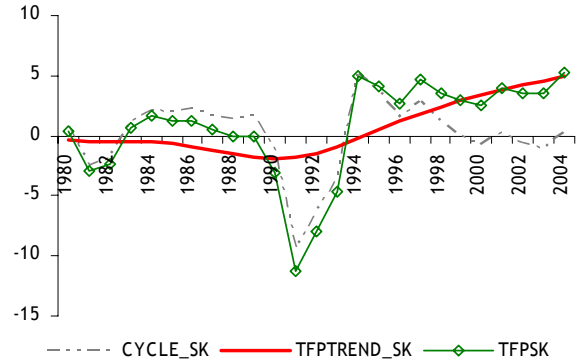
Poland



Czech Republic



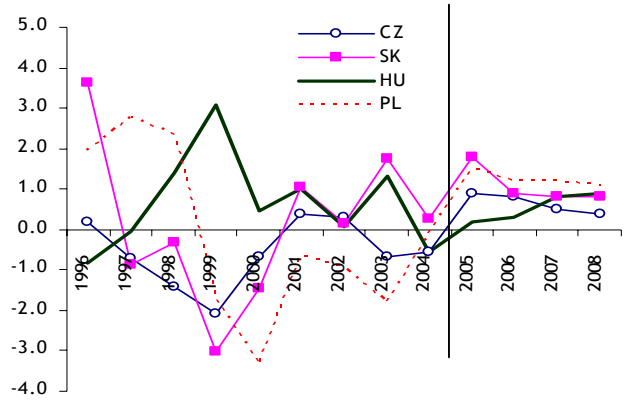
Slovakia



Note: TFP growth in 1980-95 from de Broeck and Koen (2000). In this exercise, the production functions were estimated using a weight of 0.35 for capital and 0.65 for labour.
Source: Bank staff calculations

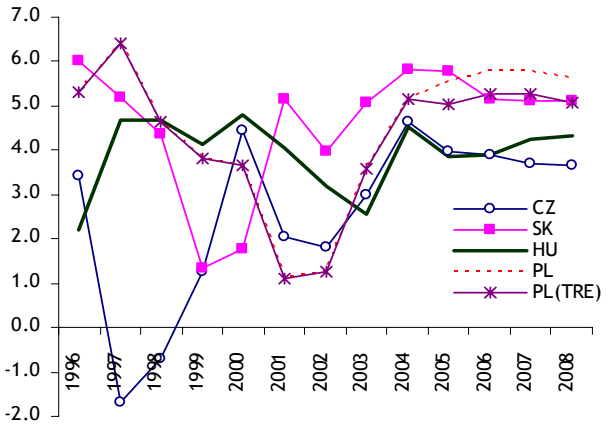
[24] TFP growth tends to be cyclical and we attempted to correct for this (for the purpose of our forward-looking exercise) following the standard practice of filtering the raw TFP series with a HP filter (the HP filter is derived by minimizing the sum of squared deviations of output from its trend subject to a smoothness constraint that penalizes deviations from the trend). Calculations require quite long data series, and we thus extended our TFP growth data back to 1980 with data from other sources.

Chart 7. Medium-term employment projections(% y/y)



Source: Convergence Programs; MOF (Poland)

Chart 8. Medium-term VA growth projections, 2005-08 (% y/y)



Source: Bank staff calculations

Sensitivity analysis suggests that these projections are fairly robust. Extrapolating recent (last four years, including 2005) employment trends (rather than assuming improved performance in the coming years as done in recent official projections) lowers average VA growth by only 0.2% in Hungary and the Czech Republic although Poland would suffer more with output growth some 2 pp lower (reflecting the assumed convergence toward other countries in the region in official projections). Thus, in Poland policies to support higher employment are critical to sustain good growth performance in the coming years.[25]

Looking further ahead, higher employment rates and, in some countries, investment rates will be needed to sustain rapid convergence to average EU income levels. As the effects of structural transformation and reallocation of resources towards more productive sectors fade, it will become increasingly difficult to sustain the rapid TFP growth experience of the last decade. While most countries still have some potential for reaping productivity gains from resource reallocation, notably from agriculture (and in some countries such as Poland from traditional heavy industries), where productivity remains low, towards modern industry and services, rapid output growth rates are likely to gradually become more dependent on raising employment rates and, where low, investment rates. Higher rates of factor accumulation will be particularly important for Poland and to some degree the other Visegrad countries, while in the Czech Republic the main challenge will be to enhance the productivity of investment. In the Baltic States, raising employment rates will be the main challenge, although in Lithuania stronger investment will also be needed.

Improving further the investment climate and labour market incentives will be the key economic policy challenges in the EU8. While the business environment has improved considerably in several EU8 countries in recent years, much remains to be done in countries like Poland to improve the investment climate in order to raise investment and labour demand. Most countries in the region will also need to pursue policies to stimulate labour force participation and incentives to seek employment in the formal sector. Upgrading skills to meet modern market-economy demands will be crucial in all countries in the region. While many, especially older workers, may no longer be employable, others can more easily adapt their skills and would be willing to work provided incentives were right. High labour taxes discourage both the demand and supply of labour, and for low-skill workers minimum wages (at least in some regions) and social benefits may still be too generous, not least to induce potential workers to move to where the jobs are being generated given high commuting or relocation costs and uncertainty about job prospects.

[25] On the other hand, assuming no further TFP growth effect from "reallocation of resources across sectors" (see section 2) has only a marginal impact on output growth projections reflecting the fact that TFP growth has become increasingly driven by intra-sector productivity improvements.

Higher investment rates would need to be accompanied by increased savings, not least in countries where current account deficits are already large. Current account deficits are high in the Baltic States and Hungary, and savings will need to be raised to ensure external sustainability (not least where higher investment rates are likely to be required such as Hungary and Lithuania). In Hungary, the main problem is low government savings and fiscal consolidation will be the key, while in Lithuania and the other Baltic countries raising private savings (including through financial sector development) will be critical.

At the same time, efforts to support continued rapid TFP growth should not be neglected. However, little remains understood about the factors that affect productivity growth at the aggregate, national level. TFP growth still has an aura of "manna from heaven", making it difficult for policy-makers to focus their efforts on creating the best possible supportive environment. In the following section, we review the recent international research in this area and probe this in the EU8 region.

Determinants of TFP growth

The literature generally identifies human capital, research activity, foreign trade, reallocation of production factors, and "catching up" as key factors influencing the pace of TFP growth **(Annex 1). Some studies have also found certain other variables to be important, including demographic factors, macroeconomic volatility, and reforms or institutional factors (e.g., deregulation or privatization).**

We find some evidence in favour of these factors in the EU8. Our empirical analysis is based on panel data for the EU8 countries (excluding Slovenia) over the period 1996-2004 and a set of variables reflecting the various key factors discussed above (see Annex 2 for further details).[26] Casual observation of the correlations between TFP growth on the one hand and R&D, exports, and shares of industry/ services in value added suggest that these factors all matter as expected (Chart 9 – Chart 12). This is confirmed in our regression analysis. **In particular, trade openness and R&D expenditures have been positively related to TFP growth in the region.** Among the variables representing competition and technological spillovers, trade openness appears to have been the most important. Business research and development spending has had a very small (albeit significant) impact on TFP growth, while foreign direct investment inflows has had a positive but statistically insignificant impact. Also, human capital (measured by tertiary or upper secondary education enrolment) has had a positive effect on TFP growth, although only significant at the 10-percent level.[27] **Further, the reallocation of production factors towards industry has been associated with higher productivity growth**, while the opposite is true for services (although not significantly). Progress on structural reform (measured by the EBRD transition indicator) also seems to matter and its inclusion improves the fit of the regression, although the indicator is significant only at the 10% level. Similarly, catching-up (as measured by the distance to the technology frontier) has the expected positive effect, but is not significant.[28] Finally, we did not detect any relationship between the availability of infrastructure and productivity growth.[29]

[26] In the selection of explanatory variables, data constraints were taken into account.
[27] Enrolment ratios may not accurately reflect the quality and relevance of human capital formation.
[28] Catching up is typically measured using either the initial TFP level gap to the technology frontier (for the EU8 this would be Germany or EU15) or the difference in TFP growth rates between the two. We used the latter measure (following Kolasa and Zolkiewski, 2004).
[29] Macro volatility variables had the expected signs and were important so we included these into the regression to check its robustness. Using EBA methodology (Levine and Renelt, 1992) we found that only openness and the growth rate of business enterprise R&D expenditure-to-GDP were robustly correlated with TFP growth. The other variables were robust in some combination of conditional variables and had the expected coefficient signs.

Chart 9. EU8 average TFP growth vs. average R&D/GDP growth 1996-2004

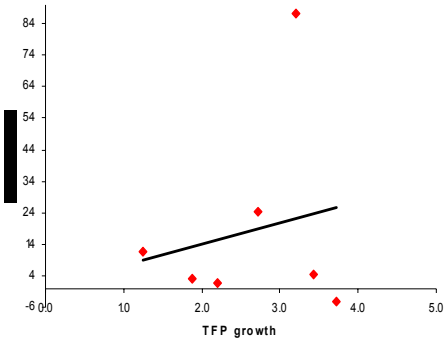


Chart 10. EU8 average TFP growth vs. average EXP /GDP growth 1996-2004

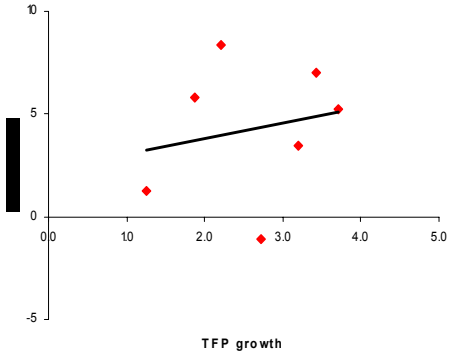


Chart 11. EU8 average TFP growth vs. average industry share in VA growth 1996-2004

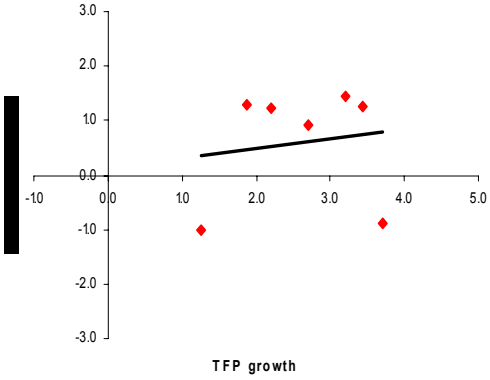
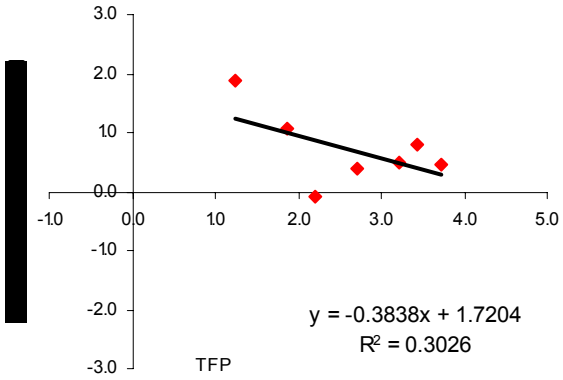


Chart 12. EU8 average TFP growth vs. average share of services in value added growth 1996-2004



Source: staff calculations

Industrialization tends to be more supportive of growth than a specialization towards services (Chart 11 - Chart 12). Lower productivity of the service sector may result from relatively lower knowledge or skills intensity in this sector or weaker exposure to competitive markets.[30] The service sector is still characterized by labour-intensive production as compared with other sectors, and this may hamper productivity growth. At the same time, resources may be shifting toward less productive service sectors such as social and personal services, health and education, and leisure activities owing to a relatively high income elasticity of these services, demographic changes and the increasing role of service firms as providers of intermediate inputs (Wölfl, 2005; Pilat and Wölfl, 2004). This suggests that there is still some empirical support for the traditional industrialization story in the NMS, although this may be more the case for modern industrial activities than traditional heavy industries (we explore this further in section 2).

[30] Not all services should be considered low-productive. In Poland, for example, productivity grew rapidly in business related services such as financial intermediation and transport and communication (see section 2).

These findings should be interpreted with caution given the problems that are commonly encountered in this type of cross-section regression analysis (notably potentially omitted variables and endogeneity). Our empirical analysis probably leaves out some important factors determining TFP as the constant term is high and significant. Also, some of the variables used in the regressions cannot be regarded as strictly exogenous (e.g., openness). Further, there may be concerns about data quality, and measurement or misspecification errors may give rise to heteroscedasticity and thus misleading results (although the latter did not seem to be a major problem in our data). To get a deeper understanding, we now turn therefore to the country level.

POLAND CASE STUDY: OUTPUT GROWTH AT THE SECTOR LEVEL

In this section we look at the growth experience across 34 sectors in Poland during 1995-2003. We first examine trends in sector value added, employment, investment, and productivity growth using the same growth accounting framework as in section 1. We then decompose changes in productivity—both labour productivity and TFP—into effects arising from reallocation of resources across sectors and within sector productivity growth. Finally, we analyze the determinants of TFP growth at the sector level on the basis of the international and regional evidence discussed above. We find that value added and productivity (TFP) growth was particularly rapid in export-oriented and competitive manufacturing industries such as office machinery, pulp and paper, rubber and plastics, fabricated metal products, and machinery and electrical apparatus as well as in motor vehicle manufacturing. TFP growth was the main contributor to value-added growth in most sectors while few relied on factor accumulation. The reallocation of capital across sectors played an important role in fuelling overall productivity growth, especially in the first half of the period, while movement of labour mattered less. Our empirical analysis confirmed the importance of competition and openness to trade and FDI for TFP growth.

Value-added and TFP growth across sectors

Value added in Poland rose particularly fast during the period 1996-2004 in certain manufacturing sectors. As discussed above, VA increased at an average rate of 4.7% during this period, with growth more rapid in the second half of the 1990s than in the first half of the current decade (annual average VA growth declined from 5.7% in 1996-99 to 3.2% in 2000-04 reflecting the dramatic economic slowdown in 2001-2002). Output growth was dramatic in competitive and/or export-oriented sectors such as office machinery, motor vehicles, rubber and plastics, fabricated metal products, pulp and paper, and machinery and electrical apparatus (Table A3.3.). **While employment increased in office machinery, most other sectors shed labour. Net investment in these sectors was generally positive, especially in rubber and plastics as well as motor vehicles, although the rate of increase in the capital stock was modest**. Meanwhile, some other sectors declined (notably traditional and/or labour intensive industries such as leather and footwear, energy and mining, and basic metals), generally accompanied by massive reductions in employment. Surprisingly, the capital stock was augmented significantly in the energy sector.

Productivity surged in several of the rapidly growing manufacturing sectors. As discussed above, TFP growth accounted for the bulk of the increase (89%) in Polish output during 1995-2003, while capital accumulation accounted for only 15% and labour had negative impact of almost 4%.[31] TFP growth was particularly rapid during the most recent period, reflecting labour shedding and restructuring brought on by the recession. **In general, TFP increased more in manufacturing branches than in services** (Annex 3, Table A3.3), perhaps because manufacturing products were more exposed to foreign competition. The fastest TFP growth during 1996-2003 was recorded in *office machinery* (350%), *motor vehicles* (275%), and *pulp, paper & paper products* (146%) – all relatively modern industrial sectors. Meanwhile, **TFP decreased in several branches which were either producing in a semi-controlled market** (*mineral oil refining; coke & nuclear fuel* – by 95%) **or belonged to services** (*real estate* - by 23%; *other community, social and personal services* – by 17%; and *public administration* – by 10%). In some cases, VA increased despite lower TFP: in *construction,* the driving force of VA growth was capital accumulation, while in *public administration and*

[31] Assuming alternatively a lower depreciation rate of 5% (and the initial book value of capital in 1995), the contribution of investment to total VA growth increased by 5 percentage points. The sensitivity analysis thus confirmed that TFP increases played the dominant role in VA growth during 1996-2003.

defence as well as in *compulsory social security* both labour and capital increased rapidly (especially after 1999 on the back of strong employment growth in the public sector after the implementation of the "4 reforms"). There were also large investments in *other community, social and personal services,* while employment expanded rapidly in *real estate* (by almost 50%). For most of the 34 branches, TFP growth was the strongest component of VA growth.

Decomposition of productivity growth

Productivity growth can be decomposed into effects arising from reallocation of production factors across sectors and within-sector productivity growth ("shift-share" analysis; see Annex 3 for further details). The purpose of such an exercise is to distinguish the impact of "structural changes" in the economy from the impact of "intrinsic" productivity growth in the various sectors. In the case of aggregate labour productivity, one can distinguish three separate effects: (i) a *static shift effect* (the effect of relocation of labour towards sectors with above-average initial labour productivity); (ii) a *dynamic shift effect* (the effect of relocation of labour towards sectors with higher labour productivity growth rates); and (iii) and a *within-sector growth effect* (productivity gains achieved by other factors than relocation of labour, including from increases in the capital-labour ratio). Along the same lines, aggregate TFP growth can be decomposed into two effects: (i) an *Intra-Branch Effect* (assuming constant factor-shares); and (ii) a *Total Reallocation Effect* (TRE) resulting from structural shifts of labour and capital between sectors. The TRE is measured as the difference between aggregate TFP growth and output-weighted TFP growth at the sector level.

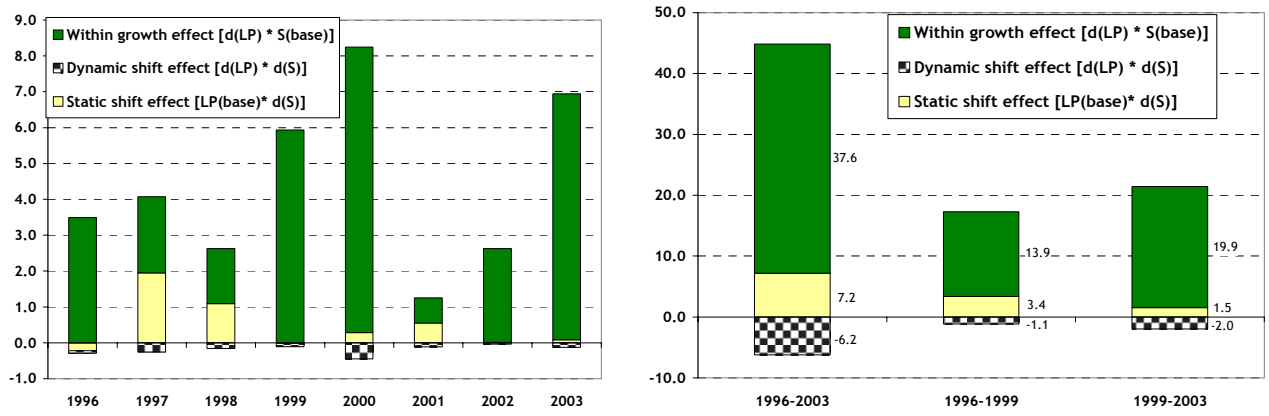
Labour productivity and "shift-share" analysis

The fastest growing labour productivity (VA in constant prices per working person) was recorded in manufacturing branches, including motor vehicles and office machinery (close to 400%) (Annex 3, Table A3.4). These branches reached relatively high levels of labour productivity in 2003 (170% of the economy-wide average), although the highest productivity rates were - surprisingly - still found in the energy sector and real estate. The lowest productivity levels were found in agriculture, forestry and fishing (11% of average) and clothing (37% of average). Across sectors, high labour productivity increases in 1995-2003 mostly coincided with high TFP growth.

The relocation of labour towards more productive sectors played only a small role in shaping overall labour productivity growth compared to the impact of changes in the capital-labour ratio and "intrinsic" productivity growth (Chart 13). The *static effect* was positive in most years, which means that employment shares grew in sectors with high initial productivity levels. In contrast, the *dynamic effect* was negative throughout the period. This reflects the "structural burden" of the transition economy where sectors with fast growing productivity were shedding labour. The *static and dynamic effect*s were usually acting in opposite directions, with the former dominating. The *within effect* was also positive and dominating the other two. This reflects both the flow of capital towards more productive sectors and "clean" labour productivity gains (for instance organizational or management improvements of labour utilization).[32]

[32] Table A3.4 shows that (1- coefficient for capital increased by 3 basis points in the period 1995-2003, what suggests the change of capital-to-labour ratio in favour of capital increase.

Chart 13. Shift-share analysis of labour productivity growth 1996-2003 (%)



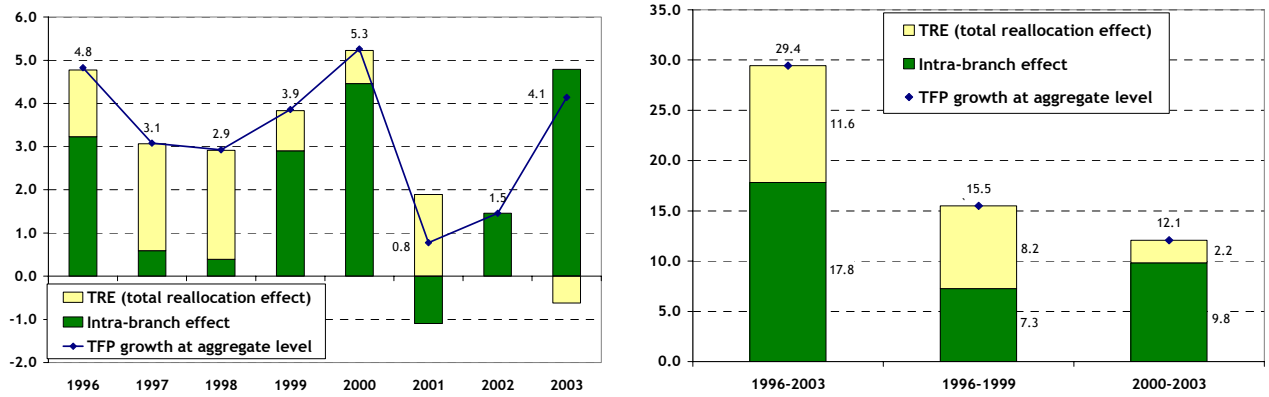
Note: LP – labour productivity; base – base year; S – labour share; and d(...) – change between base and final year
Source: Bank staff calculations

Total factor productivity and "shift-share" analysis

The reallocation of resources has played an important role in driving rapid TFP growth, especially in the second half of the 1990s. For the period 1996-2003 as a whole, TRE accounted for almost 40% of total TFP growth (Chart 14). The TRE dominated aggregate TFP growth in the early part of the period, while the importance of structural changes has diminished in recent years and TFP growth has become increasingly driven by intra-sector productivity improvements. In several years, the TRE was even stronger than the intra-branch effect (1997-1998) or more than compensated a negative intra-branch effect (2001). These results in line with Timmer and Szirmai (2000).

Six sectors accounted for most of the "intrinsic" (intra-sector) TFP growth. During 1996-2003, the strongest impact on total TFP dynamics from this source came from *transport & communication* (3.6 pp), followed by *food, drink & tobacco* and *trade and repair* (both 2.1 pp), *fabricated metal products (*1.7 pp), *motor vehicles* (1.5 pp), and *mechanical engineering* (1.1 pp). These six branches accounted for about 70% of total intra-sector TFP growth.

Chart 14. Shift-share analysis of TFP growth 1996-2003 (%)



Note: Intra-branch effect - TFP increases are weighted with value added-shares in constant prices; Reallocation effect (TRE) – the difference between total TFP growth and the intra-branch effect (the sum of TRE and intra-branch effects sum up to total TFP growth (all in logarithms).
Source: Bank staff calculations

The reallocation effects thus came out much stronger from decomposition of TFP growth than from decomposition of labour productivity. The dominant role may accordingly be attributed to capital. In other words, the stronger is labour productivity growth arising from higher capital-to-labour ratios, the stronger is the TRE. This finding is in line with economic logic and empirical evidence that mobility of capital is much stronger than mobility of labour. The result is also consistent with O'Mahony (2003) who notes that "between-firm growth contributes more to multifactor productivity growth than to labour productivity growth because entering firms usually invest in new technologies or organizational change, while incumbents increase labour productivity primarily through capital-labour substitution."

While the TRE effect has slowed in recent years, the question is whether this reflects that the structural transformation is largely over or that the remaining agenda has stalled. The answer is probably somewhere in between, with the more market-driven structural reallocation of resources across sectors probably well advanced but with some more shielded sectors still facing deep restructuring ahead (e.g. agriculture, mining, energy, railways, post, health, education, and public administration). Thus, there is still some potential for achieving productivity gains from reallocation of resources towards more productive uses, but reaping these benefits will be conditional on both ambitious reforms and allowing market forces to work as well as a general recovery in investment. Meanwhile, it is encouraging that intrinsic productivity growth at the sector level has been increasing.

Determinants of TFP growth at the sector level

There appears to be a negative (albeit weak) relationship between VA growth and two selected broad areas of the business environment: business regulations; and institutions and property rights (Box 2). For example, the worst performing sector (c*onstruction)* also included the most firms complaining about the business environment. Although the perception of business regulations was only slightly better among firms from the *manufacturing, transport* and *real estate* sectors, these were the three best-performers as far as value added growth was concerned. The trade sector did well despite sizeable obstacles to doing business.

On the other hand, the link between TFP growth and business environment indicators has been, if anything, the opposite of what one might expect. One explanation for this might be that sectors and firms that faced more obstacles in doing business were under greater pressure to innovate and grow through productivity increases. Another explanation could be that firms in sectors subject to burdensome regulations are more likely to unwind assets, and that this translates statistically into a temporary spur in productivity (the capital stock being run down faster than value added). There is little doubt that improving the business environment would generate new investment and higher employment although it is perhaps less clear if it would also support more rapid productivity growth. It is thus promising that firms' perception of the business environment has improved in recent years although reforms are still needed in some important areas.

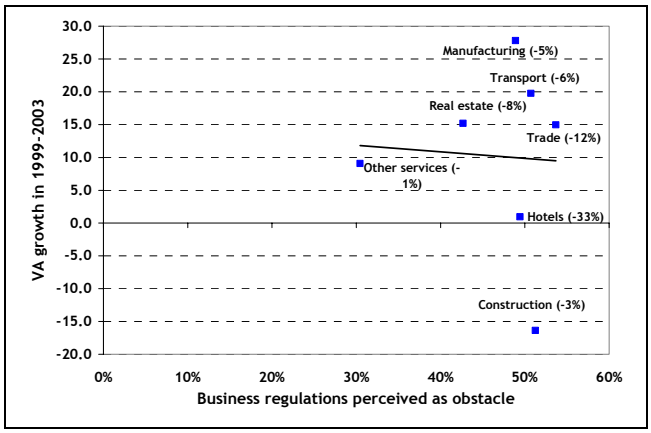
The degree of openness to trade and FDI inflows seems to have been important determinants of sector TFP growth. Reflecting the key determinants of TFP growth discussed above and data availability, we examine the impact of the following variables: exports; FDI, human capital, R&D, and the initial level of TFP (see Annex 3 for further details). FDI and exports were both positively correlated with TFP growth (Chart 15). Consistent with our EU8 cross-country results, the importance of these factors in explaining productivity growth is confirmed in a panel data regression analysis: both exports and FDI have a positive and significant impact on TFP growth. In line with several other studies, we also find that the initial level of productivity matters: the lower the initial level of TFP, the faster the subsequent TFP growth.

Box 2. Does BEEPS help us understand VA dynamics?

The EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) provide information on the business environment for 7 sectors in Poland. Firms that operate in sectors subject to government price regulation and prudential supervision, such as banking, electric power, rail transport, and water and waste water, were excluded from the sample. In the case of Poland, this meant that around ¼ of total value added in the economy was excluded from the sample.

We aggregated our 34 sectors into seven sectors broadly corresponding to the BEEPS sectors and compared VA growth in 2000-2003 with perceptions regarding key elements of the business environment according to BEEPS 2002. The results are shown in Chart 15 and Chart 16.

Chart 15. Business regulations, institutions and property rights, and VA growth 1999-2003 (%)



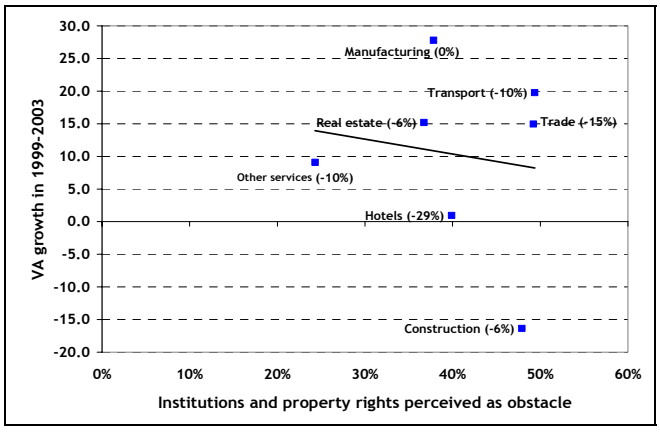
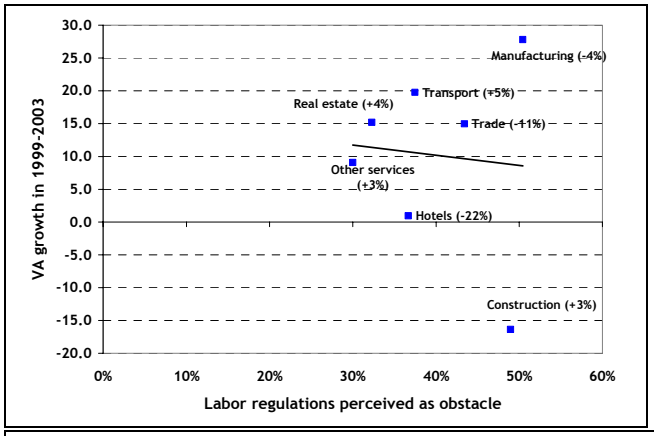
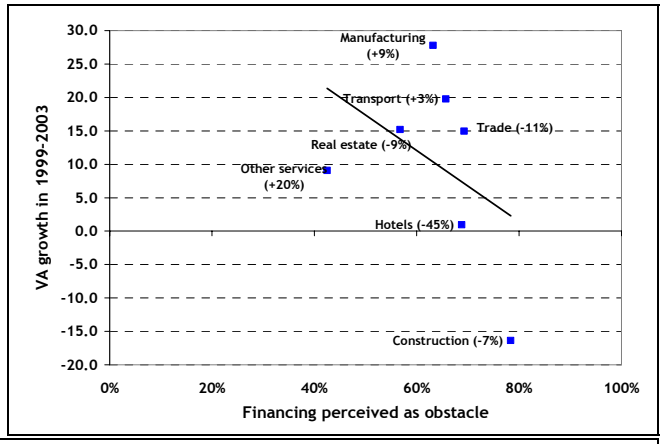


Chart 16. Labour regulations, financing and VA growth 1999-2003 (%)



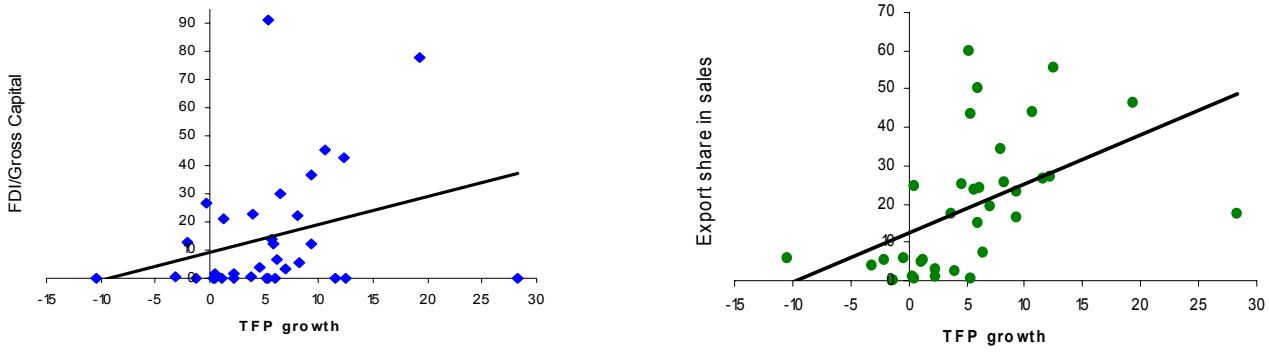


Note: The values in brackets indicate changes between BEEPS 2005 and BEEPS 2002 (negative values denote less obstacles in 2005 than in 2002).

Sources: BEEPS 2002 and BEEPS 2005, and Bank staff calculations

On the other hand, in contrast to what we observe at the cross-country level, innovation, as measured by spending on R&D relative to VA, does not appear to matter much in the case of Poland.[33] One interpretation is that R&D is important on average but that one cannot generalize how important such a relationship is across countries or across sectors. Still, the finding contrasts with several other studies of Poland (e.g., Kolasa, 2005; and Jakubiak, 2005). Thus, further research on this issue would be warranted. Finally, as in our findings for the EU8, we did not detect a significant impact of human capital, again most likely because our variable (the number of schooling years) is a poor proxy for the quality of education and human capital.

Chart 17. Poland: TFP growth, FDI and exports



CONCLUSIONS AND POLICY RECOMMENDATIONS

1. The EU8 countries have witnessed relatively rapid output growth over the past decade. Services have been the main driver of output growth in all countries, but industry has not been far behind. On the demand side, domestic demand growth played a relatively larger role in the Baltic States while net exports played a relatively larger role in the Visegrad countries.
2. Total factor productivity (TFP) growth was the main driver of growth in the Visegrad countries, while factor accumulation—especially investment—dominated in the Baltic States. This is consistent with the demand patterns noted above on the presumption that exports and exposure to foreign technology and competition are important drivers of TFP growth. Slovakia, Poland, and Lithuania all saw average TFP growth in excess of 3% during 1996-2004, while in Latvia and the Czech Republic at the other end, average TFP growth was only around 1½%.
3. In Poland, TFP growth led output growth in most sectors, especially the more modern, export-oriented manufacturing sectors. However, overall productivity declined in some regulated sectors as well as in some service sectors. The reallocation of human and especially capital resources across sectors played an important role in supporting overall TFP growth, not least in the second half of the 1990s, but more recently "intrinsic" (intra-sector) technical progress has taken over. Technical progress within sectors was particularly strong in areas such as transport and communication, food, drinks, and tobacco, trade and repair, fabricated metal products, motor vehicles, and mechanical engineering.
4. Also in Poland, the quality of the business environment seems to have been important for output growth but more through factor accumulation than through TFP growth. TFP growth was mainly driven by technology spillovers and competition through trade (exports) and FDI inflows. Business spending on R&D was important for the region as a whole, although we did not find evidence for this in the case of Polish sectors. This suggests that the stage of development and quality of spending is key. Similarly, we did not detect an important role for human capital, but this likely reflects difficulties in measuring its quality. Further, we found some support for the generally acknowledged role of "catching up" and progress with transition. Finally, reallocation of resources towards industry was a

[33] In our panel sample, the Baltic countries were characterized by stronger positive correlation between R&D and TFP than the Visegrad countries.

key factor in supporting higher TFP growth, while countries that shifted more toward services that are less exposed to foreign competition tended to have slower productivity growth.

5. Thus, policies that would support further competition and outward orientation, including deregulation and attraction of new FDI inflows, will play a key role in sustaining rapid productivity growth. The effectiveness of measures to enhance domestic R&D may vary much more according to country circumstances. Further reforms of various elements of the education system, including higher education and vocational education and training programs, will be critical for providing high quality human capital. Restructuring of remaining "strategic" or "socially important" sectors such as heavy industries, transportation, mining, and agriculture will facilitate the flow of resources towards more productive activities. The growing importance of services makes it important to implement policies that take account of the growing contribution of this sector to aggregate performance. Again, regulatory reform (i.e., product market regulations) and openness to trade and foreign direct investment in services are of great importance in this regard, as the services sector is traditionally less exposed to competitive pressure than the manufacturing sector. Such policies should go hand in hand with efforts to further improve the investment climate in several of the larger countries in the region and enhance incentives for labour market participation and employment in most countries.
6. Extrapolating recent trends in the Visegrad countries suggests that output growth in the coming years could amount to about 4% in the Czech Republic and Hungary and more than 5% in Slovakia and Poland assuming that further efforts to enhance employment bear fruit. Previous analysis done by the Bank suggests that growth could be even higher in Baltic States, although below the recent pace. Higher growth rates in all countries would require significant additional efforts along the lines discussed above as well as to improve further the investment climate and rate of capital formation.

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DANIELA GRESSANI[34]: UPGRADING HIGHER EDUCATION IN THE NEW MEMBER STATES

The countries of Central Europe and the Baltics have made impressive strides towards adopting social policies that are well adapted to their new status a dynamic market economies and members of the European Union. Reforms have taken place – with varying degrees of decisiveness and success – in health, education, social assistance and social protection as well as protection and integration of minorities.

Consistent with the growth and equity objectives of the "European Social Model", yet unlike its old-fashioned versions, the model adopted by the new member states of the EU has been based more on policies that address needs than on entitlements. This is not true across the board, but most new member states relied more on focused interventions to groups with specific needs, by targeting income level, or location over the territory, rather then targeting "straight" demographic characteristics or labour market status. These countries have also paid close attention to incentives, especially vis-à-vis the labour market, to avoid or at least reduce the risk of creating "poverty" or "unemployment" traps. As a result, a number of good practices – lessons not just for perspective EU members but also for the EU15 – have emerged, including for example health policy in Estonia, old-age pensions in Poland, and social transfers in Slovakia.

One area which is crucial for growth with equity but where uniformly less progress has been achieved is higher education. Work by the World Bank on fiscal policy reform has focused on financing of higher education as a key issue not only for growth with equity but also for fiscal sustainability in the new member states[35].

Success in improving quality, access and market relevance of higher education is critical for the new member states to converge to EU15 levels of competitiveness and standard of living. Higher education is also an area where we expect Central Europe and the Baltics to have the comparative advantage bequeathed by a long tradition of strong commitment to education, generally good enrolment rates, and large investment in research.

Since the beginning of the transition, the countries of Central Europe and the Baltics have experienced a remarkable increase in enrolment rates in higher education. Enrolment rates more than doubled and in some cases trebled: in Hungary from 12 to 60 per cent; in Latvia from 21 to 64 per cent; in Slovenia from 23 to 80 per cent. Currently the average enrolment rate in higher education has reached the level of the EU15 at about 58 percent[36].

This boom in enrolment happened for good reasons: earning premia are now higher in the new member states than in the EU15 both for men and women: based on 2002 data, earning premia of higher education graduates, as compared with upper secondary education graduates, average 43 per cent in the EU15 compared with premia ranging from 46 per cent in Lithuania to 110 in Hungary. In addition, unemployment rates are generally lower for higher education graduates than for upper secondary education graduates in the new member states[37].

As a result, the new member states now spend about as much public funds as the EU15, as a share of GDP, in higher education, averaging 1.1 per cent in 2004. But this is a much smaller expenditure in absolute terms, on average the new member states spend about 40 per cent less than the EU15. In addition, it is unlikely that the new member states can allocate larger public funds to higher education, given the tight fiscal space available in Maastricht-bound economies. Finally, I believe that it is inequitable to pour large sums of public money into a sector that benefits largely those citizens who are already better off, reap significant private benefits from higher education, and have also begun to migrate in large number to other, wealthier countries[38].

What are the challenges for higher education now, in the face of strong increases in enrolment rates and poor prospects for increased public funding? Demand for quality will continue to increase, both from students and

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[35] M. Canning, M. Godfrey and D. Holzer-Zelazewska, "Financing Higher Education", in T. Laursen ed., "Current Issues in Fiscal Reform in Central Europe and the Baltic States", World Bank, 2005.
[36] Data from UNESCO Institute for Statistics, presented in M. Canning et al., cit.
[37] Data from OECD, EUROSTAT and national sources, presented in M. Canning et al., cit.
[38] Data from EUROSTAT, presented in M. Canning et al., cit.

the business sector; pressure for relevance will also continue to increase, in a more and more globalised labour market; and pressure for access by those minorities that have been largely excluded from higher education – such as the Roma of Central Europe – will continue to increase.

In this context, increasing private resources going into higher education is not only desirable but also inevitable; what matters is that it happens in a way that is equitable and transparent, as well as efficient. The establishment of private institutions could be facilitated; and the establishment of dual-track system with public institutions offering free higher education to "regular" students and fee-based higher education to "other" students is inequitable and creates distorted incentives for institutions of higher education. In my view, the approach that promises to increase resources and ensure equitable access is a system of student loans which does not discriminate against lower-income students.

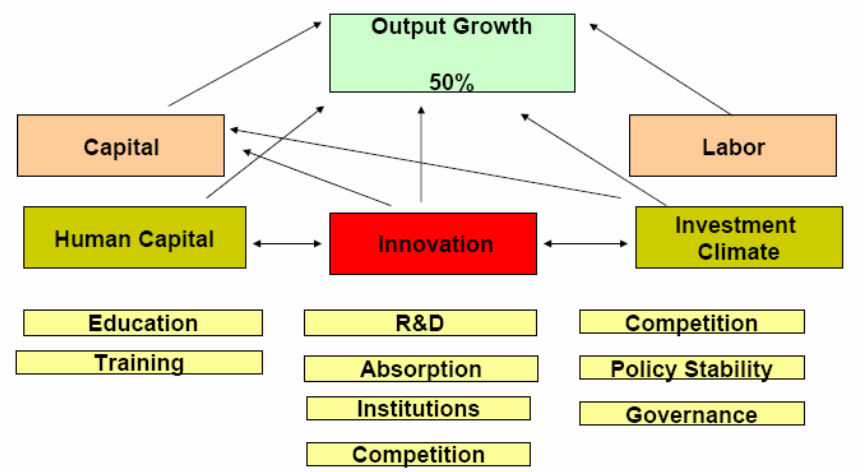
Increasing resources and improving access will not be sufficient. Increasing autonomy of higher education institutions – not only in funding – together wit result-based funding and accountability is also necessary to improve quality and relevance. There is now a body of specialized knowledge on funding mechanisms for higher education to support greater focus on quality, collaboration, and transparency that is available to the new member states. Increasing autonomy is also necessary to bring about closer linkages with industry, as we discussed yesterday and as is necessary to promote commercial application of research in higher education institutions.

III. KNOWLEDGE ECONOMY IN THE NMS

ITZHAK GOLDBERG[39] AND JOHN GABRIEL GODDARD: COMMERCIAL INNOVATION IN POST-TRANSITION ECONOMIES

Innovation is now understood to be a major driver of long-run growth trends, accounting for up to 50% of output growth. R&D spending, absorption and learning processes, institutions framing intellectual asset production and ownership, and competitive markets are some of the most important components in the formula for strong knowledge-driven growth. Of course, this source of growth does not flourish in isolation, but requires education and on-the-job training to enlarge the human capital of labour and access to finance for physical capital accumulation.

Chart 1. Innovation in the growth context



Cross-country comparisons of countries in Eastern Europe and the Former Soviet Union reveal a strong positive association between the wealth of countries (in terms of GDP per capita) and the development of their knowledge-oriented capabilities (summarized by the Knowledge Economy Index - KEI). This correlation does not imply a particular direction of causality, and indeed, the economic literature on endogenous growth suggests that causality works in both directions: economic capacity permits investments in education, R&D, and ICT infrastructures; simultaneously, these investments can generate sustained increases in economic growth.

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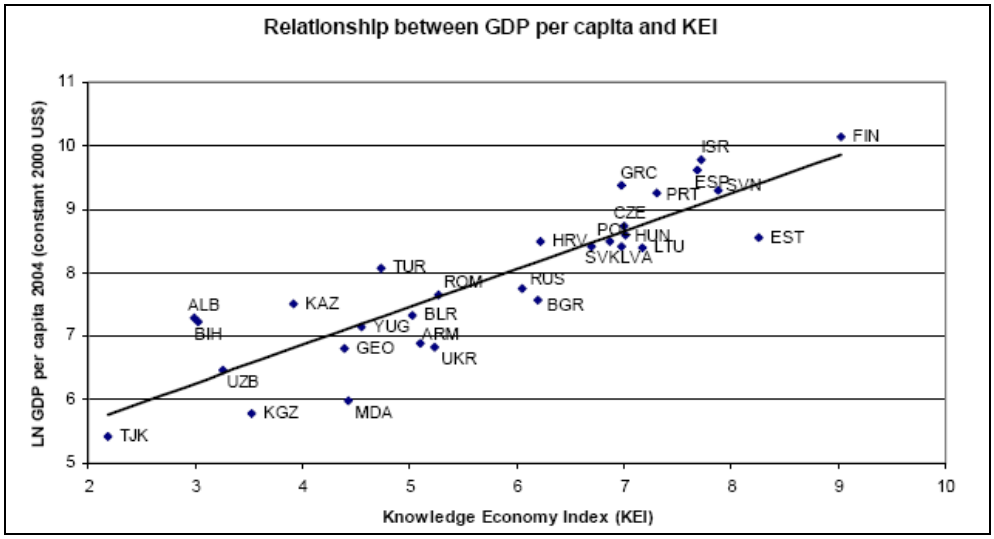
Chart 2. The development of knowledge economies



Source: World Bank (2006)

It is unusual for countries to have a uniform degree of development across all tangible and institutional capabilities tracked by the KEI. This fact is very relevant for understanding the relation between national innovation systems (NIS) and economic growth, because thresholds need to be satisfied for each pillar of the NIS if the system as a whole is to generate innovativeness and productivity increases. Frequently, countries will face specific bottlenecks that distort the incentives to invest in knowledge-intensive economic activities. An analysis carried out by the World Bank (2006), suggests for example that Russia is encumbered by a weak institutional framework (IPR, banking system), whereas in Turkey education is an unresolved problem (years of schooling).

A diagnosis of a country's innovation system based on the KEI leads quite naturally to a two-stage process for deploying public support for commercial innovation. This process would, as we have mentioned, begin by pinpointing and rectifying specific areas of weakness in the NIS. The weaknesses can pertain to the educational sector, the ICT infrastructure, the public research system, or the incentive structures affecting firms (e.g., rules regarding IPR). When the fundamental conditions for commercial innovation have been sufficiently advanced, then it makes sense to go one step further and put in place measures that help industry (including large incumbent firms, but especially targeting SMEs and entrepreneurial entrants) to become competitive via innovation.

In the process towards improving their NIS to levels that enable innovation policy to be effective, countries can think about intervening by bolstering the absorptive capacity to learn from the rest of the world and articulating solid bridges across organizations (especially public and private, who because of the differing goals, norms, etc., often find it hard to collaborate). Absorption and innovation are not as different as one could at first imagine: both entail investments and learning, and the knowledge gap that needs to be bridged by firms to upgrade by reusing technologies developed elsewhere can be subject to uncertainty as well. The major difference is probably not in the process of developing and implementing technologies, but in the greater importance of channels of spillovers for the purposes of absorption, whether these are international like FDI or domestic as in e.g. consulting services by university members.

If we consider commercial innovation in more detail, we will see that the outcomes of firm's effort to innovate are mediated by many determinants: some operate at the level of the firm and its capabilities; others have to do with the external knowledge flows via licensing; and there are environmental factors that impact the potential payoffs from innovating, such as the wage costs of R&D personnel and the prevailing market structure. To investigate the strength of these determinants in the Central and Eastern European countries and Russia, the World Bank used the BEEPS survey (Business Environment and Enterprise Performance Survey, EBRD and World Bank). The BEEPS utilizes a standard survey instrument applied to nearly all countries in Eastern Europe and Central Asia (ECA), thus ensuring comparability. The results show that innovation outcomes (i.e.,

filing a patent, developing a new product/process, etc.) depend positively on investing in R&D. This means that, for firms, at least, innovation is a purposive, directed process, not a fortuitous event.

Further results from this study indicate that firms with more sophisticated IT innovates more. This is consistent with the results of Van Ark and Piatkowski (2005) about the positive effects of ICT on innovation and on productivity. It is now widely recognized that, like electricity and steam power, ICT is what is known as a "general purpose technology" (GPT) and therefore has the potential to spur growth as it spreads across different sectors of the economy, prompting a transformation in terms of the organization of labour and production (Helpman and Trajtenberg 1996). Although certain ICT tools are ready-to-use (plug-and-play), the common pattern of diffusion of a GPT involves adaptation of the tools to the environment –examples of "secondary innovations" in ICT are the hardware/ software developed to suit specific industry needs– and adjustments in the environment as tools are put to work. The adjustments can require behavioural shifts, training and re-skilling, upgrading complementary assets, etc. all of which bear an investment cost for firms and society. But these transformations are critical for the full benefits of ICT to unfold.

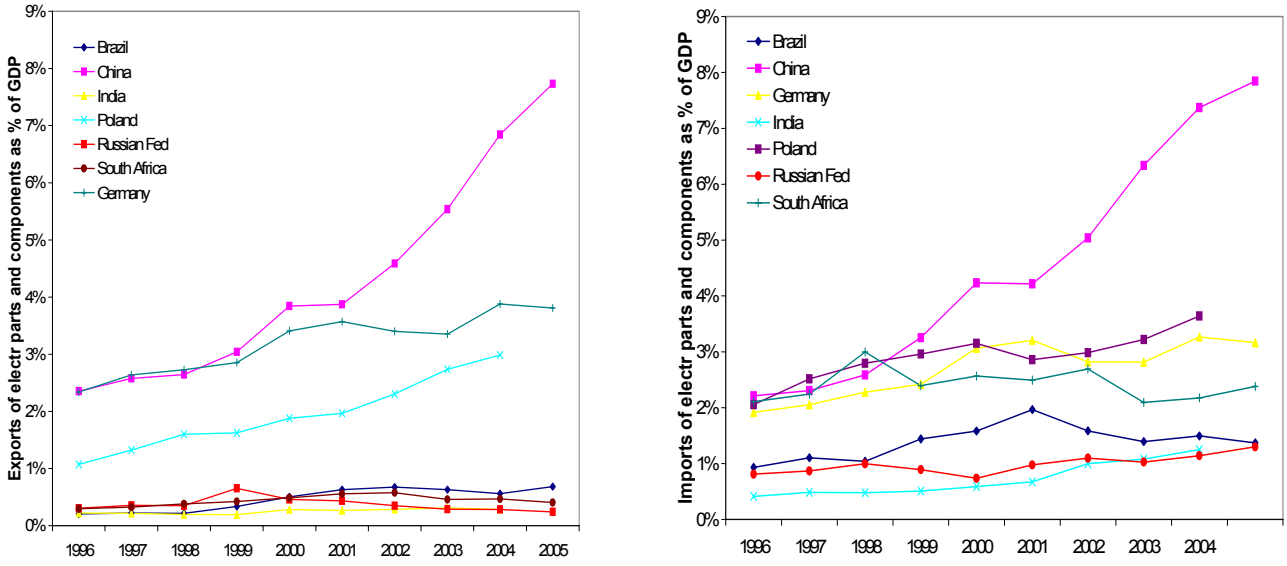
There is an interesting policy implication in relation to the previous results about innovation and IT. Science and technology policy tends to pay more attention and favour innovation compared to absorption, among other reasons because of the idea that it is necessary to be at the technological frontier to remain competitive in a globalised world. But what we learn from GPTs is that the original breakthroughs, essential though these are, do not account for much in terms of productivity and growth –what matters more is that users and producers take this breakthrough and apply it for their own purposes. It is the extension in the number of applications and the entirely new markets that are created around them that are the driver of growth. And these absorptive and learning activities need to be encouraged, because as we pointed out they require coordination in making complementary investments, and overcoming significant technical and market uncertainties.

For the above reasons, IT is more important than most product or process innovations, to the extent that it can be considered as a central contributor to the organizational capabilities of the firms. There are many other sources of organization capabilities that are connected to innovation and diffusion. One of these sources is achieving international standards for the quality of diverse processes, which is reflected in the positive effect of ISO certification for innovation outcomes. Purchases of patents (which give the right to use intangible knowledge in applications) and machinery and equipment (which can be thought of as having a high degree of embodied knowledge) are strongly associated with innovation. A 2005 survey of 1000 manufacturing firms in Russia also shows strong correlations between foreign experience of management and measures of innovative activity such as exports of advanced technology, purchase of patents, and ISO certification. Other measures of absorption such as management reorganization, hiring of external consultants, and inventory control are also correlated with innovation in Russian manufacturing.

Another critical dimension of diffusion and absorption is trade. The diffusion of new technologies through trade can be channelled in two ways: through an increase in quantity of trade volumes and through an increase in the quality of trade volumes (to include goods and services with higher technological intensity). It is not only the quantity of trade that matters; "who you trade with" makes a great difference as well. Trading with countries that have a larger knowledge base and that are able to export more advanced technology goods can lead to positive spillovers in the forms of "learning" from either buyers (in the case of exports) or sellers (for imports). There are convincing studies that corroborate that "countries that promote exports of more sophisticated goods grow faster" literature (see e.g. Rodrik, 2006).

Moreover, trading with countries that are already well-integrated in the global production network can facilitate the acquisition of new technology through vertical spillovers. As an indicator of how much countries could be benefiting from trade-related knowledge flows owing to the degree of integration in global production networks, Chart 3 presents the amount of trade in parts and components to and from BRICS countries, and as comparators, Poland and Germany. This evidence shows that China has observed exponential growth in the share of parts and components, moving sharply ahead of other BRICS countries. Countries such as Poland and Germany are increasingly integrated in terms of exports, others including Russia have lagged behind. For several countries, the flow of imports in parts and components is much larger than that of exports, suggesting that the exporting firms are not yet competitive enough.

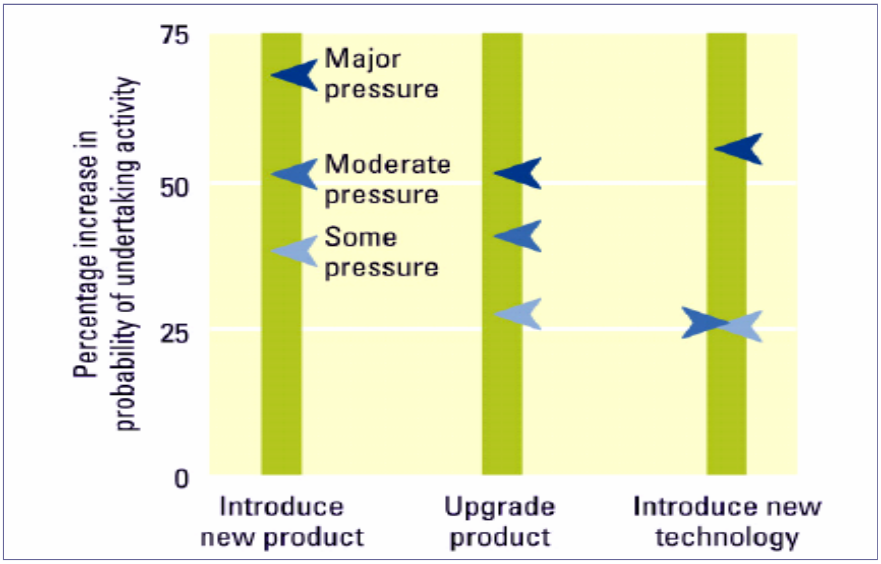
Chart 3. Trade in Parts and Components for Electrical Machinery and Equipment



Note: The share of exports/imports in parts & components is computed using GDP in current USD (WDI).
Source: UN Comtrade (WITS) and WDI

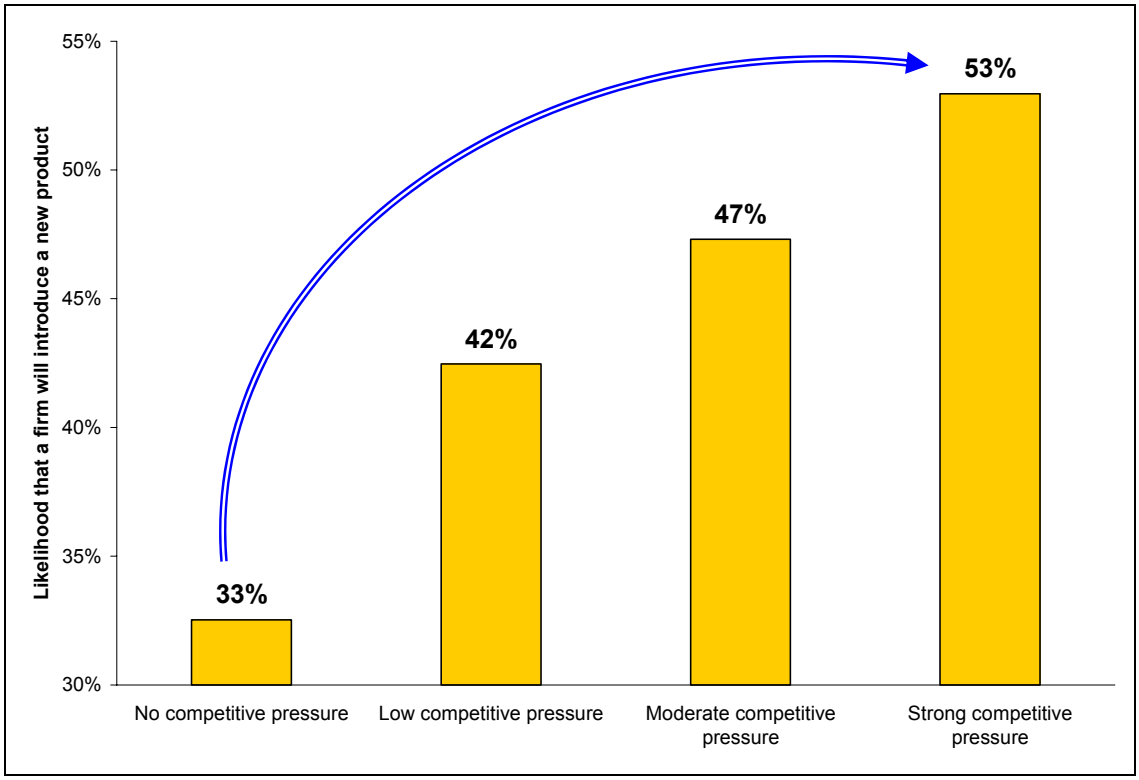
An environmental variable that was found to be very significant for innovative activities (e.g., R&D spending) and final outcomes is competitive pressure, whether this originates from rivalry among domestic producers, foreign producers operating domestically, or imports. The explanation for this can be found in Schumpeter's writings, which have been further developed and verified empirically by endogenous growth theorists in what is called the inverted relationship between competition and innovation. This theory suggests that having a low degree of competition blunts the incentives to innovate; the extreme case is a monopolist that is protected from entry, which has no incentives to innovate because the fixed investments would hurt its bottom-line. It is in oligopolies with low barriers to entry, and especially where the playing field is more or less balanced, that innovation will be greatest (this has been called neck-to-neck competition). The reason is that a firm that successfully innovates can temporarily escape acute price competition with rivals.

Chart 4. Competitive pressure is associated with more innovation



Source: World Development Report (WDR) 2005

Chart 5. In Russia, competitive pressures can raise the likelihood of innovation by 20%



Source: BEEPS

What does the relationship between competition and innovation, which is by no means unique to this study, mean for policy? One implication is for industrial policy that has as its goal to facilitate the emergence of national champions. Actively targeting support to one firm in an industry, with the idea that it will attain the

critical size and degree of productivity necessary to be competitive globally, could weaken the entire industry's incentives towards innovation. For the firm that is receiving public support, because to the extent that it can rely purely on domestic market power to generate profits, there is little reason to invest in costly innovation. Incentives to spend on R&D are blunted for its rivals as well (whether incumbent firms or potential entrants), because an uneven playing field means that any innovation will generate a return on a smaller customer base, since the domestic champion can use its larger capacity and excess profits as instruments to engage in aggressive pricing competition.

Now, the counterargument could be made that, if we believe that competition is an effective mechanism to promote innovation and thereby increase the competitiveness of the economy as a whole, then why does innovation policy not just rely on competition policy? The main reason is that market failures involving coordination of investments and information asymmetries for firms and for the markets from which they obtain essential inputs (among others, knowledge, human capital, finance) can weaken private incentives to innovate, as compared to the optimal levels from a social welfare perspective. Of course, one problem with this argument is that we have no good estimate of the optimal level of R&D/GDP at the micro- or macro-level. The EU goal of 3% is not anchored on an empirical analysis but is instead based on a comparison of present spending levels in the US, Japan, and other developed economies.

If we accept, for argument's sake, that the 3% R&D/GDP target is the right one, there are still many options about the measures that should be put in place to reach this. Should the governments in CEE and Russia rush to imitate the success stories of other countries, such as the subsidies to venture funds that were used in Finland and Israel, the SBIR-administered grants to innovative firms in the US, etc.? Should the previous measures supporting the private sector be accompanied by actions and reforms in the public research, and what is the appropriate balance between the two? There are no correct answers to these questions, of course, because conditions in each country differ – in the dimensions measured by the KEI mentioned before, and there are many other relevant dimensions.

One crucial aspect is whether the government has the capacity to implement such policies, which will depend on balance on the strength of government vs. market failures. In post-transition economies, government intervention is liable to fail, or even cause harm, if the institutional framework is prone to problems such as capture by special interest groups and corruption. There are policies that are particularly at risk, such as those where a government agency is directly "picking winners," as has occurred in industrial policy in the past. Targeting policies, to favour a specific firm, product class, technology, or sector, has generally not proved helpful; although there are exceptions, since targeting is one way to induce more efficient coordination in the private sector, an important contemporary example being the selection of technological standards to ensure domestic and international interoperability.

The foregoing discussion raises the issue of policy design in the area of innovation, for which, as in other areas of government intervention, there are several principles that should be kept in mind. A recent World Bank study on public financial support for commercial innovation proposes two central principles. One is having policies that guarantee a neutral and transparent project selection. This can be achieved by having independent investment committees, incorporating international experts and civil society stakeholders in decisions-making, including technical assessments, and ensuring that proposals and decisions are open and transparent. The second is that risk-sharing should be instrumented, possibly through public-private partnerships. The key points here is to have PPPs that match the needs of public research organizations and firms, whilst preserving the incentives of each partner to invest resources and effort, and respond to market signals about the commercial perspectives of innovations.

To conclude, commercial innovation and the accompanying creation of scientific and technical knowledge drive microeconomic productivity and macroeconomic growth. Absorption is an important developmental activity that can precede but also accompany the efforts of industry to push established technical frontier. Both activities are rife with market failures, some of which are inherent to the complex and uncertain nature of R&D-related outcomes, but others are a result of problems in markets for complementary resources, from the supply of skills and access (technical and managerial) to innovation finance (broadly thought to comprise early stage funding for high-tech firms and financing for research projects in larger companies).

Governments in ECA countries can help to resolve some of these problems, and thereby increase private incentives towards innovation, but in doing so special care needs to be taken about possible government

failures, particularly capture and corruption. Successful interventions implemented in other countries may have succeeded precisely because the institutional framework and economic constraints were different. One avenue to solve this is to carry out simultaneous reforms in education, ICT, or whatever the relevant bottleneck is. It is usually necessary to adopt the support measures as well, and in doing so it is useful to adhere to a few principles that have been shown to immunize public funding from common abuses and misuses. The most important are neutrality, transparency, and risk-sharing. Of course, like any other public investment decision, it is also crucial to carry out a cost-benefit analysis that takes into account the social gains (tangible and intangible alike).

Besides pointing to when and how the State can most effectively intervene in the national system of innovation, the results presented in this short paper have implications for activist technology and industrial policy. The two we highlighted have a common thread, which is that measures to foster improved productivity need to be aware of potentially perverse effects on private incentive structures. One example we discussed is that the impact of general purpose technologies like ICT requires investments and transformations to enable diffusion across sectors and firms, which may or may not be counted as innovations, but which can be much more important in terms of the benefits than the original innovations. Supporting innovation but forgetting about the long diffusion process that follows can be a mistake. The other example is that undermining the domestic forces of competition in an effort to maintain national competitiveness can obstruct the enterprising spirit that is at the heart of commercial innovation.

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MARC BOGDANOWICZ[40]: THREE FRAMING CONDITIONS FOR ESERVICES. HOW MUCH DO THEY APPLY TO EASTERN EUROPEAN MEMBER STATES?

INTRODUCTION

I wish to present in this short paper what I consider as three major framing conditions for a successful and useful deployment of public eServices in the Eastern European Member States (EEMS), in line with the leapfrogging ambitions that those countries legitimately ambition. Hence, I will not speak specifically of eGovernment, as the title of the panel might legitimately induce, but in a broader sense of eServices and the challenges to their emergence.

This aim will drive us to discuss successively - from the most to the much less obvious: from the still controversial assessment of the Information Society state-of-development in the EEMS, then to the conditions and mechanisms of innovation, and finally the prospects and nature of future ICT applications.

This paper has to be seen as rooted strongly in the general empirical and theoretical framework developed by Prof. Carlota Perez41. We are interpreting here reality, the observed facts, while considering that we might be assisting – at least in the so-called advanced economies – to the early years of the deployment phase of a new techno-economic paradigm where Information and Communication Technologies (ICT) play the central role of pervasive technology, a "constitutive technology" as expressed recently by the ISTAG42.

In the case of the EEMS, some caution will be taken and will be reflected in the paper, as precisely those countries might be among non-core economies, described by Professor Carlota Perez, that historically have a chance to join the core ones only if taking advantage of the changing production paradigm. This is when leapfrogging occurs.

Last but not least, the thoughts that I am sharing here owe a lot to a broad range of studies effectuated at, or commissioned by, the Institute for Prospective Technological Studies (IPTS) to which I also belong. In particular, I would like here to refer to the studies on the EEMS coordinated for IPTS by Professor Pal Gaspar, from the International Centre for Economic Growth of Budapest, the debates animated by IPTS in the Scientific Steering Committee for the IS take-up in EEMS as well as the in-house research line launched at IPTS on eRuptive trends.

The paper is organised around what we consider three framework conditions for the emergence of successful eServices:

1. The Information Society take-up in EEMS
2. The role of Innovation in the deployment phase
3. The prospective dilemma of AmI versus Web2.0 applications

THE INFORMATION SOCIETY TAKE-UP IN EASTERN EUROPEAN MEMBER STATES (EEMS)

Baseline, we consider that the Information Society took up in the EEMS. This is a strong statement for those who, as ourselves, have shared a lot of doubts about such scenario to ever occur.

[40] Institute for Prospective Technological Studies DG JRC, European Commission

[41] Reference: Perez C., 2002. Technological revolutions and Financial capital. The dynamics of Bubbles and Golden Ages. EE Publishing, UK

[42] ISTAG: Information Society Technology Advisory Group: High level industrial advisory group to the DG Information Society of the European Commission. Reference document: Shaping Europe's Future Through ICT (March 2006). See at: http://cordis.europa.eu/ist/istag.htm

Still, the Information Society statistics, a controversial but rather accepted series of indicators set at international comparability standards through the long lasting work of national and international statistical institutes, are here to confirm the statement. This goes for national growth rates, discrete penetration and use rates of several specific equipments, levels of expenditure, etc. This goes equally when comparing across the European Union, or with neighbouring non-EU countries. It is rather good news for the EEMS and Europe as a whole.

This impressive move forward happened mainly during the period 2002 – today, and took hence quite less time than in Western Europe. Today, one might consider that the EEMS are countries which are well equipped and intense users of ICT.

Of course, such positive diagnosis calls for some nuance. First of all, EEMS still "lag" or show latecomer profiles. Even if they perform better than western European countries on some indicators (mobile telephony penetration rates for example), it is obvious and expectable that on average they still show weaker figures. The performance is rather in the speed of growth, and its comparative rate: what can be observed is certainly both a strong move into the realm of Information Society take-up, as well as a catching up pattern.

Furthermore, the Information society take-up shows a specific profile in EEMS as compared to western European countries. Being a recent trend, it might still stabilise in some different point, but today we can identify some of its characteristics:

a) The IS take-up is characterised by diversity, first matching what is usually assessed as strong digital divides. In particular, it shows very important regional divides, with the expectable high rates and concentration in capital cities and urbanised areas. But that diversity is also striking among countries as those differences are today often deeper than those between eastern and western Europe. While those countries started only a few years ago to upgrade their ICT, they show already striking differences in patterns. The common sense view about a homogeneous "ex-communist block" does not resist the analysis in such a domain.

b) The substitution of fixed access telephony (traditionally the copper access) by mobile access telephony can be considered as a fact in the EEMS. Most observers agree on the various factors that have favoured such transition: very low initial fixed penetration rates (as compared to western standards), weak and slow service in fixed telephony exacerbated by on-going weak competition, weak investment capacity of the operators, in addition to difficult geographical conditions in some countries, large size depopulated areas, low expected returns due to the average revenues, etc. On such basis, mobile access to telephony has taken a very rapid start, shown very high growth rates during several years, and finally has overtaken western penetration rates quite early in several EEMS. This pattern is, first of all, an achievement in many terms: market, regulation, technology, communication patterns, consumption profiles, etc. Still, it encompasses one major uncertainty: that of the future broadband access to Internet. In that sense, it is one facet characteristic of the present Information Society in EEMS.

c) Broadband access to Internet is a central, but hopefully provisional issue of the EEMS. Central as it is a shared opinion among experts that only always-on broadband access will allow delivering the benefits of the Information Society. The substitution mobile/fixed, its roots, but also the later kick-off of broadband explains this lag and also point at its reduction. At the same time, there is a concurrent trend showing that in EEMS, internet, more often than in Western Europe, is accessed via wireless and broadband. This is an interesting pattern of technological leapfrogging that should be further monitored.

d) Last but not least, it should be noted that business internet access rates in EEMS are already at the level of those of Western Europe, at least in overall statistical figures. We interpret as part of that same general trend, the specific strategies developed by individuals in EEMS to access and use the internet in public access points or at work. In both cases, businesses and individuals demonstrate the strength of the social trend towards using the information and communication technologies. They incarnate demand, in economic and societal terms. They are, in our opinion, also the proactive stakeholders of the rapid Information Society take-up in EEMS.

All the trends above are encapsulated and evolve inside another observable fact: investment in ICT in the EEMS is high, above expectable levels when considering other macroeconomic figures (GDP, growth, etc.), but is misbalanced towards Telecommunications rather than Information Technologies. This possibly shows that EEMS are countries that still need to develop their telecom infrastructures and suffer simultaneously from high telecom pricing largely due to weak competition and insufficient regulation enforcement.

THE ROLE OF INNOVATION IN THE DEPLOYMENT PHASE

The above section intends to demonstrate that since 2000, with an obvious time-lag mainly due to historical reasons (rather than technological, cultural, political, financial, or other reasons), the EEMS have recently favoured investment in the current pervasive technology, ICT, and in other terms, set the foundations for entering the 21st century as technologically and economically advanced societies.

Such statement might prove to be only partially true. We would make the complementary assumption: to fulfil the conditions for reaping the benefits of ICT, the EEMS need to close a gap in innovation capacities. If not they are doomed to stay in a catching-up mode for an undetermined period. Alternatively the EEMS could take the opportunity of their much needed structural reforms to regenerate their innovation capacities and leap-frog advanced economies on several aspects (technology, social systems, etc.)

Let us take the first point: a gap in innovation capacities. If taking into consideration Prof. C. Perez analysis of the latest six major technological waves and their impact on the world economy, the rapid uptake of the Information Society in EEMS shows resemblance with the first period of such waves, the so-called installation period.

Such period encompasses very high investments in the emerging technology, but it also serves as a preparatory phase for serious social reengineering, allowing trials and errors, successes and failures with new ways of doing things, of getting benefit out of them. It sees new players in the market replacing the older ones, or incumbents radically transforming their core businesses. It forces regulations to adapt to new rules, new standards, and new limits. The financial investment is not only in technology. There is frenzy for investing also in people, in business projects and (start-up) companies. At the risk of failure, up to the point of a financial bubble burst. The lessons from the installation period are expected to mature after the burst of the bubble: during the deployment phase.

The EEMS have not beneficiated from a full installation period. The immense investments they have gone through have served the ambitious but different goals of transition and EU Membership. They have undergone privatisation, re-industrialisation (but with an average low share of high tech), and the rapid emergence of services (with lots of retail). The productivity gains have been relying on the closing of unproductive sub sectors, labour shedding, etc. The institutional and regulatory transformation has aimed at meeting the requests of the *Acquis Communautaire*. All together, the transition and the enlargement process – that by the way encompassed little trial and errors at company, regulatory or technological level, pursued other important goals, but did not prepare the EEMS for the deployment phase.

Useful economic, social or regulatory trial and errors of the installation period have been skipped, and the lessons thereof. Today, the gap can be interpreted as an in adaptation in innovation capacities that would have not sufficiently experimented and adapted through earlier trials. Hence for the upcoming deployment phase, the business environment in EEMS is assessed as showing very specific weaknesses that are at risk of impeding any rapid progress in terms of Knowledge economy[43]: Very limited innovation capacity and mindset marked by insufficient collaboration between stakeholders such as Government, industry and research, low investment rates, absence of effective innovation "systems"; An economic structure with traditional sectors that still weight a lot in the economy and higher value sectors too slowly developing; Outsourcing/off shoring trends insufficiently understood as to benefit the EEMS (Technological transfer in particular) with little spillovers and knowledge transfer from major multinational investments; Dominance of traditional management style; insufficient entrepreneurship and knowledge management problems; Still weak financial

[43] This brief diagnosis is largely inspired by the work developed in the IPTS Scientific Steering Committee of High-Level Experts on "Information Society Strategies and Developments in the New Member States and Candidate Countries" held on 8 April 2006 in Budapest, Hungary. For more: http://fiste.jrc.es/pages/steeringcommittee.htm

systems with difficult access to the capital market. Much could be added to such list. But it is enough to illustrate the issue at stake.

Briefly speaking, the EEMS did not renew their innovation institutions, neither their techno-economic paradigm. They have "modernised" but with past frameworks.

What then is the alternative, if any?

At this stage, we could say that today the history of the Information Society take-up in the New Member States boils down to two scenarios: catching-up or leap-frogging. Around 2000, most experts were agreeing on a rather much more pessimistic "lagging-behind" scenario for the Information Society in the EEMS: the constellation of the usual 8 to 9 necessary factors for IS take-up was such that at best it was estimated that EEMS would develop some FDI-based industrial islands of hi tech in an information desolated landscape. At the time, the alternative catching-up scenario was calling for a major public policy, probably at European level[44].

Probably some of this happened with the successive eEurope plans and their sister plans in the Eastern European Member States. Also, the Enlargement process acted as an attractor for FDI and a booster for overall growth prospects, propelling demand in those countries. The period 2003-2005 showed to be an accelerated catching-up period in terms of Information Society indicators, as explained above.

Time might be ripe today for leap-frogging – using ICT in such ways that they flourish and reap off the benefits of the techno-economic changes technology can support by stimulating organisational changes and rejuvenating innovation.

In particular, we believe that the articulation between the structural reforms of the Education, Pension, Health, Public services etc, and the development of eServices might serve as crucial domains for leapfrogging and a key factor for future Growth. The Innovation debate finds its place at the cross road of these opportunities – eServices and structural reforms – but EEMS show to be in bad need of finances and adapted institutional settings, in particular at regional level. Taking the leap-frogging step might rely today on the right use of the structural funds – regional by definition. Such public investment capacity, complementing private investment, can support clustering or agglomeration effects on the basis of which technological transfer offers opportunities for much of the ICT-based innovation and growth.

This is where the debate stands. And it does not stand homogeneous across the Eastern European Member States: those countries have developed a high diversity in Information Society developments, have a variable access to European Funds and – very legitimately -diverse views about their investment priorities.

THE PROSPECTIVE DILEMMA OF AMI VERSUS WEB2.0 APPLICATIONS[45]

Last but not least, while the Information Society take-up shows the progressive diffusion of ICT across EEMS, and while innovation systems at national and regional levels in those countries might be seen as "under construction", some attention also has to be paid to the potential nature of that innovation: what is the world that will come out of those ICT?

Today, two visions, opposite or complementary, occupy most of the available space when foreseeing what is there to come in terms of Information Society. Those two visions are those of Ambient Intelligence or AmI, and Web 2.0.

In very simple terms, one might consider that those two visions oppose respectively an internet of things and an internet of human beings; a global network of intercommunicating intelligent sensors and a global network of intercommunicating intelligent individuals and communities, both mediated by processing machines; the trend to ever increasing embeddeness of inter-communicating electronic components and the socially driven trends based on internet applications.

44 For more see the "Enlargement Futures Panel Report" on Information and Communication Technologies, by M. Bogdanowicz, J.C. Burgelman, E. Gourova, C. Herrmann, 2002. IPTS, Sevilla, Spain. EUR No: EUR 20247 EN

45 This section owes a lot to the work of my colleagues at IPTS, and some of their published material, in particular that of Geomina Turlea, Jean-Claude Burgelman, David Osimo and Corina Pascu.

In the AmI vision, the major technological drivers of digital convergence are embeddeness, itself driven by cost-effective computing, miniaturization, ubiquitous communication, advanced materials and sensing devices, communication networks convergence, and the increasing standardisation and interconnectivity of various devices.

The European view of AmI adds Intelligent User-friendly Interfaces to the above-mentioned technological drivers. The objective of the AmI concept is to enable people and devices to interact with each other and with the environment. The further main lines of development are towards solving the software and hardware incompatibilities, reducing costs of embedded systems and increase their interconnection.

On the other hand, over the last few years, Internet has seen the emergence of a plethora of new applications facilitating social interaction, in particular self-publishing, direct participation and collaboration, such as blogs and wikis[46], social networking websites, search engines, auction websites, games, VoIP and peer-to-peer services. These have facilitated creation and distribution of content with unprecedented speed and variety. Together, they are referred to as "Web 2.0", indicating the new paradigm which considers the web as an operative system, a platform for "social computing", offering the connectivity of the Internet to support the networking of people and in particular, tacit content.

The success of these applications and the leading firms operating in the corresponding service markets is based on using the shared knowledge of the public. Social computing is a reinforcement, on an unprecedented scale, of the very strong network effects already exploited through the Internet.

This debate AmI / Web 2.0, even if not necessarily a dichotomy as presented here for simplification, affects very strongly the premises we have talked about before.

On one hand, each of those visions belongs to a different view about innovation processes. Although an oversimplification, it is useful to broadly associate the production of ambient intelligence with the innovative type of "creative accumulation", given the prevalence of large established firms and the presence of corresponding barriers to entry for new innovators. Quite on the contrary, in the service markets based on social computing, suppliers are natural candidates for the "creative destruction" type of innovation, with the technological ease of entry and a major role played by entrepreneurs and new firms in innovative activities. Hence the potential future of technological innovation – when invention will match demand – might be seen as affecting today's innovation logic.

Similarly, the anticipation of the nature of the eServices - those of eGovernment, eHealth or eLearning - under one or another vision, that of AmI or that of Web 2.0, points at very different future services, relying on very different premises: in each vision, content and intelligence are located in very different instances, and are often different in nature (codified versus tacit, logic versus intuitive, etc.). Such different views about the future of services affects in turn very strongly the essential debates about control, privacy, transparency, efficiency, cost effectiveness, etc. and hence the nature of any such service.

We think those are three very important framing conditions for eServices in the Eastern European Member States. The Information Society take-up with its national and regional specificity, the reconstruction of both innovation and social systems which have so much suffered during and after transition, and the necessary awareness of the nature of the opportunities offered by the ICT as the pervasive technology of the XXIth century. This last condition is the one least fulfilled in EEMS, while it might be the best possible path to real leapfrogging for those societies.

[46] Wikis are websites that rely on collaborative software to enable collective content production by different users. The primary example is **www.wikipedia.org,** a free online encyclopaedia with 100.000 unpaid authors.

PÁL GÁSPÁR[47]: EGOVERNMENT IN THE EU-8: RECENT DEVELOPMENTS AND THE POLICY CHALLENGES

INTRODUCTION: SOME BENEFITS OF EGOVERNMENT

The presence of online public services and the expansion of eGovernment may lead to various closely related benefits for public administration, users and the economy and society in general. While most of the benefits are equally applicable to advanced and developing economies, there are some which are especially relevant for the EU-10 due to the socialist past and transition experiences of most of them.

1. Enhanced policy effectiveness

By facilitating the exchange of information between different institutions of the public administration, and also between administrations and the private sector (both citizens and the corporate sector) eGovernment can contribute to enhancing the effectiveness of public policies in major policy areas such as health, education, national security and public safety. The eGovernment solutions allow more diversified channels for determining users' need, receiving inputs from users and communicating policy preferences and decisions which can lead to policy decisions matching better the intentions of governments.

2. Improved quality of information and reduced process time

Thanks to the use of ICT, the quality of the information supplied and held in the public administrations' information systems is improving. The digitisation of public services can also significantly reduce the time it takes to process and deliver a service, therefore saving time for both public administrations and their customers. This will spill-over to efficiency of delivery of public services and will also improve the cost effectiveness of service provision.

3. Reduction of administrative burdens

The use of ICT in the provision of public services makes it possible to significantly reduce the administrative burdens for citizens and businesses using and organisations delivering them. It may accelerate the period of registration, reduce the time needed access to services, reduce the number of administrative rules and burdens citizens and corporations need to face.

4. Increased economic competitiveness

The expansion of eGovernment can provide a major contribution to increasing economic competitiveness at local, regional and national levels. By streamlining bureaucratic procedures and increasing public sector efficiency, it plays a significant role in raising productivity levels in the economy as a whole. By reducing corruption and providing better access to information and better quality, user-centred public services, eGovernment can reduce the loss of scarce resources and increase the competitiveness of enterprises.

5. Cost reduction

The development of eGovernment enables public sector bodies to increase their service processing and delivery capabilities, while requiring less time and fewer personnel. This is especially relevant in the EU-10, where the number of public servants providing these services above their levels in the EU-15 and the efficiency of service provision is also below the average European levels.

[47] Director, ICEG European Center, Hungary

6. Improved service level

A major benefit of eGovernment is the improved service level in terms of increased flexibility[48] and transparency[49], but also of increased time available and capabilities for custom-made services, through faster processing of tasks, and customisation of electronic service delivery.

7. Increased efficiency

The changes made possible by eGovernment, such as the improved information supply and service levels, contribute to increase the efficiency of public service delivery.

8. Openness and transparency

The provision of online public services may be an important step towards more transparent, accountable and open public institutions, as tax payers may make their governments more accountable for the use of public funds. Moreover, the greater openness and transparency of public administration and institutions may help in the fight against corruption and fraud, which has been a significant obstacle for competition and development in many EU-10. Besides these benefits eGovernment may increase democratic participation as through online forums, consultations and electronic voting, direct communication can be established between citizens and the policy-makers. Citizens can express their views on policy debates, directly question the decisions made, and thus may influence and also control stronger the formulation of opinions and policy decisions.

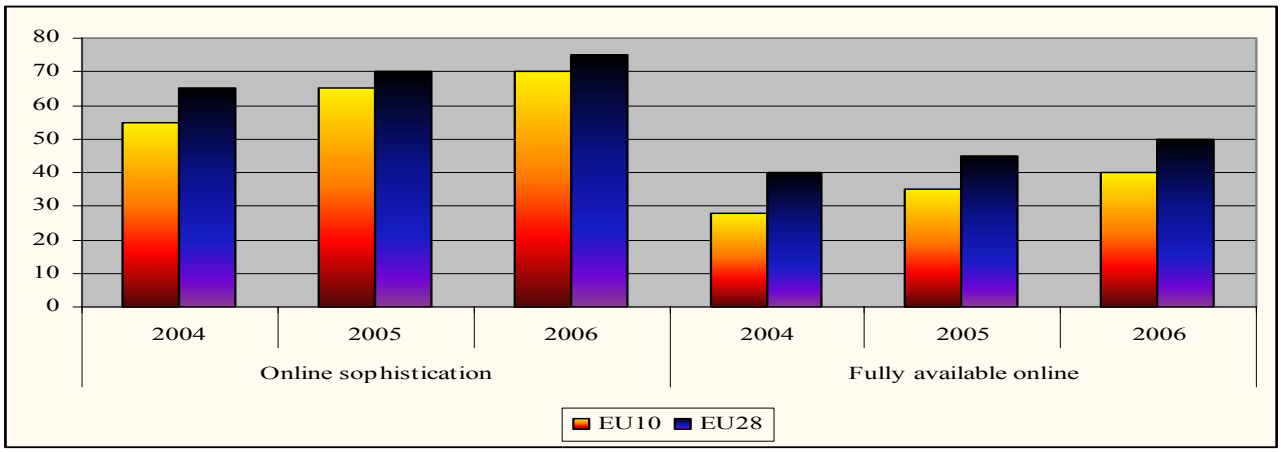
THE RECENT DEVELOPMENTS IN EGOVERNMENT IN THE EU-10

In recent two years the EU-10 countries in general experienced significant rise in the level of eGovernment services, which is reflected in their position in various international comparative numerical indices. According to the e-Government Readiness index prepared by the United Nations (United Nations (2005)) for example Latvia climbed from her 39th worldwide position in 2004 to 32nd in 2005, while Hungary from 33rd to 27th, and some progress was also reached by Malta, Slovakia and the Czech Republic. Estonia, Slovenia and Malta are ranked the highest among the EU-10 countries, and most of the EU-10 performs better or on par with many more advanced EU-15 countries including Spain, Portugal, or Greece.

Similar pattern emerges when assessing the online sophistication and availability of public services in European context. The recent survey by Cap Gemini (Cap Gemini (2006)) shows that there has been a fast expansion of online eServices: while in 2004 online sophistication of public services was 55% in the EU-10, it is expected to increase to 70% by the end of 2006, while the level in the EU-28 increases in the given time period from 65% to 75 %. [50]

[48] This means among others 24 hours in 7 days availability, multi-channel delivery
[49] This implies availability of more detailed and complete information about the service
[50] Some countries progress even faster with online sophistication as for example Hungary lagged considerably behind both the EU-10 and EU-28 in both indicators, in 2005 it reached the level of EU-10, while the consensus forecast is that by the end of 2006 the level will exceed both the EU-10 and the EU 28 averages (a change from 50% in 2004 to 82% in 2006)

Chart 1. Availability of eGovernment services

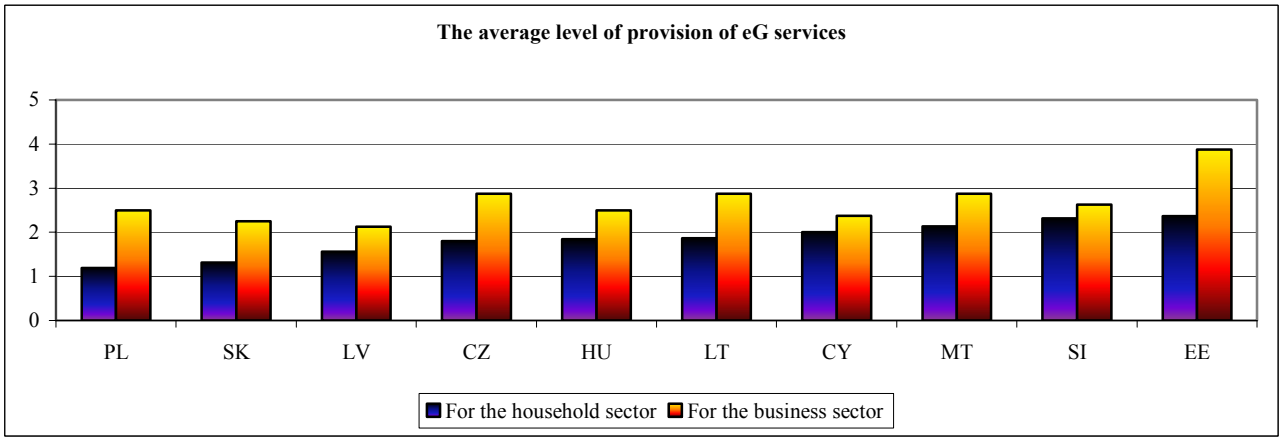


Source: Eurostat (2006), IDABC(2006)

Besides increasing the number of public services available online, these countries have simultaneously raised the level of online interaction with public authorities providing these services[51]. The average of public services available fully online (meaning either level three or level four of interaction) is expected to increase from 28% in 2004 to 4% by the end of 2006, with 40% and 50% for the same figures respectively in the EU-28. Altogether there is a fast catch-up in the EU-10 in terms of online sophistication as well as highest level of online availability

At the same time the average level of interaction in eGovernment has increased in recent years significantly: the average for the EU-10 for the households sector in 2005 was 1.8 and for the business sector 2.6 on the four level scale. In case of the business sector this level is in par with the EU-15, while in case of households the gap is still considerable.

Chart 2. The average level of provision of eGovernment services

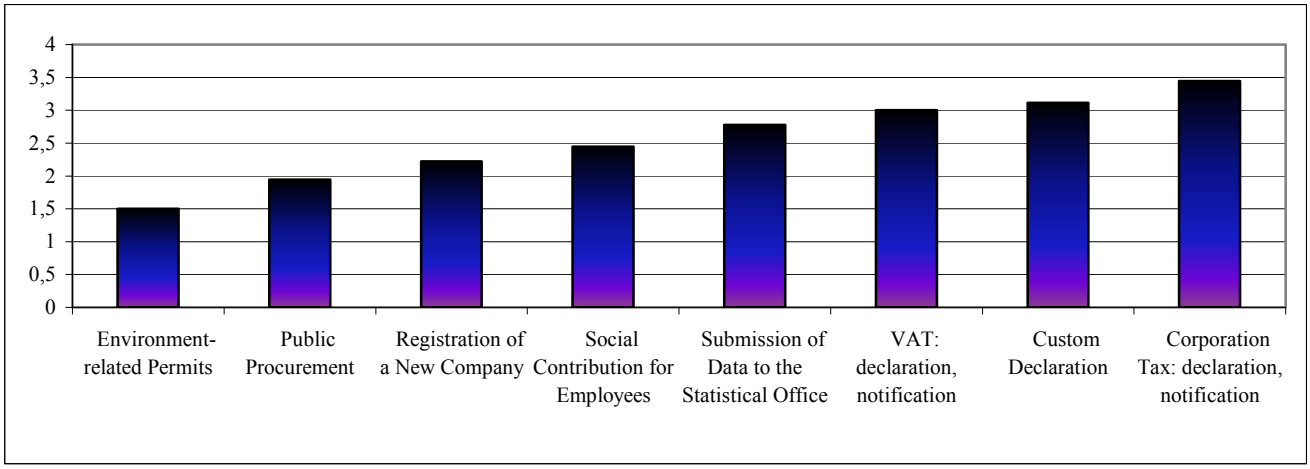


Source: Eurostat (2006), IDABC(2006)

[51] The are four stages for measuring the level of sophistication in the provision of eGovernment services: Stage 1 - Information: online information about public services, Stage 2 - Interaction: downloading of forms, Stage 3: Two-way interaction: processing of forms, including authentication, Stage 4: Transaction: full case handling, decision and delivery (payment)

In the business sector there is a clear distinction in the level of online sophistication of eGovernment services available for the companies. The highest level of sophistication has been reached for revenue generating services, where most are available at higher than third level, which means a two-way interaction between the public administrations and the companies, allowing them to download and submit online the requested documents. The high level of interaction for revenue generating services is in contrast with relatively low level of public procurement, where only the forms are available online, while the submission procedure is still off-line and shows that the countries in general have been unable to utilise the advantages of eProcurement.

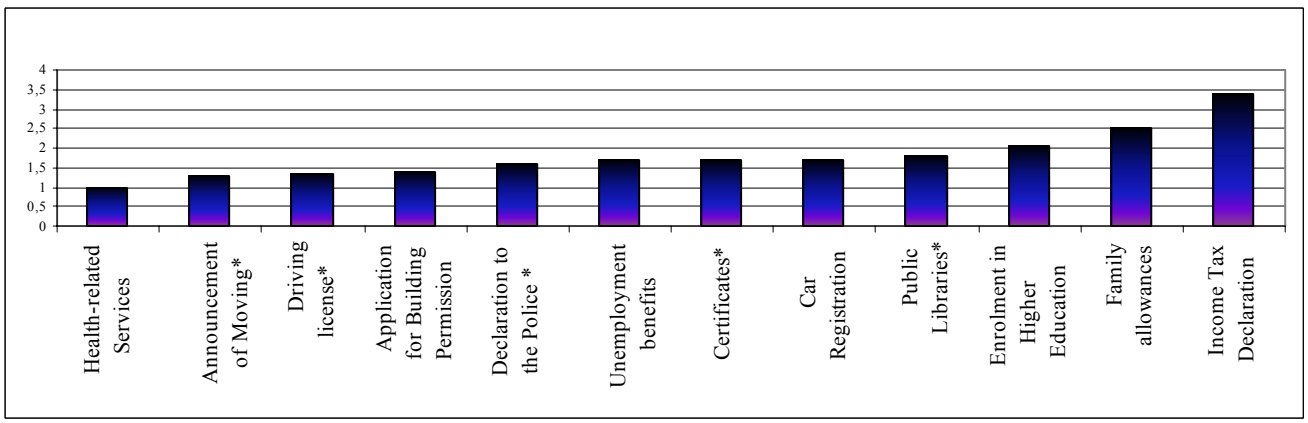
Chart 3. The average level of selected eGovernment services for the business sector.



Source: Cap Gemini (2006)

The level of provision of selected eGovernment services in the EU-10 shows a pattern similar to the business sector as the income generating services are the most advanced, meaning almost level four interaction in most of the EU-10. In recent years governments have put significant emphasis at developing these services in order to raise additional revenues from the private sector. Generally other registration related public services have reached lower level of interaction averaging around two, meaning the presence of interaction between service suppliers and users allowing the letter to download the forms and then submit them off-line. Finally, the chart reflects that the level of eHealth is very low in the EU-10, being the least developed public service available online.

Chart 4. The level of provision of selected eGovernment services for households

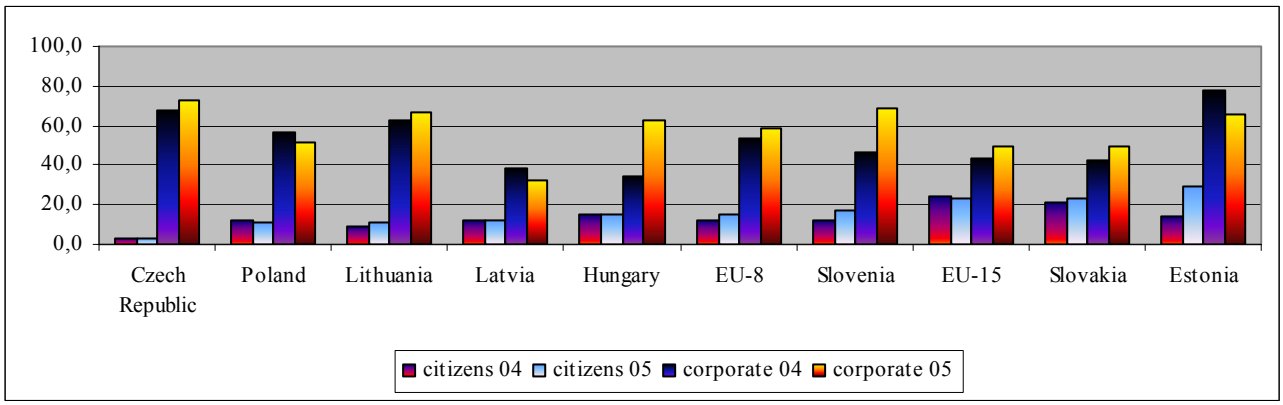


Source: Cap Gemini (2006)

Closely related to the expansion in the number of online services has been the fast rise and comparably high level of usage of online public services both by the household and corporate sectors. While usage depends on various factors (including penetration, affordability and cost of access), the role of content and available eServices should be considered. In case of corporate sector, the percentage of companies interacting with public authorities online was on average by 10 percentage points higher in the EU-10 than in the EU-15 (with 59% and 50% respectively for 2005).

In case of households, the level is still higher in the EU-15 than in the EU-10, but it has been gradually decreasing thanks to fast rise in the EU-10, where it reached 15.5 percentage points of all households in 2005. There are certainly big differences among the EU-10 in both indicators: in 2005 the percentage of households interacting with public authorities online varied between 3.3% (the Czech Republic) and 29% (Estonia), while in the case of the corporate sector the level varied in 200 between 32 %(Latvia) and 69% (Slovenia)

Chart 5. The percentage of citizens and enterprises interacting with public authorities online



Source: Cap Gemini (2006)

THE MAJOR ACHIEVEMENTS AND SHORTCOMINGS OF EGOVERNMENT DEVELOPMENTS IN THE EU-10

Based on the data presented in the previous sections, it is possible to determine some general achievements and shortcomings of eGovernment developments in the EU-10.

One major achievement of eGovernment developments in recent years has been the fast **increase in the number of public services available online** as well as the upgrading of the level of this availability. Similarly to the advanced European countries, the EU-10 focused their policy priorities and scarce resources at the development of the 20 major public services (12 for households[52] and 8 for businesses[53]) listed at IDABC. There were some countries, which have been able in recent years to raise their indicators very fast (Latvia, Slovenia, Hungary), which allowed them to improve their relative position in Europe and also worldwide. For example, according to the recently published eReadiness report and indicator of the United Nations, Hungary moved from 2004 to 2005 from the 33rd to 27th, Latvia from the 39th to 32nd position worldwide, while among the EU-10 countries 5 have been within the first 30 countries worldwide (Estonia, Slovenia, Malta, Hungary and the Czech Republic).

The increase in number of public services available online has been accompanied in the majority of countries by **significant improvements in front offices**, leading to more user friendly, transparent, in many cases internally integrated services. Public authorities put in the last two years bigger emphasis at developing front offices with the purpose of catching up to the measured indicators of the European Union and improving the scope and quality of public services available online.

An important achievement has been the presence of relatively **concentrated efforts at eGovernment developments** compared with other areas of information society. While still in most of EU-10 there is no ultimate owner of information society policies and within that of eGovernment, especially the last two-three years have shown that more policy attention and funding was available for eGovernment compared either with other eServices or with infrastructure. Governments have developed policies at increasing the number and level of online available public services, started to harmonise the services provided by various public institutions, tried to upgrade the level of infrastructure available for public institutions and administrations providing eGovernment services.

The cross country analysis reveals that the EU-10 have progressed in establishing the **appropriate and supportive legal background for eGovernment**. The countries have enacted either acts on eGovernment or separate acts serving the purpose of regulating elements of online public services. The legal framework is EU conforms, follows the major guidelines and principles of the European Union and has generally been used as an exogenous instrument to force the progress with eGovernment.

Last but not least an important achievement has been the **development of the basic infrastructure** needed to provide online public services. In most of the EU-10 the major public institutions, including the ministries, tax authorities, major government units have been connected with unified technical solutions including broadband connection, centralised backbone systems, technical background in the individual offices. While there are differences in the quality of the infrastructure (for example generally the technical background of tax and other revenue collecting institutions is much more advanced than the technical solutions at local government), altogether the basic framework is present and capable of absorbing further volume increases in the number of services, service providers as well as users.

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42 1. Income Tax Declaration 2. Job Searches by labour Offices 3. Social Security Contributions 4. Personal Documents 5. Car Registration 6. Application for Building Permission 7. Declaration to the Police 8. Public Libraries 9. Certificates (birth, marriage) Request and Delivery 10. Enrolment in Higher Education 11. Announcement of moving (change of address) 12. Health-related services (e.g. appointments for hospitals)

53 1. Environment-related permits 2. Public procurement 3. Registration of a new company 4. Social contribution for employees 5.Submission of data to the statistical office 6. VAT declaration and notification 7. Custom declaration 8. Corporate taxes declaration and notification

While the EU-10 may present various though different and country specific achievements in eGovernment, there are still **several shortcomings** that characterise online public services. First, while there has been a significant increase in the number and level of services provided from the basic twenty, altogether **the scope of public services available online is still limited**. The developments in recent years have concentrated at providing these 20 services and increasing the level of interaction between providers and users and less or in some case no attention has been devoted to other public services.

Closely related to this, online service developments were carried out from **supply side perspective** and the need to catch up with the openly measured twenty basic services, and service developments were not driven by the attention devoted to the needs of users. There are only few or none of surveys that would measure the demand of users for eGovernment services, though several smaller reviews have shown that some other online public services would be demanded more extensively than those listed among the twenty.

There is a general trend in the EU-10 that the provision of income generating services has far outpaced the level and extent of the provision of registration/return and permits services. The revenue generation need by central and local governments accelerated the development of online tax declaration and payment, leaving other more expenditure or user needs oriented services underdeveloped. The limited number of services is also due to the very unequal level of development in the provision of services: there are still many central government institutions, which have been unprepared both technically and institutionally to provide online public services and there is especially significant deficit in the services provided by local governments and other public institutions outside central public administration.

Another shortcoming of eGovernment in the EU-10 is the **fragmented and scattered development**, which is observable at various domains and areas. First, many eServices are not integrated inside the central government and among various general government institutions. The development of online public services has not been horizontal in its nature but has mainly focused at the vertical demands and ideas of various public institutions. This has seriously reduced the extent of connectivity, interoperability among the services, and limited users in getting an efficient and universal access to services.

Second, the providers of eServices are fragmented; the online development of their services is uncoordinated: they develop different and frequently not interoperable hardware, software applications and different platforms. In most of the countries there is a lack of universal interfaces through which the public services are available online. The reasons behind the fragmented developments are the lack of or unequal access in time and amount by individual institutions to funding to develop eServices. An additional factor of fragmented developments has been the absence of uniform, central development priorities and the lack of central procurement for systems, hardware and software. All these factors lead to problem with integrating and connecting online public services.

A further shortcoming of eGovernment in the EU-10 is the **quality of services provided by local governments.** While there are significant differences among the individual countries, altogether local governments and their institutions lag behind the development of online public services. The local governments generally have less funding to develop their online services, have less technical and managerial skills to operate these services than the central government institutions or the public administrations. The local governments are generally less equipped technically, use outdated technological solutions and models, which reduce the range and quality of services provided by them. There are certainly significant differences in the level and quality of services provided, depending on the size, geographical location, determination of political and professional managements of local governments to put eServices as a priority for their development, but the overall level of online public services is generally behind central government institutions.

A serious shortcoming of eGovernment developments in most of EU-10 has been the **limited scope of back office reforms** and related institutional and organisational changes. Most of the developments have been concentrated at developing and upgrading front offices, increasing the number of services available online without preparing the back offices to shift from paper to online services and reorganising their institutions to meet the requirements of online public services. While there are again country and institutional differences, in most of the cases the internal reorganisation of public service providers was limited, the staff and the institutions were not reshaped from paper to online service provision. Thus a serious gap emerged between the services offered by front offices and the back offices providing these services, which will hinder the upgrading

of the level of interaction and service provision and will reduce the net benefits from shifting the services from paper to online provision.

Related to the reorganisation of back offices, in EU-8 the opportunity was missed so far to connect the development of **eServices with the reform or public sector**, which would include redefinition of the role of the state, changes in the institutional and organisational framework in which public services are provided, and reorganisation of the public sector institutions. Most of eGovernment developments would allow public administration to rethink the procedures of service provision, the role of the individual institutions and the overlaps among them in order to increase the quality of public services, and efficiency of their provision. As long as the institutional structure of public administration is not streamlined, the scope and nature of health care services provided by public institutions is not defined, the various social security and social services are not brought in line with the revenue generating capacities of governments, and there is little room for developing online these services online.

While the achievements in the area of eGovernment include the more focused and concentrated developments compared to other online services, one major shortcoming and future barrier can be the **lack of appropriate "owner"** of both information society and eGovernment developments. This is mainly due to the scattered policy structure and regular changes and redefinitions of competencies and authorities among the various public institutions and ministries. The example of successfully converging countries shows that it is difficult to achieve success without having a strong political commitment and a leadership/"owner", who is determined to put the information society and eGovernment developments as a top priority. Such leadership has been generally lacking in the EU-10, which is both an ex post and ex ante shortcoming.

MAJOR DRIVERS AND BARRIERS OF EGOVERNMENT IN THE EU-10

As eGovernment developments are inseparable from public sector developments, a **major driver** can be the structural **reform of public administration in particular and public sector** in general**.** Public sector reforms in the NMS comprise the changes in the scope of services provided by the public sector, the adjustment of the institutional set-up providing these services, the changes in the financing of public institutions partial or full outsourcing and privatisation of certain public services provided by bureaucratic institutions. The reforms should reduce inmost of countries with country specific weight the level of public redistribution, rationalise the scope and improve the quality of public services and the efficiency of their delivery, change the ways of financing the public institutions.

The reforms of and changes in the institutional structure, internal bureaucratic procedures, in responsibility and financing of public services could rely on technological organisational and procedural solutions made possible by online services. Thus eGovernment applications themselves may support the technical implementation of reforms, while on the other hand the determination to proceed with reforms is a strong supply side driver of eGovernment in the next years.

An important driver of eGovernment will be a more focused attention at changing and fast increasing **user's need** and demand. So far eGovernment development in most of the EU-10 was supply-side driven by the need to progress with the provision of the 20 basic services deemed as priority ones by the European Commission for eGovernment developments. While this has been an important driver of developments, the focus has been lost from the assessment of the users' demand and progress with the digitalisation of other almost 400-500 public services, which are not in the list of these 20 basic ones.

An important driver for eGovernment may be **increased and more concentrated funding** of online public services. Financing constraints have been one of the decisive impediments for the uptake of eServices, while an important shift in the forthcoming years will be the increased access to EU Structural Funds and associated co-financing requirement from the EU-10 budgets. The amount of available EU Funds will almost triple in most of the countries and increased funding seems to be incorporated to various Operative Programs dealing with online services, at least according to the planning of the Second National Development Programs of the EU-10[54].

[54] There are three areas, where countries seem to increase their spending:

There are two additional drivers for eGovernment developments: **concentration and top-down implementation of rules** and eGovernment related developments in the public sector. So far in most countries eGovernment developments have been disintegrated, scattered resulting in the use of various systems, hardware and software solutions by institutions. Besides reducing the interoperability and connection of services and service providers this development pattern has been costly as government institutions had to pay repeatedly the price for developing, installing and operating the services. More centralised developments will require a compulsory use by similar institutions of unified registration/documentation/delivery procedures, adoption of similar software, systems and interfaces, use of best practices learn one institution by others, etc. This focus on more centralised approach has already begun and should be a target for most institutions, which can reduce both the costs of developing eGovernment applications and improve their interoperability.

The compulsory**, top-down implementation** of rules may also become an important driver. Forced implementation includes the compulsory use eProcurement at all levels and institutions within general government, the implementation of procedures laid down in electronic administration, shift towards compulsory electronic submission of various official documents inside the public sector is an important driver. The natural institutional and personal resistance against changing bureaucratic procedures could be overcome in easiest way by compulsory, top-down introduced rules and procedures.

An important demand side driver of eGovernment is the **growing demand from household and corporate** sector for improved eGovernment services. In case of citizens, households the growing awareness concerning the use of public money, the new demand generated by the increased availability and functioning of the already existing public services, the pressure exerted by the users on providers[55] is an important driver for online public services. On the other hand business sector also puts a strong competitive pressure on governments as globalisation, increased competition between countries and the ease of shifting production from one location to other has put besides tax rules, wage and other production costs the transparency of and access to public services an important element for investors decision. As EU-10 countries are open, depend on the supply of local and international investments are both beneficiaries and losers from global relocation, this is an important driver to force government to improve public services also through their online provision.

While there are numerous drivers of eGovernment development stemming from economic benefits, exogenous economic and social developments, policy pressures, there are also **various barriers** that should be considered seriously by policy makers in the EU-10.

While the availability of **increased funds** for information society developments is a driver, recent experiences on their **use and spill-over effect** raise caution. The amount of funding available for eGovernment developments will significantly rise in 2007-2013, an important lesson from the current budget cycle period is that the composition of and priorities for spending matter. During the recent financial perspective (2004-2006) funds were used for multiplicity of purposes, the synergies and spill over effects from spending remained moderate as the main priority was to use all funds to increase the absorption capacity. Most of countries have already encountered the dilemma of choosing between absorption and efficiency raising approach in using the Structural Funds. Due to weak institutional capacities, low quality of spending proposals, time constraint most countries have been spending Structural Funds with giving priority to absorbing them and reducing the role of efficiency considerations.

The second important barrier may be that the significant **social, regional and digital divides** won't ease in most of the EU-10 as recent years of fast growth and rising incomes were not associated with declining social,

- financing the basic infrastructure: full provision of broadband access and interconnection of public institutions, more funding for local governments and certain public institutions (libraries, policies and first, etc.)
- improving the level of online public services and progress on the four level scale towards the higher levels of service provision.
- improving of eSkills in public administrations.

[55] In most countries online tax declaration and payment has progressed very fast. While tax payers had to adjust to online tax declaration by investing either in IT hardware and software or hiring accountants and other consultants to provide the services, they started immediately to demand the online access to their files, the possibility of using the electronically signed confirmation on tax payments in public procurement procedures, which forced the tax authorities to upgrade their services.

regional and income gaps. This is mainly related to the slow institutional and factor market reforms, which are needed to increase low employment rate, reduce high structural unemployment and mitigate the regional differences by allocating more funds for regional developments. As long as these structural, market and institutional weaknesses are present, digital divide acts as an important barrier to eGovernment developments as differences in the access s in various regions and by various users, the gaps in the digital literacy and affordability to access services are serious barriers in front of broad based usage of eGovernment.

While the reduction of the existing deep regional, social and even digital divides is related to policy options outside the eGovernment area, these exogenous factors will strongly influence the development of online public services both from demand and indirectly from supply side too. Moreover, the lessons from other countries are also not encouraging as fast catch up and convergence per se doesn't lead to declining regional and societal differences unless the appropriate labour market, education and other reforms are implemented.[56]

While several elements may act as drivers of eGovernment, there are various institutional, policy and financial barriers. One major barrier can be if the **reform of public administration** is derailed with a special focus at the redefinition of roles, competencies between central, regional and local governments. The reform requires a significant reduction in the number of local governments with independent spending competencies and institutions, the centralisation of various public services provided by local governments, reduction of various central government institutions, a general shift of competencies and funding from central and local governments towards regions and small regions (NUTS-II and NUTS-III instead of NUTS-I and NUTS-IV/V levels). Most of these changes require broad political consensus, hurt various influential lobbies and interest groups, weaken and redefine competencies and spending opportunities: thus reforms may easily be derailed[57].

Within the whole general government the **approach of local governments** remains a critical issue: they are the least providing online services, their system are the most disintegrated and divided: if neither the incentives nor the funding is present, then online public service development may slow down in their case.

There are **social barriers** in front of eGovernment developments as well. One barrier, the overcoming of which may require quite long time, is the presence of the **bureaucratic culture** of public services, which are provided based on providers intention and not the demand of users. As long as there is no either tougher competitive pressure on public servants or employment guarantees and conditions remain unchanged, the socio-cultural mentality will remain unchanged, the service orientation of service providers will not overcome their bureaucratic approach and mentality.

An important barrier to eGovernment developments is the **level of digital literacy and eSkills** both of service providers inside public institution and service users outside them. While recently the EU-10 have been devoting both more attention and funding to improve eSkills, the efforts are still limited compared to the existing gaps. Inside public administration units the creative use of IT solutions, the incorporation of electronic applications to daily practices is missing to a great extent.

OPEN POLICY ISSUES AND PRIORITIES OF EGOVERNMENT IN THE EU-10

The review of the advantages and shortcomings of recent eGovernment changes in the EU-10 allows drawing some general conclusions on the major issues faced by policy-makers in these countries. With significant differences among the ten countries in the importance and order of reform measures, the policy makers in the EU-10 have the following priorities for their policies to contribute to eGovernment developments.

One of the major priorities is the reform of the public sector, which means significant changes in the provision, financing and institutional set-up of public administration and generally public services. There are several

[56] This reasoning is in line with the trade-off theory, which shows that inside the EU national convergence is associated with increased divergence in the level of development of regions inside the countries.

[57] Besides the division of competencies among various levels of general government, the slow reform of public administration may result in slowdown in the application of online provision of public services. As long as appropriate measurement indicators are not applied, input financing is not replaced with output one, the scope of services provided by these institutions is not defined appropriately the natural institutional resistance, the lack of defined role of service providers will inhibit the shift towards online public services.

aspects of the public administration reform that influence eGovernment developments, including the restructuring of public administration, reduction of the levels of general government, redefinition of the scope of services provided by the public sector and their ways of financing, the revision of the institutional structure in which these public services are provided. The reform of the public sector should be closely linked to the spread of eGovernment as the technical, organisational solutions offered by eGovernment can help in redefining the internal processes within public administrations, the costs and time needed to provide certain public services.

Closely related to the reform of public sector are the internal changes inside public administrations that could accelerate the spread of online public services and improve their quality. First is the need to harmonise and connect eGovernment developments at various levels of the general government, which so far has been generally disintegrated. This has been observed among the institutions at similar level of general government (e.g. ministries), but even more between central and local government institutions, which seriously reduces the number of available services, the quality of service provision. Second, public policies should be directed at accelerating transformation of internal processes requiring the coordinated development of front and back offices. So far with minor exception the developments focused at front offices leaving back office, internal reorganisation out of scope, though at the end the quality of services and the efficiency of their provision hinges on back office structures. Here a major progress and enhanced policy attention is needed.

There is still a potential for the stimulation of the use of ICTs by citizens, including personal computers, broadband access and improving the affordability of this usage. In order to achieve this, governments should support the deregulation of the access to these services, including local loop unbundling, opening the market for broader competition between infrastructure and service providers.

The reduction of existing social, regional and digital divides is another policy issue, which is closely related to the improvement of the affordability of these services. The EU-10 is characterised by deeper social divides and this has an impact on the access and usage to online public services. While most of the measures and policy options available for governments are only indirectly linked to eGovernment, they should be considered seriously in order to reduce digital and other divides. The most important are the increase and better targeting of education spending to provide more equitable access to them, the increase of low employment rates and more targeted regional policies. There are other measures closer to eGovernment area, including improvement in eSkills, financial and non-financial stimulation to use ICTs, which are partly in the domain of public policies.

An important policy area is to increase the scope of public services provided online, as in the EU-10 recent developments focused on the 20 services regarded as vital by the European Union. However, these are only a minor part of all those services that can be provided online and for which there may be a demand from the users. In order to increase the number of online services the following measures need to be considered. First, a much better understanding of the demand for services is needed: recent developments were driven by the assumed need to comply with the European achievements and measurement priorities and less with the demand of the users.

Therefore there is a need to have regular and updated annually reports, picture about the preferences of the users for online public services. Second, there is a need to persuade with a “stick and carrot” approach several institutions that could play important role in the provision of eServices, but the most of who have so far neglected these issues. This refers mainly to local and regional government units, but also to several central government institutions, including certain ministries. Finally, the legal changes are also an important integral part of the supply side measures including the adoption of laws on eSignature, equalling online and paper administration, etc.

Government in the EU-10 can significantly contribute to the progress with online public services by spending more and in a more focused way on eGovernment. In the forthcoming years these countries will predominantly use the Structural Funds to finance their development plans and also the reforms in the public administration. The amount of spending available in the 2007-2013 period seems to be appropriate in terms of the financial requirements of major developments. It is a vital policy issue to use this funding for the most important bottlenecks, to spend them for such developments which may generate sizeable spill-over effects and additional spending and contribution from the private sector.

OPEN RESEARCH CHALLENGES

There are several open issues, which should be at the centre of research on eGovernment besides the EU-10 also in other European countries.

First, the development of online public and health care services has so far neglected the **measurement of costs and benefits**. This has been related to two linked issues. On the one hand developments proceeded without considering and estimating the real indirect and direct costs of the decided eGovernment developments. While the direct costs associated mainly with front office developments were more measurable and considered, the indirect ones related to the reorganisation of broadly understood back offices, were generally not calculated.

On the other hand there are no reliable studies and estimates on the net effect of online public service developments on the level of employment in the public and linked to this in the private sector, on the changes and quality of public services, on the productivity improvements related to the changes in the composition of employment and tasks inside the public institutions. The lack of efficiency measurement and of the SWOT analyses results in the general perception by public servants, that most of the ICT developments just create costs for public administrations, thus reducing their motivation and cooperation. Better understanding of the loss and revenues from the expansion of online public services is needed to have clear visions on its impact on employment, output, efficiency, savings both in the public and private sectors.

Another important research and development issue is **the integration of new technologies** and services to the provision of online public and health care services. As mentioned earlier both mobile services and digital television have the potential to stimulate the provision of certain eGovernment services. These technologies are unable to allow the use of all eGovernment services; however they may allow the development of new ones. Further research is needed to determine the preferences and motivation of users, when selecting between personal computers, mobile or digital TV connection to use online public and health care services, to assess which services may be switched to mobile or digital television provision which both have bigger acceptance and popularity among the final users than personal computers, to evaluate which services could be brought online for users through these two technical possibilities.

As the scope of online public and health services is broad, there is an increasing room for the **private sector in their provision**. However, there are several public services, where these concerns are of smaller relevance or can be dealt with which call for the more extensive reliance on PPP solutions and other forms of private sector involvement to service provision. An important research and development challenges is to assess the areas, where the outsourcing of the core activities related to the build up of eGovernment may bring substantial benefits as compared with the current involvement.

An important research area is the issue of **measuring the efficiency of eGovernment**. As it is well-known from the literature it is more difficult to measure the efficiency of government, public services, which is an even more complicated task for eGovernment. What should be the output of the eGovernment services, how to measure them, ho to link output and input indicators, how to assess the efficiency of spending are open research issues for the future.

Finally, an area of future research is the question of the **new business models** that may be developed in the public administration thanks to eGovernment. As the success of eGovernment hinges on the reorganisation of back offices, it is of crucial importance to assess what will be the new business model of public institutions, what internal structural changes will be required and supported by the spread of online public services. The research on this vital issues is in its infant stage, though institutional and organisational solutions are vital fro the success of eGovernment.

ANGELA DUNBAR[58], NIELS ROSSING[59]: HEALTH SYSTEM TRANSFORMATION - EHEALTH OPPORTUNITIES

INTRODUCTION

The WHO Regional Office for Europe (WHO/Europe) aims to support it's 53 Member States in the strengthening of their health systems. With the World Health Assembly's adoption of resolution WHA58.28 in 2005, WHO/Europe has coordinated the WHO Global Observatory for eHealth survey administered to the European Member States.

This article presents eHealth as part of the Health Systems and describes the preliminary findings of the WHO Global Observatory survey for eHealth and identifies various opportunities of information technology tools to facilitate health system transformation on the road to fair access, quality and responsiveness.

It acknowledges the vast diversity in the European Region in terms of health, economy, health priorities, drivers for change and penetration of information and communication technologies (ICT) and provides basic principles for ICT adoption.

THE RESOLUTION

The Ministers of Health of the 192 Member States of the World Health Organization committed in May 2005, to WHA resolution 28.28, noting the potential impact that advances in information and communication technologies (ICT) could have on health-care delivery, public health, research and health related activities for the benefit of both low and high income countries;

This commitment urges Member States to consider drawing up a long-term strategic plan for developing and implementing eHealth services through health system functions including legal frameworks and infrastructure as deemed appropriate to promote equity, quality, affordability and universal access. And to build on closer relationships with partners.

Likewise, it requests WHO to promote health system reform using eHealth in support of national strategic plans and develop collaborative platforms to inform policy and practice of eHealth in countries (best practices, research and standards).

The World Health Organization is headquartered in Geneva, Switzerland with 6 Regional offices. The Regional Office for Europe is located in Copenhagen, Demark. The Regional Office for Europe serves approx. 870 million people in 53 Member States from Greenland in the West to Kazakhstan in the East. The European Region is diverse, where annual expenditure on health per capita differs by a factor of 100 and life expectancy differs by 10 years, health systems also differ enormously.

EHEALTH IN THE HEALTH SYSTEM CONTEXT

eHealth can be seen as a system within 3 systems. A set of tools and services which support the 4 functions of the health system in diverse ways, which in-turn make up the health system.

The term eHealth has come into common use over the last five years in parallel with eBusiness, eLearning and eGovernment. WHO defines eHealth as the combined use of information and communication technologies (ICT) for health. It is acknowledged that "in a broader sense the term characterizes a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked global thinking, to improve health locally, regionally and worldwide by using information and communication technology."

eHealth is one of several tools to support the functions of the systems as described:

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- Health care is an extremely information dense sector and eHealth can play a very important role in service provision through eCare. eHealth improves access and therefore equity by virtually connecting facilities, professionals and citizens, which diminishes geographical or physical barriers.
- eHealth has the potential to provide an important impact on health system resource generation through eEducation by facilitating the exchange of health related knowledge and between persons, systems and between and within countries.
- eHealth can provide an important impact on health system financing through eAdministration by improving information quality and transfer speed to support more effective resource allocation and purchasing.
- eHealth has the potential to provide an important impact on health system stewardship through eGovernance (Management & Surveillance) improving information and communication systems for planning, preventing, anticipating, decision-making, and responsiveness.

When recommending the integration of eHealth services in Member States health systems of the intermediary strategic objectives must be:

A) To enable all health providers and healthcare workers to deliver health services with efficiency, quality, security and equity of access for citizens irrespective of time and existing or anticipated shortage of skilled health staff

B) To bring the citizens into the centre of healthcare with eHealth empowering them with ICT supported provision of information to be co-responsive for their own well-being and participants in their health care.

C) To measure and benchmark performance, cost and quality

D) To further improve knowledge management by capture of data at place of origin, retrieve and analyze it to create knowledge

E) To be aware of the reality of the "digital divide" and strive to overcome it

F) To improve surveillance and early warning systems by modern communication tools

G) To increase preparedness and responsiveness in situations of crisis or disaster

H) To contribute to needed resource generation and capacity building at all levels in health care

I) To facilitate health and biomedical research

J) To harness the technologies in order to optimize security and data safety when implementing eHealth elements in order to respect citizens' civil rights to confidentiality of personal information

K) To ensure that eHealth services are at the appropriate and affordable level

L) To ensure that the strategy builds on the strengths already found in Member States build strategies on already existing strengths and the European region both in healthcare and the supporting industries and infrastructures.

eHEALTH ACROSS THE EUROPEAN REGION

Acknowledging the vast diversity in the European Region in terms of health, economy, health priorities, drivers for change and penetration of information and communication technologies (ICT), the WHO Regional Office for Europe, examined Member States´ needs through the first global survey on eHealth, administered in 2005-2006 to all European Member States.

The survey included seven sections and analysed:

1. Enabling environment - policies & strategies
2. Infrastructure - access to ICT

3. Content - access to information and knowledge
4. Cultural and linguistic diversity, and cultural identity
5. Capacity - human resources knowledge and skills
6. National centres for eHealth
7. eHealth tools and services

A 52% response rate to the Global Observatory on eHealth survey, illustrated that the European WHO Member States can be seen as being at three different stages of eHealth uptake:

A) The 15 original high to moderately high-income EU Member States (EU15) + EFTA countries; They have long established health delivery systems which are hard to change. Cross-border interoperability and change management are key problems to solve. These countries have national or regionally derived resources to spend on ICT for health.

B) The 10 new EU Member States (EU10) + 4 accession countries in Central Europe; They are generally not bound to legacy health delivery systems and can therefore adopt new technologies more quickly. They have medium resources to spend on ICT for health. eHealth activities in group B countries tend to be support projects with national frameworks and tend to be financed through international developmental organizations and sustained through national funds. It is often claimed that by making ICT an integrated element of their newly developed health delivery systems from the very start they can be leapfrogging although still with considerable gaps.

C) The non EU Member States in Eastern Europe; They not bound to legacy health delivery systems but by scarcity of resources. The technological knowledge is growing rapidly. For many, the benefits of eHealth have not yet materialized and the rather uncoordinated eHealth developments tend to be supported projects financed and sustained through international developmental organizations with little national involvement and therefore with limited chances of continuity. Unreliable utilities such as electricity, water and gas present challenges.

Elements of eHealth have been used increasingly, since the mid 1960's first in health administration and the "technical" medical specialities such as radiology and laboratory medicine, but have now permeated into all aspects of health service. To-day health systems without at least some digital support would be inefficient. It goes without saying that major biomedical and pharmaceutical research without the use of ICT is unthinkable.

Full-fledged eHealth implementations are rare in Europe, though, and only to be found at sub-national, regional level. Some countries are now making massive efforts to reach full scale implementation; most evident is the English initiative, i.e. the "NHS Connecting for Health" programme of the NHS.

When successful, eHealth supports a multi-sectoral strategy for sustainable health by improving communication between policy makers in different sectors of government (Education, Health, Information Society, Environment, Social Services, etc) and an outcome-oriented health sector by improving information collection and knowledge sharing for better, more informed planning, decision-making and policies.

Also, the costs of conventional approaches to health care are becoming insupportable and alternative more effective ways of delivery must be found. For many governments, therefore, a key issue is the gap between the cost and financing of health care to which is added the demand for equity of treatment and access within the MS and across borders.

Thus, the driving forces behind the adoption of eHealth in most MS of the region are:

1. An aging population with higher prevalence of chronic conditions
2. Quality of care and care delivery including patient safety
3. Existing or foreseen shortage of professional health care staff
4. Rising costs of care to be curbed by optimized efficiency
5. Mobility of citizens wanting access to the health services they are entitled to, wherever they are

6. Increasing potential technology and decreasing technology costs
7. Increasing consumerism and increasingly educated and demanding citizens
8. The non-sustainability of existing health approaches by national governments and health insurance payers.

Across the Region, the drivers for change are diverse. For group A and B countries, these include an aging population with higher prevalence of chronic conditions, increasing demands of higher quality of care, existing or foreseen shortage of health professional, rising costs of care, increased citizen mobility, increases in technical capacity and decreases in the cost of technology, increasing consumerism and increasingly educated and demanding citizens. For Group C countries, drivers include prevalence of communicable diseases, need for early warning systems, decaying physical and organizational infrastructures, capacity building and the threat of professional brain-drain.

The results from the WHO Global Observatory for eHealth60 survey question number 7 has been detailed in the publication eHealth Tools and Services and provides a basis to position WHO as an organization in relation to eHealth. Findings illustrate that WHO could assist countries by providing generic tools and access to existing tools, facilitating knowledge exchange, providing eHealth information, and facilitating resource generation- eLearning. These findings support the position identified for WHO-Euro. The full results are currently in publication – Building Foundations for eHealth.

BASIC PRINCIPLES

There are a number of essential conditions for responsible deployment of eHealth derived from the basic principles and lessons learned through experience.

Large scale deployment and use of eHealth must always be seen in the context of a political, an organizational and social as well as a technical framework. That implies that action must be planned at all levels of the framework to achieve sustainable benefits. These technologies must be harnessed, never to trespass upon individuals' human and civil rights to privacy, and yet contribute to improved access to health services on the other.

eHealth must never violate ethical, social or cultural norms of communities and countries. Any system/service must integrate with the cultural environment and support transparently the health care approach and its supporting administrative and payment infrastructure.

High speed is essential for an interactive internet-based eHealth service either based on terrestrial or satellite broadband connectivity established to serve many public sectors but with embedded special services for the health sector notably relating to security and confidentiality issues.

Supporting frameworks for successful implementation are analysed in some detail, these include:

- Data security, privacy and citizens' rights as well as ethical and legal issues
- The Europe Council's recommendation to Member States: The Impact of Information Technologies – The Patient and Internet from 2004.
- Confidentiality, authentication, data integrity, non-repudiation and authorisation control
- The code of "Health on Net" **(www.hon.ch)** is recommended as a better and safer way of using the Internet
- Liability issues associated with persons providing eHealth services especially telecare.

Standards are of critical importance and the report recommends that WHO-HQ in collaboration with the Regional Offices plays an even more active role in the future on coding, classifications and nomenclature and ensure that the standardisation mechanisms is kept as simple as possible. The ITU initiated "eHealth

[60] Note: Analysis performed on global responses, not Regional specific

standardization coordination group" (EHSCG) is acknowledged. In addition to these basic principles, there are 5 elements fundamental for eHealth deployment.

A number of lessons have been learned from previous experiences in eHealth deployment.

- If implementations are driven by technology and not healthcare needs they will fail (At the early stages of technological adoption it is better to improve existing services with technology than require extensive changes. Only at later stages are an organization and its people able to respond to technologically driven change).
- Initiatives must be based on a realistic budget including adequate funds for initial investment, staff training and continuous support, and continuing maintenance
- Change management is an essential component of all implementation projects
- Initiatives need champions and identified stewards and should not be left as an organizational activity
- Initiatives must involve users in a practical and encompassing manner. They have to be conceived as needs driven service, not just the purchase of systems
- Activities implemented in a single or at most a few institutions create isolated information islands without regional, national or international interoperability and totally miss out on the power of the communication element. The lesson learned in other industries need to be learned where expensive efforts had to be made to link these islands into more coherent services.
- eHealth elements have to adhere to standards so that they can be linked
- Budgets have to include costs of necessary and continuous training of personnel as a consequence of staff turnover, cost of 24/7 operation (24 hrs a day, every day of the week) and of maintenance.

KEY MESSAGES

Responsible deployment of eHealth in support of the health systems is based on five underlying concepts:

1. Providing leadership by:

1. The paradigm shift - bringing the citizens/patient and not the health provider, to the centre of health by empowering them with shared information.
2. The transformation of working procedures as a consequence of timely, accurate and relevant information being available irrespective of location.
3. Interoperability - the capability for systems and humans to understand each other in spite of different technologies, languages, cultures and administrations without violating legal, ethical and security issues.
4. Diminishing the digital divide- acknowledgement and work to diminish the disparities in access to health information, goods and services available through ICTs for sectors of the population.
5. Ensuring legal and ethical data security - many Member States have already enacted measures to ensure data security, privacy and confidentiality, but along with new technologies, new threats arise, therefore authorities must remain vigilant.

The World Health Organization, with acknowledgment of the diversity of member states, through the WHA Resolution 58.28 urges partners and national actors to consider the appropriate and responsible use of eHealth tools and services in support of Health System Transformation used to meet Country Health Priorities.

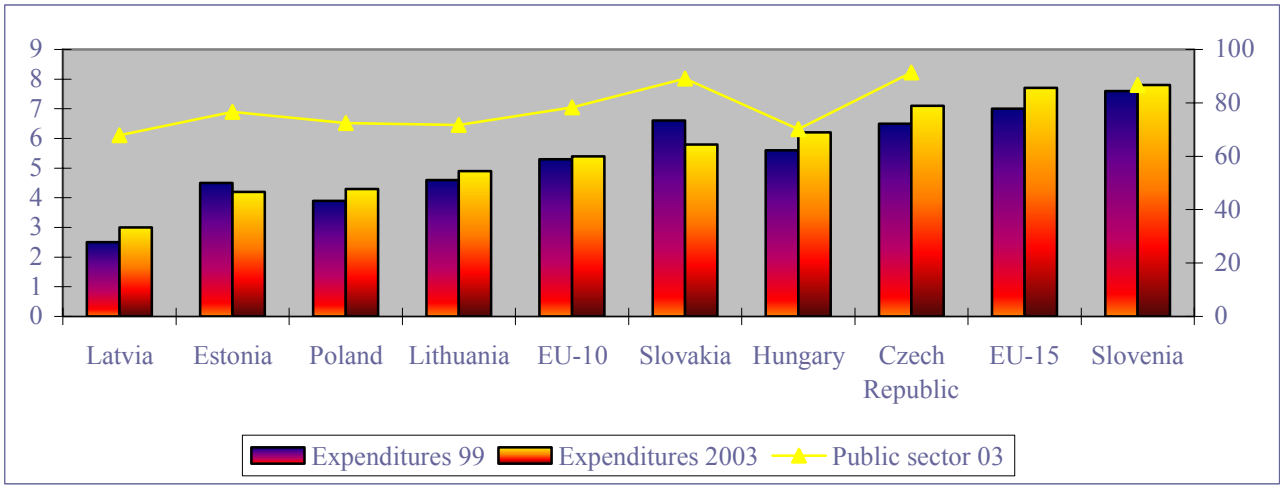
eHealth is a tool and not an end in it's self; it is about people, not about technology and it is a means by which relevant information and knowledge can be more reliably and quicker provide to empower people to take action.

PÁL GÁSPÁR: EHEALTH IN THE EU-8: DEVELOPMENTS AND CHALLENGES

BASIC FEATURES OF THE HEALTH CARE SECTORS IN THE EU-8

The EU-8 generally spends on health care a rising but still lower than the EU-15 share of their respective GDP. There has been a drastic decline of health care expenditures in the EU-8 during the structural, institutional changes of the 1990s with their gradual recovery in recent years. Notwithstanding that in 2004 the average of the health care expenditures to GDP was slightly above 9% in the EU-15, and slightly below 7% in the EU-8. The latter figure has already been an increase as expenditures in the EU-8 made up only 5.5% of GDP in 1999. In per capita terms the gaps are even more striking between the two country groups. If measured by the Purchasing Power Standards (PPS) the adjusted per capita health care spending was 1891 Euro in the EU-15, while only somewhat less than one third of that in the EU-8 (624 €)[61].

Chart 1. Health care expenditure as percentage of GDP and the share of public sector in total spending in percentage points



Source: Eurostat (2005)

As described briefly later, most of the health care services are provided by public institutions and the share of the private sector involvement is lower than in the EU-15. On average around 75% of health care expenditures are public in the EU-8, with the Baltic States remaining closer to 70%, while of Slovakia, Slovenia and the Czech Republic above 80%.

While there has been a cost explosion in the health care sectors of EU-8 together with small increase in the efficiency of service provision, the low expenditures re insufficient to cover the rising costs, which results in generally worsening quality of services.

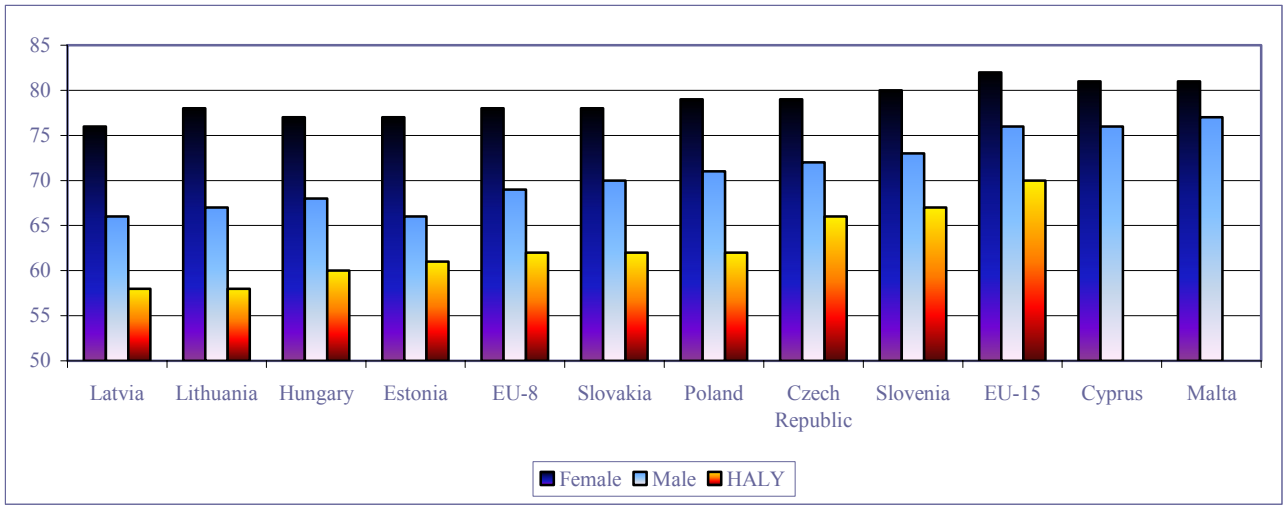
While the EU-8 generally spend lower proportion of their GDP on health care,[62] they face worsening or at least worse than in EU-15 health conditions. Among many indicators presenting this development, the life expectancy and the high mortality rates caused by special and above the European average death causes are the

[61] However one should consider that the adjustment to PPS means the elimination of price differences and a calculation on unified price level. Then considering the actual exchange rates and the price differences, the gap would be reduced as the lower price level n the EU-8 would produce higher per capita spending at the actual exchange rate.

[62] This statement is true even if one considers the extensive use of gratitude money in the health care sectors of the EU-8 countries. There are various estimates according to which the expenditures channelled to the health care sector through gratitude money may reach 1-1.5% of the GDP depending on the country in question. But this is country specific and is spent by users for private expenditures and not for the health sector itself.

most telling ones. Among the EU-8 the average life expectancy is well below the EU-15 average: in case of Slovenia, the Czech Republic and island countries the figure is 1-4 years lower than in the EU-15, while the gap rises in the Baltic States and Hungary to almost 6-11 years. One statistical reason behind this gap is related to much lower life expectancy of the male population: the gaps between the male and female life expectancy are five and nine years respectively. The figure is even worse when the health adjusted life expectancy (HALY) indicator is used: the difference in the average HALY is on average eleven years, with Latvia having the highest gap of thirteen years.

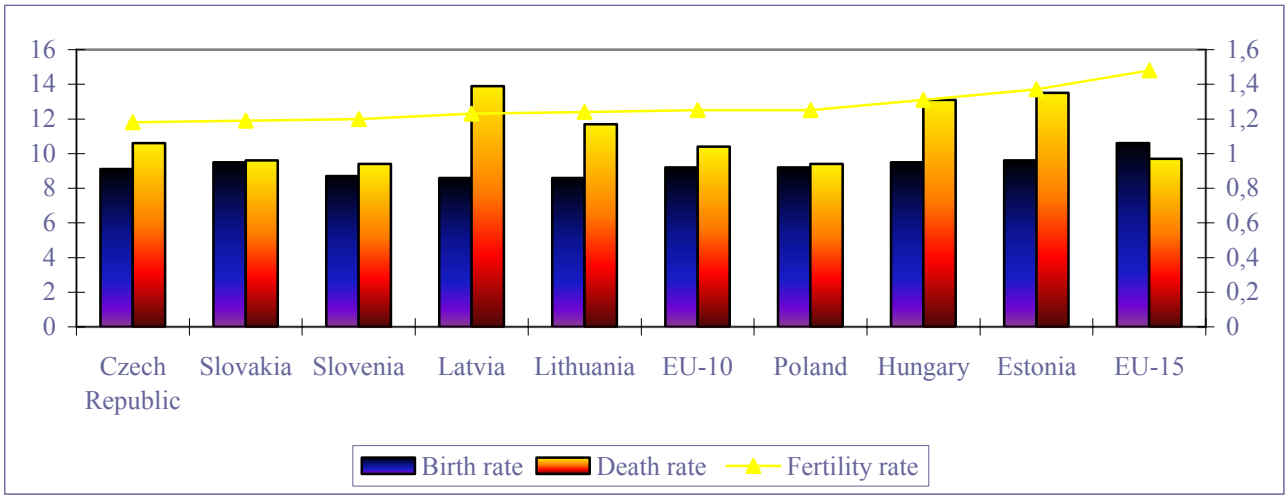
Chart 2. Life expectancy: raw and health adjusted data



Source: Eurostat (2005)

Another reflection of the health sector problems are the demographic trends: with the notable exception of Cyprus, Malta and Slovenia the population of the EU-8 declines or stagnates. While birth rates are somewhat below 1 percent (0.9% average for EU-8) and higher this level in the EU-15 (1.1%), the death rates are just the reverse with 1.2% and 0.9% for EU-8 and EU-15 respectively. The factors behind the stagnating or declining population are manifold and include among others the mentioned gap in the mortality rate, the emigration (net migration has a positive balance only in Hungary and Slovenia, while outward emigration prevails in other EU-8) and lower fertility rate, which is above the 1.48 average of the EU-15 only in Cyprus and Malta.

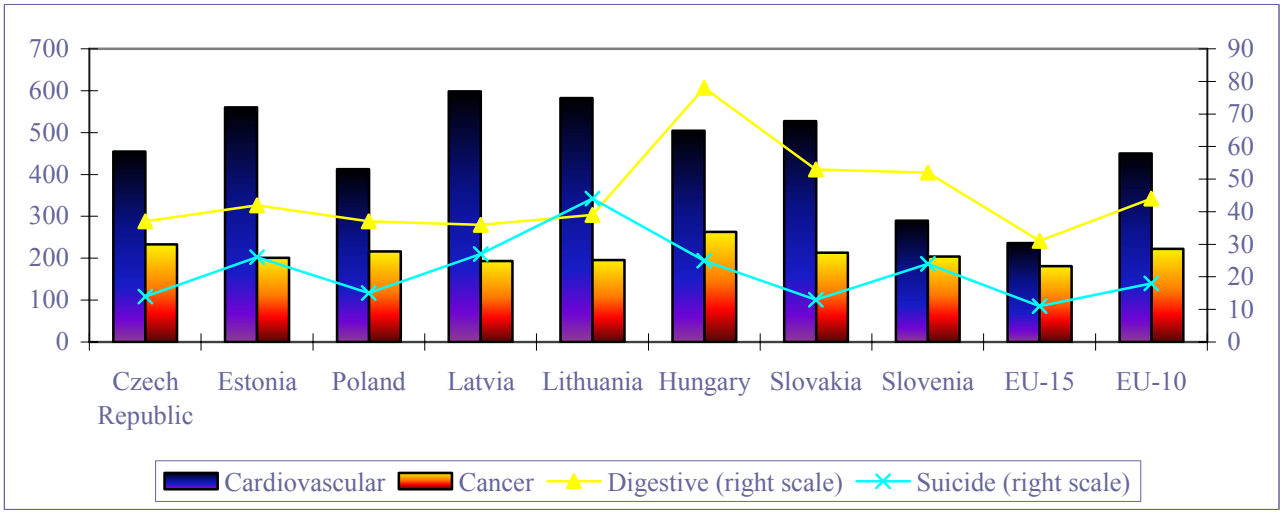
Chart 3. Fertility, birth and death rates (%)



Source: Eurostat (2005)

There are also various reasons behind the death rates which are by 25% higher in the EU-8 than in the EU-15: besides the life style, health care sector problems result in exceptionally high death rates from cardiovascular diseases, cancer, digestive system and suicide, which determine the high mortality rates. Linked to lower life expectancy of the male population, the mortality rate of the middle age male population is 2.5 times higher in EU-8 than in the EU-15. According to various studies most quarter if the gap in death rates is caused by the inappropriate level of health care services (higher incidence of cancer and infant mortality among others).

Chart 4. Major death causes by 100.000 of population

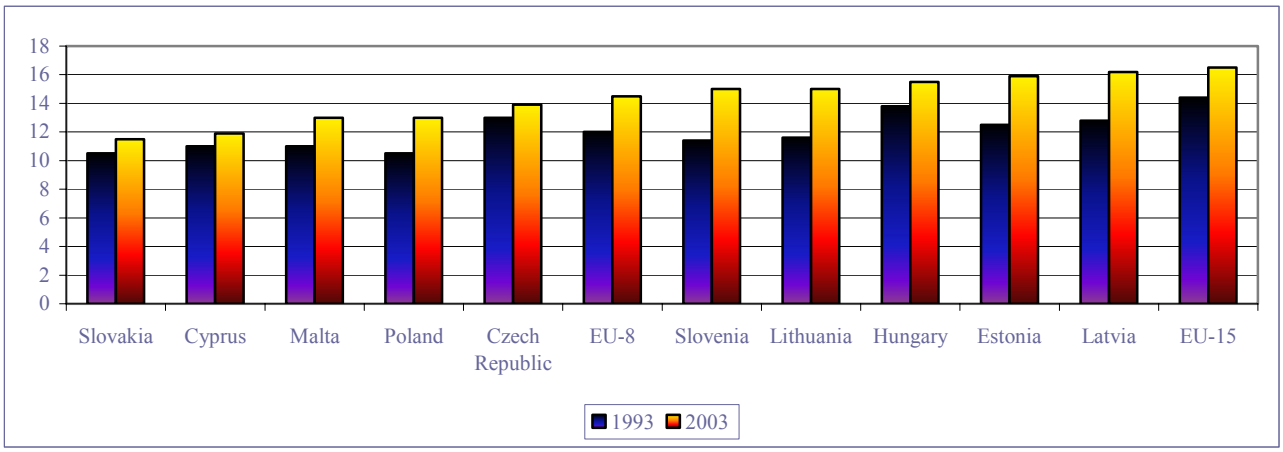


Source: Eurostat (2005)

An important factor shaping the health sector developments in the EU-8 is that with some delays compared to the EU-15 the population of the EU-8 started to experience ageing. The demographic situation is still slightly better in the EU-8 than in the EU-15 as the share of the younger generation is higher and of the older somewhat lower: the respective figures for younger generations (younger than 14 years were 16 and 18 percent for the EU-15 and EU-8, while for the older than 65 it is 14 and 12 percent. However, one should note that aging is present and the share of population over 65 grew faster in recent decade in the EU-8 than in the EU-15: while in 1993 this ratio was 12% in the EU-8 and 15% in the EU-15, it increased until 2003 to 15% and

17% respectively. As a result of these changes, there is an increasing pressure from aging on health care and pension system reflected in rising health sector expenditures, medicine costs and related budget subsidies among others.

Chart 5. Share of population over 65 (%)



Source: Eurostat (2005)

MAJOR FACTORS AFFECTING THE EVOLUTION OF THE HEALTH CARE SECTORS

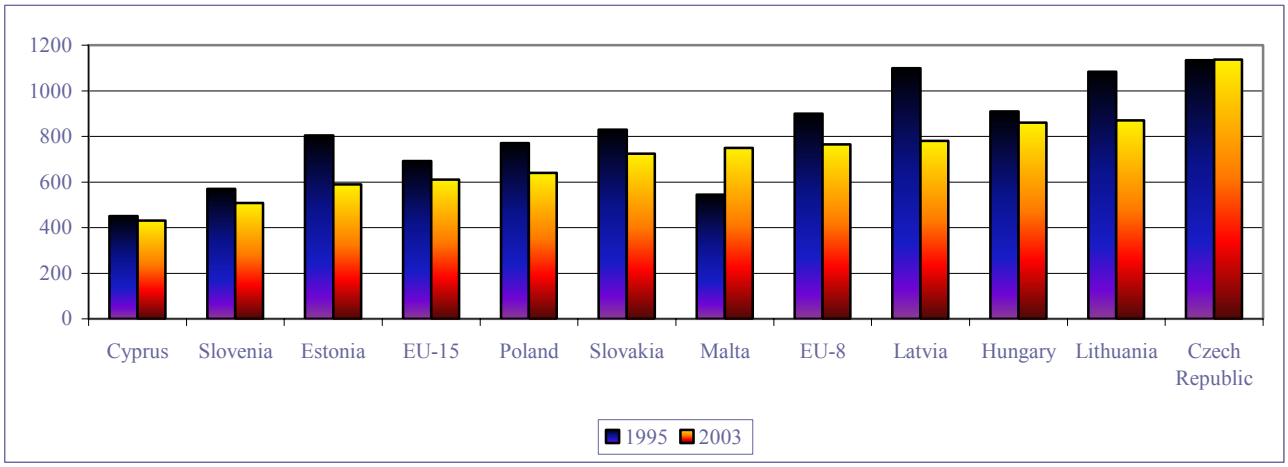
The developments of the health care sectors in recent decade in the EU-8 have been affected by **various factors**. One of these factors were the overall exogenous trends that overall shape health sector developments in advanced countries. These include the already presented demographic trends (aging population and shifting age composition, low fertility and high death rates), the cost explosion in health care services due to technological changes, and the increased sensitivity of service users towards the services provided.

As most of the EU-8 has been transition economies, the transition to the market economy and the changing economic framework has also affected health care developments. Transition related impacts included among others generally worsening health care indicators, serious difficulties with revenue collection, partial and generally still very limited privatisation of the providers of health care services, uncertain ownership structure, frequent and uncertain changes in the regulatory framework.

There are various structural distortions that have affected the evolution of the health are services in the EU-8, but especially in the EU-8 countries. Some of these distortions are related among others to the unfavourable share of preventive and curative health care, hospitalisation versus out-patient treatment, a significant gap between the supply of and demand for health care services, significant explosion of pharmaceuticals related expenditures.

Most of the problems are linked to the weaknesses of the regulatory and incentive framework for health care providers. The financing models are institution centred supporting bigger units, hospitals which leads to much higher number of hospital beds in the EU-8 than in the EU-15: the average for 100.000 inhabitants for the former was 780, while for the latter around 600. The distortions in the financing model make the providers of health are service interested in longer and less efficient treatments: the average number of days spent in hospital per patient was 6.7 in the EU-15 and 7.9 in the EU-8 in 2004. In relation to this the centralised institutional structure, the financing incentives increase the level of hospitalisation instead of out-patient treatment, force health care providers to hospitalise the patients leading to more expensive treatments.

Chart 6. The number of hospital beds per 100.000 inhabitants



Source: Eurostat (2005)

Another structural distortion is related to the demand and supply of health care workers and their wages and incomes. The number of physicians and nurses is below in EU-8 than in EU-15 and the only exception is specialised doctors. The number of physicians has been increasing in recent years, but there are structural distortions in the system leading to mismatch in the structure of supplied and demanded doctors.

The education system has generally been slow to respond to changes in the demand for doctors, and the financing incentives didn't support the health care providers in their fast change of supplied services, creating in several professions oversupply while in others over demand for certain types of doctors.

A related concern is the relatively low formal wage level, which in many countries is made sustainable through the presence of gratitude money. This combination of low formal and higher informal pay leads to lower efficiency, blocks the institutional changes by creating counterincentives for senior health care staff, and leads to measurement and monitoring problems.

The final important factor shaping health care developments is the prevailing institutional and financing model. The institutional framework is characterised by incomplete changes in the ownership structure with a predominant role of the public sector limiting in most of the countries the private ownership to certain health care services, by principal-agent problems typical for publicly owned institutions and by overlapping institutional responsibilities among the various health are service providers.

This institutional set-up is amplified by the serious doubts concerning the sustainability of the financing model. With some exception most of the expenditures are financed from the publicly run social security funds covering their expenditures from taxes or social security fees. Even in countries where there is a multi insurance model, the share of the private insurance funds remains limited similar to the limited formal financial contribution of the private sector in co-payment.

Reflecting the pressures stemming from financial sustainability, cost explosion and worsening health service quality and major health status indicators, most of the EU-8 initiated reforms in their health sectors. While the scope, elements and outcome of the reforms has been country specific there were some common elements, which could be identified. Due to the repeated emergence of deficits in health care budgets, one of the reform elements has been the reform of the contribution system, which focused on broadening the taxable base of income, increasing the contribution rates to the health care system. Partly related to funding and partly to inserting pressure on service providers, some countries have been trying to create a multiple insurance model for financing expenditures and selecting the service providers. In countries, where such service providers exist, the policy reforms focus at increasing the competition between the insurance funds and reducing the asymmetries prevailing in their size.

The reform in several countries is directed at privatising certain elements of the health services. This has been especially efficient in case of most of supplementary health care services and in certain areas (dentist, home doctors, part of the first aid service, etc.). Privatisation and the involvement of the private sector ahs however

remained so are limited due to lack of political will ad uncertainties regarding the financing of healthcare services.

Finally, the reforms in most of the EU-8 focus at institutional rationalisation to streamline the health care sector and reduce the overlapping institutional functions. Institutional reforms try to reduce the extent of overlaps in health care sector and service providers, simplify the structure of funding and rules governing health care institutions.

MAJOR CHALLENGES FACING THE HEALTH CARE SECTOR IN THE EU-8

There are several important challenges faced by the health are sectors of EU-8. One of the major challenges is related to the improvement of the basic health care indicators, especially in the area of life and health adjusted life expectancy, death and fertility rates, major chronic diseases and death causes. The major indicators are worse than for the advanced part of the European Union, and while they have not worsened on average in recent years, the gap between the EU-15 and EU-8 didn't close either. The poor health care indicators cause serious losses in terms of lost labour hours, lower labour productivity and by themselves contributed o lowering the employment rates in these countries. The links between health status and economic growth are well documented and improving health status may help in fostering economic growth too.

Another important challenge is to contain the fast increase in costs in order to bridge the gaps existing between rising costs and low, sometimes declining (in relative terms) health care expenditures. Cost containment involves several issues ranging from the institutional rationalisation (merging of and reducing the number of health care providers, etc.), regulatory changes (financial incentives for service providers, drug subsidies, etc.), and technological modernisation. Cost containment and related institutional changes also include the reduction in the mismatch between supplied and demanded health care services, changing the preference for hospitalisation vs. out-patient treatments or in the relative weight of preventive and curative treatments.

The third major challenge is to increase both competition and private sector involvement in the health care sector. There should be more areas where the market is open for private providers and the competition between various heath care units should be strengthened too. This will require significant efforts at privatising certain health care institutions, increasing the share of the private sector in financing wither through higher level of co-payment or through increased amount of funding channelled through private insurance funds.

Finally, these challenges should overlap with the goal of reducing the gaps existing in the access to health care services caused by income, regional and health problem related divides. Besides the differences on the demand side (income, regional disparities) the quality of services, the number of institutions providing them, the level of treatment in the health care sector varies too, creating further societal divides.

THE EVOLUTION OF EHEALTH

The brief and very selective review of the recent developments is based on the draft reports of the „Next steps in developing Information Society Services in the NMS: The cases of eGovernment and eHealth" project run by ICEG European Center.

According to the preliminary results of the project, the scope of eHealth in the EU-8 is more limited than in the EU-15. The number of health related services provided both by service providers, official sources and administrations remains below the average EU-15 levels with the notable exception of Slovenia and Estonia. Besides the number of health related services available online, the level of interaction between the suppliers and users is low; ICTs have been used mainly in curative procedures and less in the interaction between patients and doctors or between various health care professionals, and the ICT hardware and software is utilised by service providers only to a limited extent.

This quite negative state is partly explained by the fact that eHealth developments started with considerable delay due to general problems of ICT diffusion and health care financing. Low level of ICT usage in health care institutions, combined with the generally well documented problems and inefficient usage of available financing resulted in the emergence of institutions, which were not stimulated in adopting eHealth solutions. Therefore neither the suppliers of services nor their owners were advancing the use of ICTs in health care.

The late start with eHealth applications was also reflected in eHealth policies, which have only recently been receiving increased attention from policy makers. The EU-8 has not been able so far to formulate forward-looking and comprehensive eHealth strategies on which their short- to medium-term policies could rely on. The governments in general have devoted more attention to the provision of online public services via eGovernment and also education, learning ad training has got higher priority under eLearning policies and developments. Generally health care sector reforms have also mainly focused at institutional, regulatory and financing issues giving less emphasis to the development of online health care applications.

Another important factor affecting the evolution and relative backwardness of eHealth is related to the limited amount of resources and funding available for eHealth applications, which is a pure reflection of the difficult funding and financial position of health care institutions in the EU-8. On the one hand the scope of public funding is limited and generally used inefficiently by the publicly owned health care units and the private sector's contribution has been either constrained or in the form of gratitude money, which is not a source of investments. The short-term stimuli, the regulatory framework and the uncertain and frequently changing ownership structure of health care institutions disallowed them to provide a stable and broad based funding for eHealth applications.

While the above mentioned factors show a negative aspect of eHealth developments, there have been recently two positive changes. First, in recent years governments seem to devote more emphasis in their policies on eHealth linked to institutional (health sector related ones), legal and regulatory, fiscal and financial, as well as infrastructure and technology measures. EHealth has received somewhat broader attention from policy makers, both in relation to ICT strategies and to health care sector developments.

Second, as the entry to the European Union demanded, there has been an increased alignment of domestic policies and laws with EU guidelines and emerging opportunity to finance eHealth related expenditures from Structural Funds. The former has already been visible around the entry and since then it has given an important legal and regulatory support for eHealth developments. The latter has been less used in the first and not full budget cycle between 2004 and 2006, as most of the ICT related programs were infrastructure or ICT sector driven, and less has been devoted to the development of eServices. In the next period however most countries try to spend more on eServices, within that on eHealth and this may stimulate the evolution of eHealth on the financing side.

OBSTACLES IN FRONT OF EHEALTH

There have been numerous obstacles that prevented most of EU-8 to progress fast(er) with eHealth. Some of these factors are related more to the domain itself (the health care), some to the general problems of information society in the EU-8 and some to policy making and priorities.

Concerning the domain itself the major problem is the slow progress with health care reforms in the EU-8. With the exception of Estonia and Slovakia these countries have not considered as policy priority the reform of the institutional, ownership, financing and incentive structure of their health care sector and therefore as already mentioned in the first chapter, the public sector is the main provider, financing unit and regulator of these services. This certainly creates conflicts, leads to inefficient use of available resources, and provides improper incentives for service providers. These conflicts divert attention from eHealth developments, and reduce the stimuli for users and providers to apply eHealth solutions.

Another inhibiting factor - partly related to the slow progress with health care reforms – of eHealth developments is the low attention devoted to it by policy makers. As shown earlier eHealth policies started to be formulated much later than other eService ones, their influence on either health sector or information society driven policies remained limited, and they lacked both consistency and appropriate funding. If this is to remain in the future, then policy makers will not be able to change the behaviour of suppliers of health care services, and will not be able to put eHealth to top priority of policy makers.

Regarding the obstacles related to information and communication technologies, there are two important ones. One is the low level of ICT skills of doctors, nurses, other health service providers. Besides using for general registration and data handling purposes, the ICT capacities are used to a very little extent and the professionals in the health care sector generally lack the basic skills needed for their more sophisticated application. Either

spending on these issues is small in the budget of institutions, or the general weaknesses of the curricula prevent the suppliers from having employees with higher levels of ICT skills.

Another ICT related problem is linked to the general problems of the level of ICT diffusion in the EU-8 countries. In many countries the low PC penetration rates, the low share of households and citizens having broadband access, the presence of very strong digital divide, the low level of affordability of and access to the services prevent many potential users of eHealth services from this as they are unable to use these services. As long as significant improvements occur here, the users will be limited t those whose income, motivation and interest allowed to get access to online medical services.

Another closely related obstacle is the security issue regarding data privacy and confidentiality. The data and information of the patients is one of the most private and confidential ones and current systems and solutions in the EU-8 are unable to handle this problem and guarantee the appropriate handling of this concern. This reduces both the supply of eHealth services (as some of them are not provided as long as data security problems are present) and demand for them (as users have fears to use the systems regarded as insecure).

Finally, obstacles inhibiting eHealth developments emerge on the demand, users' side as well. One generally observed problem is that while the scope of eHealth services is also limited (especially compared to the possibilities and to the scope of services in case of other eServices as eLearning for example), there is very frequently a lack of awareness by users concerning their availability. This is related to another frequently observed weakness of information society developments in the EU-8, the lack of appropriate marketing of new services. Awareness frequently coincides with accessibility of online information which is sometimes weak, especially for persons with disabilities who are in most of the need to get this information.

THE POTENTIAL CONTRIBUTION OF EHEALTH TO GROWTH AND HEALTH CARE SERVICES

The online provision of health care services may have overall a positive effect on the growth and development of EU-8. These potential benefits are related to the cost saving, better resource allocation and utilisation, higher labour productivity allowed by the spread of eHealth applications. They are especially worth considering in the EU-8, where the quality of health care services is well below the average level in the EU-15, the cost explosion and the worsening demographic and health care indicators accelerating it are serious cause of concern, the efficiency of service provision is limited and there is a huge waste of resources.

First, eHealth developments may reduce the cost explosion in the health care sector and may contain the increasing pressure between spending needs and available sources. The eHealth applications may reduce the curative, administrative and reporting costs, thus could somewhat contain the health care sector driven and dependent factors of cost increase.

Second, eHealth may help in better monitoring of excessive use of certain services, medicines, which may also stimulate their more efficient use and reduce costs. There is a chronic problem in many of the EU-8 that the either user charge free or heavily subsidised supply of certain services results in their excessive usage, waste of resources, abuses with the subsidies provided by the central governments. This is true for drug use and consumption, access to cost free services and has led to fast increase in the demand for these services. The wider adoption of eHealth applications may help in monitoring the excessive, unjustified usage and access to health services.

Third, eHealth applications may help in reducing the death rates linked to special illnesses characteristic for the EU-8. Better monitoring, patient control, doctor-patient links could reduce cardiovascular and cancer related death rates in the EU-8, which are the major cause of the worsening death rates and a serious concern for health care policy makers.

Fourth, eHealth may also contribute to institutional decentralisation: the institutional structure is much centralised (preference to hospitals, bigger health care units, etc.) and the technological availability may accelerate decentralisation, may help to develop more competition and smaller health care providers. The reduced pressure on hospitals and bigger health care service providers may lead to efficiency gains, may speed up the shift towards true regionalism at NUTS-II level and may contribute to a more dispersed and diversified provision of health care services. Many good examples from various European and other countries show the

potential of eHealth to lead to spatially more decentralised health care syste4ms, which are of vital interest for most of the EU-8.

Finally, eHealth may in principle reduce the divide in terms of access: there are increasing differences in health care indicators between the more and less affluent and prospering regions. The wider use of eHealth applications may help in reducing these gaps, pressing in most of the EU-8.

ANNEX I: SHORT CVS OF THE AUTHORS

ANNAFLAVIA BIANCHI

Senior Scientist, IPTS, DG JRC, European Commission

Annaflavia Bianchi, Italian economist, joined the IPTS Institute for Prospective Technological Studies - JRC EC - ICT Unit, in November 2004 as visiting scientist. She previously worked at Telecom Italia in a research centre in Venice, at CURDS, Centre for Urban and Regional Development Studies, University of Newcastle, UK, at ASTER (Agency for Technology Transfer of the Emilia-Romagna Region) and at Nomisma, a private Italian research institute, both in Bologna, Italy. Her main research interests have been: economic development factors; characteristics of the local economies; international integration, technology dynamics, especially focusing on ICT and knowledge. At the IPTS her main research areas are the evolution and scenario building of applications, especially eGovernment and inclusion, and the different paths of development of the Information and Knowledge society and growth. A special focus is devoted on uneven developed areas, on fast growing Asian countries, their path towards the information society and the role of ICT for growth and cohesion in a global Knowledge-based Economy.

MARC BOGDANOWICZ

Senior Scientific Officer, IPTS, DG JRC, European Commission

Marc Bogdanowicz has a Post Graduate Diploma in Training and Group Dynamics and in Organisational Science and has a BA in Education Sciences. Before joining IPTS in April 2000, he has been a senior Researcher in two successive university departments with continuous participation in European activities, networks and observatories. 1993-2000:Senior Researcher at the Technology Assessment Unit at the "Laboratoire d'Etudes sur les Nouvelles Technologies de l'Information et de la Communication" (LENTIC) - Faculté d Economie, de Gestion et de Sciences Sociales - Université de Liège,Belgium. 1984 - 1993: Director of the consultancy and HR training organisation on behalf of the Dpt. of Social Psychology. Centre de Dynamique des Groupes et d'Analyse Institutionnelle (CDGAI)Social Psychology Department - Université de Liège - Belgium.

JOHN BRADLEY

Research Professor at the Economic and Social Research Institute in Dublin, Ireland

Dr John Bradley is a Research Professor at the ESRI. During his early career in the Irish Central Bank and the Economic and Social Research Institute he had substantial experience in research and evaluation in the areas of domestic (Irish) and EU policy analysis and specialised in the development of formal economic models and their application to a wide range of policy areas. He has advised the Irish government on medium-term economic and industrial strategy, and works as a consultant for the European Commission on a regular basis. He has published widely in these areas.

His current research and consultancy activities focus mainly on the transition economies of Central and Eastern Europe (CEE). He has made a special study of the impact of pre-accession and post-accession Structural Funds on the CEE economies and has acted as a consultant to government ministries in Latvia, Estonia, Poland, East Germany and the Western Balkans.

In addition to working at the national level, he has also worked on regional development issues within Ireland, Northern Ireland, East Germany, the Italian Mezzogiorno and Kosovo. In the case of Northern Ireland, he has examined the strategic importance of North-South policy and business links on the island economy of Ireland and has advised the Northern Ireland Assembly on industrial strategy. He directed an investigation into the impacts of Economic and Monetary Union (EMU) on the regions of the United Kingdom, with special reference to Northern Ireland.

ANGELA M. DUNBAR, M.B.A.

Programme Manager of e-Health, Division of Country Health Systems, WHO Regional Office for Europe, Spain

Angela M. Dunbar leads the e-Health programme for the WHO Regional Office of Europe where she is responsible for supporting Health System transformation by leveraging appropriate ICT infrastructure and eHealth tools and services in 53 Member States. She has a comprehensive understanding of management, public health and IT business environments based on 10 years of experience as an international manager in health IT.

Ms Dunbar has a broad experience of leading cross-cultural and multi-disciplinary teams across Western, Central and Eastern Europe and North America – Canada and US with proven ability to enact visions through strategic planning and building effective international alliances.

Ms. Dunbar is a Canadian with a B.Scs in Health Information Science and a Master in Business Administration (MBA) and has a particular interest in cross-domain knowledge management traversing IT, Public Health, Management, and Development sectors.

PAOLO GARONNA

Deputy Executive Secretary, United Nations Economic Commission for Europe (UNECE)

Paolo Garonna is currently the Officer-in-Charge Executive Secretary of the United Nations Economic Commission for Europe, in Geneva. He is also full professor of Applied Economics on leave from the Faculty of Statistics of the University of Padua in Italy. In the 1990's, Mr. Garonna was Director General of the National Statistical Institute of Italy (ISTAT). He also worked at the OECD in Paris as Deputy Director for Education Employment Labour and Social Affairs. He joined the United Nations in 1999 as Director of the Statistical Division of the United Nations ECE. In August 2001 he was appointed Deputy Executive Secretary of the UNECE, and then in November 2001 became Officer-in-Charge Executive Secretary.

He had his first degree at the University of Rome (Law degree), and undertook graduate studies in economics at the University of Denver (USA), as Fulbright scholar, and at the University of Cambridge (UK). He was an economic advisor to the Italian Government (Prime Minister Office, Labour Minister, Finance Minister and Treasury), and internationally (e.g. for the 11th French Plan). He acted as high-level consultant for international organisations, in Europe and world-wide. He is in the Scientific Committee of Confindustria (the Italian employers' main organisation) and advised the social partners in Italy and at the European level. He was visiting professor in several Universities in Europe (e.g. the University of Paris).

Author of many books and articles on economic policy, labour economics and official statistics, Mr Garonna is member or Fellow of several Economic and Statistical Associations in Europe, and at the international level. He founded and chaired the European Centre for Statistical Co-operation and Development (Cesd-Roma), the Italian Association of Labour Economists and the "Rivista di Statistica Ufficiale", a Journal of Official Statistics in Italy.

PÁL GÁSPÁR

Director, ICEG European Center, Hungary

Pál Gáspár holds a Ph.D. and currently works as the Director of the International Center for Economic Growth (ICEG) European Center. Besides that he is an Associate Professor at the Corvinus University of Budapest. His main areas of research are macroeconomics and public economics(exchange rate, monetary and fiscal issues), economic growth, and ICTs. His main areas of lecturing are macroeconomics and growth economics. Besides his native Hungarian he is fluent in English, Russian and German.

DR. ITZHAK GOLDBERG

Lead Specialist, Europe and Central Asia, World Bank

Dr. Itzhak Goldberg is Lead Specialist at the Private and Financial Sectors Development Unit at the World Bank. He holds a Ph.D. in economics from the University of Chicago, having studied under the guidance of three Nobel Laureates in Economics, and was a fellow at the Hoover Institution in Stanford. After an 11-year career in the corporate sector in Israel, he joined the World Bank to work on the transition economies in 1990 and has since worked on privatization, investment climate and innovation in most Central European, Balkan and Former Soviet Union countries.

DANIELLA GRESSANI

Country Director, Central Europe and the Baltic States, The World Bank, Poland

Daniela Gressani studied economics and political science at the London School of Economics and Political Science and at Universita degli Studi di Roma as well. She worked as Economist at Italian Central Bank for four years. Then she has joined The World Bank in 1988. Her main positions and offices were the Interim Director at Office of the President, Director at Latin America & Caribbean Region and at Strategy and Operations. She has been the Country Director for Central Europe and the Baltic States since 2005.

THOMAS LAURSEN

Lead Economist for Central Europe and the Baltic States, World Bank

Thomas Laursen is Lead Economist at the World Bank in Warsaw at Central Europe and Baltics region, Europe and Central Asia Department. He has graduated from Aarhus University of Denmark, he has a Master and a Ph.D. in Economics. Previously he worked at International Monetary Fund as a Senior Economist. He has participated in analytical works on economics of the EU and fiscal studies, and took part at different international conferences. His main fields of research are the new members of EU, mostly Poland, Czech Republic, Slovakia and Slovenia. His native language is Danish, but he speaks English, Spanish, French, German and Polish too.

DR. PETER LOVELOCK

Deputy Director of Telecommunications Research Project, Centre of Asian Studies at the University of Hong Kong

Peter is the Deputy Director of the Telecommunications Research Project at the University of Hong Kong (www.trp.hku.hk) and a partner in the quarterly Telecoms InfoTechnology Forums (TIF). He has a long background in telecommunications and Internet research, analysis and consulting, having worked on regulatory assessment, implementation and execution projects, as well as due diligence and market entry strategic guidance projects in China and Asia over the last 17 years.

Between 1999 and 2004, Peter built and ran China's leading IT research consultancy, MFC Insight. Headquartered in Beijing, Insight provided strategic guidance to clients such as Ericsson, Vodafone, China Mobile, Agilent, Nokia, Google, Huawei, PWC, White & Case, the Singapore Government, as well as to China's State Council.

During 1997-98, Dr Lovelock worked as a policy analyst at the ITU in Geneva, where he was a contributing author on the World Telecommunications Development Report, amongst a number of other publications, as well as many of the Secretary General's speeches from the period. Subsequently, Peter was a leading contributor to the ITU's IP Telephony initiatives, and has run training courses for a number of Asian regulatory bodies as part of the ITU's Regional Center of Excellence (CoE).

Since disbanding Insight, Peter has provided consulting advice to RAND, Novell, Accenture and others on developments in China, provided regulatory and broadband advice to the governments of India, Japan, and Singapore, worked on restructuring projects for Alcatel in Paris, and authored reports on fixed-mobile convergence, alternate operator strategies for mobile, and Huawei's 3G expansion.

Most recently Peter has established a new regional consulting operation based in Singapore, and working with the emerging IT companies in China, India and Vietnam.

PROFESSOR MICHAL MEJSTŘÍK

Chairman, Institute of Economic Studies, Charles University, Czech Republic

Professor Mejstřík had completed his MA diploma in econometrics at Prague School of Economics and received his postgraduate title for academic research of project assessment and welfare economics. He had pursued advanced studies at the London School of Economics (1990-91). Between June 1991 and June 1993 he was the cofounder and later the director of Center for Economic Research and Graduate Education (CERGE), Charles University, when it was awarded by EU ACE Center of Excellence as a CEE regional postgraduate center. Since 1997 he has been a professor of economics and finance at Charles University and since 1993 he has developed -as a Chairman- the Institute of Economic Studies at Charles University, the prestigious economic think tank in Czech Republic.

NIELS ROSSING M.D.

Health Telematics Consultant, Hon.Fel.EFMI

Dr. Rossing holds a degree in Medicine from 1961 and has had a full hospital career in Clinical Physiology and Nuclear Medicine which he stopped in 1988. He was a consultant to national health authorities in DK from 1971 until 1988. He then joined the EU commission to become head of the R&D programme "Health Telematics" until 1994. He was CIO of the Copenhagen Hospital Corporation till 2002. He has been a member of a number of national strategic groups in Denmark. He works for the Danish Health Telematics Centre and for WHO-EURO as a consultant.

NICK VON TUNZELMANN

Director of Research, Freeman Institute of Innovation, SPRU, United Kingdom

Nick von Tunzelmann earned an MA degree at University of Canterbury, New Zealand and a PhD degree at Oxford University. He worked as a Lecturer in Economics at Cambridge University and Fellow of St John's College, Cambridge. Later he became Professor of the Economics of Science & Technology, University of Sussex. Mr Tunzelmann holds the position of Director of Research at SPRU. Nick von Tunzelmann's main current research interests include: the evolution of technological capabilities, complexity and management, governance of micro and macro economic systems, long-term causes of economic growth. He has written two major books on the relationship between technology and the economy, and has numerous publications in refereed journals, chapters in books, and published reports. He has published in relation to many areas of technology, in the EU-15 and new member states of the EU, as well as other regions. He is at present completing a comparative study of new growth dynamics in emerging Asian countries for IPTS/ESTO.

ANNEX II: PROGRAMME OF THE WORKSHOP

I. R&D AND NEW INNOVATION SYSTEMS IN A GLOBAL ECONOMY

Chair: Mr. Bernard Clements, Advisor, IPTS, DG JRC, European Commission
Speakers:

- **Mr. Mauri Pekkarinen,** Minister, Ministry of Trade and Industry, Finland
- **Prof. Morris Teubal,** Professor of Economics, Hebrew University of Jerusalem, Israel
- **Prof. Itzhak Goldberg,** Lead Specialist, Europe and Central Asia, World Bank
- **Dr. Peter Lovelock,** Deputy Director of Telecommunications Research Project, Centre of Asian Studies at the University of Hong Kong
- **Mr. Kazimierz Marcinkiewicz,** Former Prime Minister and Currently Mayor of Warsaw, Poland

II. ABSORBING EU FUNDS IN THE NEW MEMBER STATES--A CHALLENGE FOR ECONOMIC POLICY

Chair: Dr. Christoph B. Rosenberg, Senior Regional Representative, International Monetary Fund Regional Office for Central Europe and Baltics
Speakers:

- **Ms. Grażyna Gęsicka,** Minister, Ministry of Regional Development, Poland
- **Mr. Imants Tiesnieks,** Counsellor in the Permanent Representation of Latvia to EU, Ministry of Finance, Latvia
- **Prof. John Bradley,** Research Professor at the Economic and Social Research Institute in Dublin, Ireland
- **Mr. Reiner Martin,** Head of Section EU Countries, European Central Bank
- **Mr. Robert Sierhej,** Senior Economist, International Monetary Fund Regional Office for Central Europe and Baltics, Poland
- **Dr. Andrea Mairate,** Head of Evaluation and Additionality Unit, DG REGIO, European Commission

III. ASIAN GROWTH PATTERNS: THREATS OR OPPORTUNITIES FOR EUROPEAN ICT?

Chair: Mr. Bernard Clements, Advisor, IPTS, DG JRC, European Commission
Speakers:

- **Ms. Annaflavia Bianchi,** Senior Scientist, IPTS, DG JRC, European Commission
- **Dr. Peter Lovelock,** Deputy Director of Telecommunications Research Project, Centre of Asian Studies at the University of Hong Kong
- **Prof. Nick Von Tunzelmann,** Director of Research, Freeman Institute of Innovation, SPRU, United Kingdom

IV. THE ROLE OF PUBLIC SECTOR'S SUPPORT FOR COMMERCIAL INNOVATION

Chair: Ms. Daniela Gressani, Country Director, Central Europe and the Baltic States, The World Bank, Poland
Speakers:

- **Prof. Morris Teubal**, Professor of Economics, Hebrew University of Jerusalem, Israel
- **Dr. Marcin Piatkowski**, Advisor to Executive Director, International Monetary Fund, Washington DC, USA
- **Mr. Bent Sternfeld**, Managing Director, Inno Group, Germany

Discussant: Prof. Itzhak Goldberg, Lead Specialist, Europe and Central Asia, World Bank

V. Growth in Old and New Europe: What Needs to be Done?

Chair: Dr. Marcin Piatkowski, Advisor to Executive Director, International Monetary Fund, Washington DC, USA
Speakers:

- **Dr. Christoph B. Rosenberg,** Senior Regional Representative, International Monetary Fund Regional Office for Central Europe and Baltics
- **Dr. Thomas Laursen,** Lead Economist for Central Europe and the Baltic States, World Bank
- **Prof. Jean Pisani-Ferry,** Director, Bruegel Research, Belgium
- **Prof. Paolo Garonna,** Deputy Executive Secretary, United Nations Economic Commission for Europe

VI. Structural Funds and Building of the Knowledge Society in Eastern Europe

Chair: Dr. Pál Gáspár, Director, ICEG European Center, Hungary
Speakers:

- **Mr. János Matolcsy,** Director, EU and Government Services Department of KPMG Advisory, Hungary
- **Dr. Andrea Mairate,** Head of Evaluation and Additionality Unit, DG REGIO, European Commission
- **Mr. Witold Sartorius,** Director General, Polish Competence Centre for eGovernment and eEducation (PCC), Poland

VII. eGovernment and Public Sector Reform in Eastern Europe

Chair: Ms. Renata A. Jaksa, Project Leader, ICEG European Center, Hungary
Speakers:

- **Mr. Marc Bogdanowicz,** Senior Scientific Officer, IPTS, DG JRC, European Commission
- **Dr. Pál Gáspár,** Director, ICEG European Center, Hungary

VIII. eHealth and Public Sector Reform in Eastern Europe

Chair: Mr. Bernard Clements, Advisor, IPTS, DG JRC, European Commission
Speakers:

- **Ms. Angela Dunbar,** Programme Manager of e-Health, Division of Country Health Systems, WHO Regional Office for Europe, Spain
- **Dr. Pál Gáspár,** Director, ICEG European Center, Hungary
- **Dr Ain Aaviksoo,** Chairman of the Executive Board, Head of Health Policy Programme, PRAXIS Centre for Policy Studies, Estonia

IX. European Social Models and Growth: Where are the Eastern European Countries Heading for?

Chair: Dr. Pál Gáspár , Director, ICEG European Center, Hungary
Speakers:

- **Prof. Jean Pisani-Ferry**, Director, Bruegel Research, Belgium
- **Prof. Michal Mejstrik,** Institute of Economic Studies, Charles University, Czech Republic
- **Ms. Daniela Gressani,** Country Director, Central Europe and the Baltic States, The World Bank, Poland

X. Asia versus Eastern Europe: FDI, R&D Investments and Relocation of the Industry

Chair: Dr. Pál Gáspár, Director, ICEG European Center, Hungary
Speakers:

- **Mr. Abel Garamhegyi,** State Secretary, Ministry of Economy and Transport, Hungary
- **Mr. Michal Jaworski,** Director of Corporate Policy, Microsoft, Poland

Prof. John Bradley, Research Professor at the Economic and Social Research Institute in Dublin, Ireland