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**BROADBAND DEVELOPMENTS IN THE NEW MEMBER STATES:  
EXPERIENCES AND PROBLEMS**

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## INTRODUCTION

Broadband has become one of the central technical instruments that contribute the most to the spread of information society in both advanced and developing economies. In recent years huge investments have been carried out by both the public and private sectors to increase the availability of broadband services and penetration rates. According to recent figures the number of broadband lines within the EU-25 increased between January 2003 and January 2005 from 12,8 million to 40,1 million, while in the EU-15 from 12,8 million to 37,7 million.

Broadband development has also become one of the central policy priorities in the European Union reflected among others in the eEurope, eEurope 2005 as well as on the country level reflected in various national broadband programs.

The New Member States<sup>1</sup> are particularly interesting area for the analysis of broadband development. On one hand these countries perform worse in development and competitiveness indicators than the EU-15 countries, their information society development level – with non-negligible inter-country differences - is on average well below the EU-15 level, and the gaps in broadband access are significant. On the other hand these economies have higher growth and productivity rates, more flexible economic structures than the EU-15 countries and are expected to catch up fast to the EU-15. This raises the chance for leapfrogging in several areas of IST development, among others in broadband access and use. These special features allow one to assess the similarities and differences of broadband development in less developed countries as compared with the advanced ones and to draw conclusions concerning the possible policies.

The paper is structured as follows. The first chapter gives a brief overview of the major economic effects of the spread of broadband connections. The second chapter presents the data background including the comparative evaluation of broadband penetration rates, spread of broadband in the New Member States compared with EU-15 and levels of other middle income countries. Various indicators show the relative level of broadband development in the NMS countries, pointing also to the factors that have resulted in lower access and penetration rates.

The third part of the paper describes the main characteristics of the policies with broadband development and the progress achieved in broadband use.

The fourth part of the study highlights the special features of broadband development in the New Member States compared with advanced countries. It analyses the ways economic conditions (income level, product market structures, market regulation, market distortions, etc.) influence broadband development policies and outcomes. It also tries to point to the special features of technological development, supply side measures that are required by the differences in economic, institutional and regulatory set up compared with more advanced countries. This part of the paper shows those special features of broadband development and policies that make these developed countries different from advanced economies.

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<sup>1</sup> NMS in this study include the eight Central European and Baltic countries: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.

Finally, the paper tries to answer two questions. First, are there any preconditions that could accelerate broadband development in the new Member States? Second, what are the lessons in broadband development from the experience of NMS for broadband policies of other middle income countries?

## I. THE ECONOMIC EFFECTS OF RISING BROADBAND PENETRATION

In order to assess the importance of broadband developments it is necessary to give a brief evaluation of the macroeconomic effects of the spread of ICT sector. International experience and theoretical studies have shown that the ICT sector exerts positive effects on economic growth both on the supply (ICT production) and demand sides (application of ICT tools and services): the countries that grow faster have either significant ICT sectors and/or high penetration rates.

The effect of the ICT sector on growth appears to be the greatest in productivity, and this comes through three channels. First, it can enhance total factor productivity (TFP) through innovation, knowledge and the related spill-over; second, through capital deepening linked to the spread of the ICT sector, third through the technical progress evolving in the ICT sector, especially considering the all purpose use of ICT technologies.

In addition to influencing the rate of productivity and economic growth, the ICT sector contributes to the growth of the investment rate in both private and public sectors. Demand for information technologies enhances demand for labour and capital; however, since ICT replaces other inputs, the application of new technologies gives rise to frictions in the labour market.

At the same time the impact of information technologies on the spatial developments is not unambiguously clear. On the one hand, lower transaction costs and flexible production can strengthen decentralisation of economic activity; on the other hand, fast and precise information about the changes in consumer preferences, the growth of the weight of intermediate goods and the spread of outsourcing also favour production close to outlet markets.

As a part of the growth in the economic weight of the ICT sector, in the last 3-4 years the spread of broadband access has risen in its importance, and high priority has been given to these developments in national policies, and in the recommendations of international organisations (primarily of the OECD, the World Bank and the European Union). In view of the spread and the prevailing positive growth and productivity impacts of the ICT sector and infrastructure, currently the spread of broadband access is one of the decisive factors.

International experience shows that broadband developments can have perceptible impacts in the following areas:

- a) investment activity and through that changes in the investment rate
- b) productivity growth
- c) acceleration of economic growth
- d) growth of R+D costs and activities
- e) changes in the retail margin
- f) effects on the labour market
- g) changes in public revenue and expenditure
- h) transformation of the structure of the economy

a) The spread of broadband access can raise the investment rate, primarily in the private sector, affecting hardware and software developments. Investments are connected with establishing and

expanding broadband access, contents available through broadband and ensuring connection between systems (companies, public institutions). The spread of broadband can also result in additional investments in the government sector through the creation of eGovernment, eAdministration, and the reorganisation of the back offices related to them.

b) One of the important macroeconomic impacts broadband developments are expected to produce is the growth of productivity and efficiency through higher productivity both in the corporate and to a lower extent public sectors. Productivity growth will be achieved mainly indirectly, through the reduction of transaction costs, the growth of new services and products, more efficient organisation forms and cost effective operation. In this respect, the impact of broadband developments on productivity is similar to the ICT sector's efficiency and productivity enhancing effect.

c) Broadband access can enhance the volume of R+D expenditures in three major ways. First, the spread of broadband access of public institutions will increase their R+D expenditures; second, the fulfilment of the public development goals (e.g., issuance of identification cards; uniform data management and maintenance of registers in public institutions) can increase R+D expenses of the private sector too. Furthermore, content development realised through broadband access can result in the extension of research and development related to applications. The growing volume of research and development expenditures is important in terms of economic growth, as it correlates positively with it; therefore, broadband developments influence growth and productivity also through this channel.

d) As a result of investments, human capital, R+D expenses, and the faster productivity growth arising from them, broadband developments favourably affect economic growth, although the full-blown impact is expected to develop in the medium term. The impact of spread of broadband access on growth may be equal to growth effects of the spread of earlier ICT applications.

e) Broadband developments will replace a part of traditional retail trade, reduce margin, primarily in B2C type commerce. Its effect exerted on retail trade is, however, mixed because several firms and trading companies are able to adjust themselves to changing market conditions and so reduce the turnover decreasing effect of eCommerce. In case of firms, eCommerce can be an additional channel of distribution, which supplements traditional ones, and this can reduce its negative effect on retail trade.

f) The effect of broadband developments on the level of employment is fairly complex. In the private sector, it has a positive effect through the rise in demand for new products and services: employment demand exceeds the level of redundancies arising from in-house rationalisation. Contrary to that, in state administration the net direct impact is rather negative, because after rationalisation and in-house reorganisation significant employment reductions is likely, which exceeds the number of jobs created by the spread of broadband access through eGovernment and eAdministration. Besides its effect of employment level the spread of broadband access has a composition effect: redundancies will be present among less skilled employees, while increase in demand among higher qualified employees. As a result of all this, broadband developments will favourably influence the structure of employment, the structure of training, the mobility of labour and these can neutralise negative employment effects.

g) Broadband developments have diverse impact on public sector expenses. It is not possible to determine the net balance effect in advance. This is a country-specific process that depends on the structure of the state budget. On the other hand, expenditure increasing effects will presumably appear earlier, and in the short term the effect of developments produced on the net fiscal balance will be negative. The reason for this is that the expenditure reduction and rationalisation related to the spread of eGovernment is time consuming, while developments and related expenses appear in the short term too.

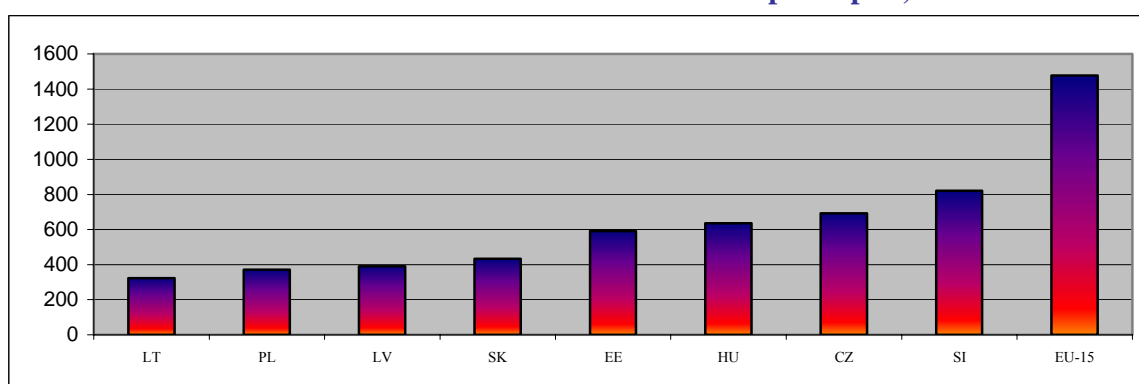
h) After the spread of broadband access, the competition between service providers and users will increase efficiency and productivity. This is especially true in economies where markets are fairly regulated and where deregulation can significantly enhance efficiency, since the spread of broadband access speeds up the appearance of competitive supply, and makes it possible for the demand to become diverse and can strengthen the evolution of a competitive market structure.

The outlined macroeconomic impacts of broadband developments are realised partly by strengthening each other, partly side by side. The force of macroeconomic effects and the term of their realisation are not identical, and the importance of each effect can be differentiated from each other. The most important macroeconomic impact of broadband developments is the growth of investments and total factor productivity. The extension of investments is realised directly through broadband related investments, indirectly through investments generated by the competition, the growth of efficiency induced by it; the improvement of the total factor productivity is implemented primarily directly through organisation rationalisation and developments. Costs related to the spread of broadband access arise in the short term partly from additional investment requirements, partly from reduction of employment.

## II. THE LEVEL OF BROADBAND DEVELOPMENT IN THE NEW MEMBER STATES

Reflecting partly the differences in the level of economic development, the New Member States (NMS) of the European Union (EU) are generally lagging behind the EU-15 in terms of their ICT indicators, especially ones that are related to the application of ICT. A summary indicator reflecting the differences between the NMS and the EU-15 is the gap in the volume of the ICT market: its per capita value in the NMS was in 2004 on average around one third of the EU-15 with only some countries approaching at most half of the latter. While the indicator may slightly be biased due to undervalued exchange rates, partial price level convergence of the NMS, the gap in this widest indicator reflects the differences in eGovernment and eBusiness between the NMS and EU-15.

**Chart 1. The size of the ICT market in euro per capita, 2004**

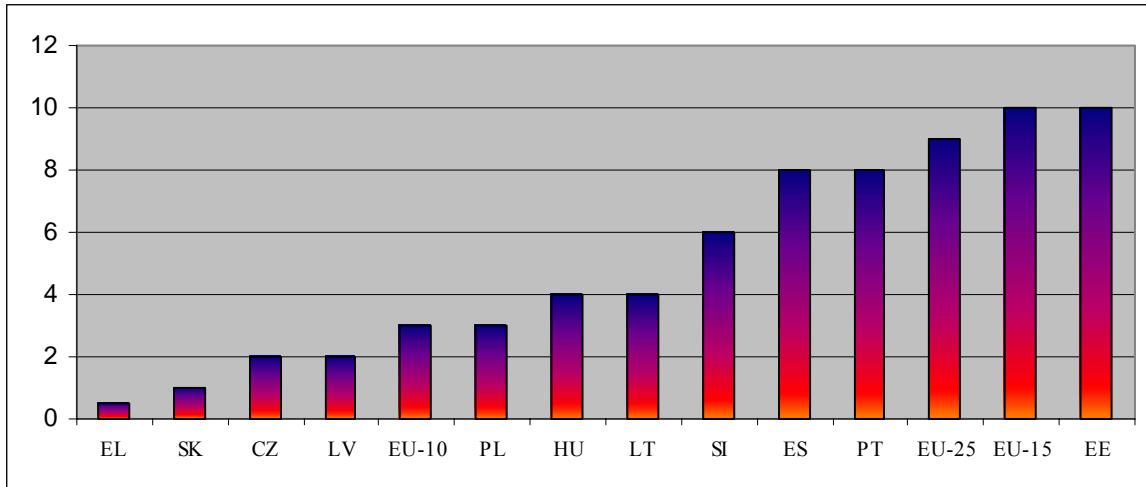


*Source: Eurostat (2005)*

The generally lower level of ICT development is also reflected in the use of broadband and mainly in the broadband penetration rates of the NMS. Compared with the advanced countries broadband penetration rates in NMS countries are much lower: the average penetration for the NMS-10 is one third of the EU-15 level. Similarly compared with less developed EU-15 countries, broadband penetration remains below the cohesion countries except Greece. In most of the NMS countries with the exception of Slovenia and Estonia, the level of broadband penetration remained below 4 percent in early 2005.



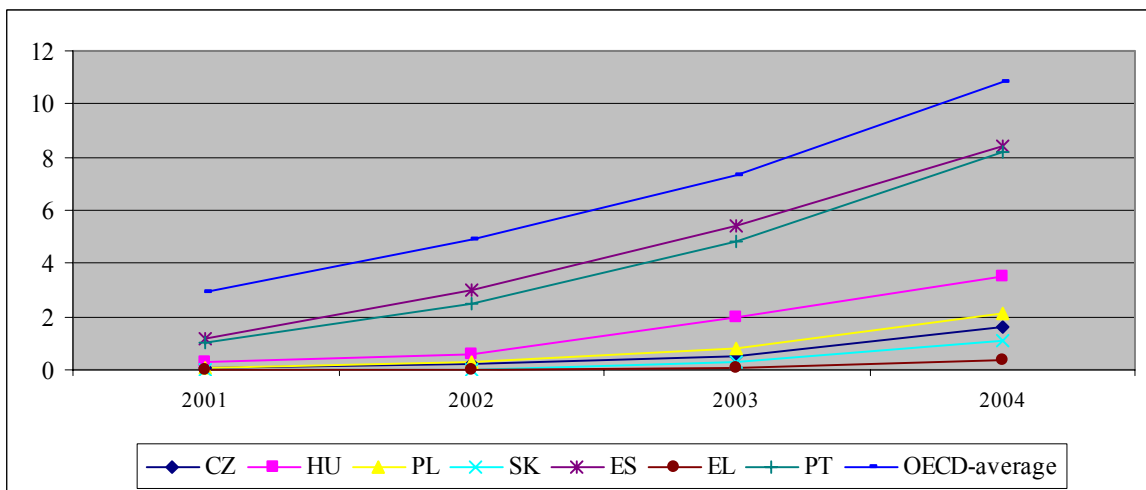
**Chart 2. Broadband penetration in the NMS countries in January 2005 (%)**



Source: Eurostat (2005)

One reason of the differences between the NMS and EU-15 countries is the timing of the spread of broadband access. While in the EU-15 countries broadband technology started to be deployed more actively already from the beginning of the decade, broadband gained popularity in NMS only from 2003, when one can see much faster rise of the still low penetration rates. In the last two years governments turned their attention to broadband developments, devoted more sources to increase access and this was reflected in the rise of penetration rates.

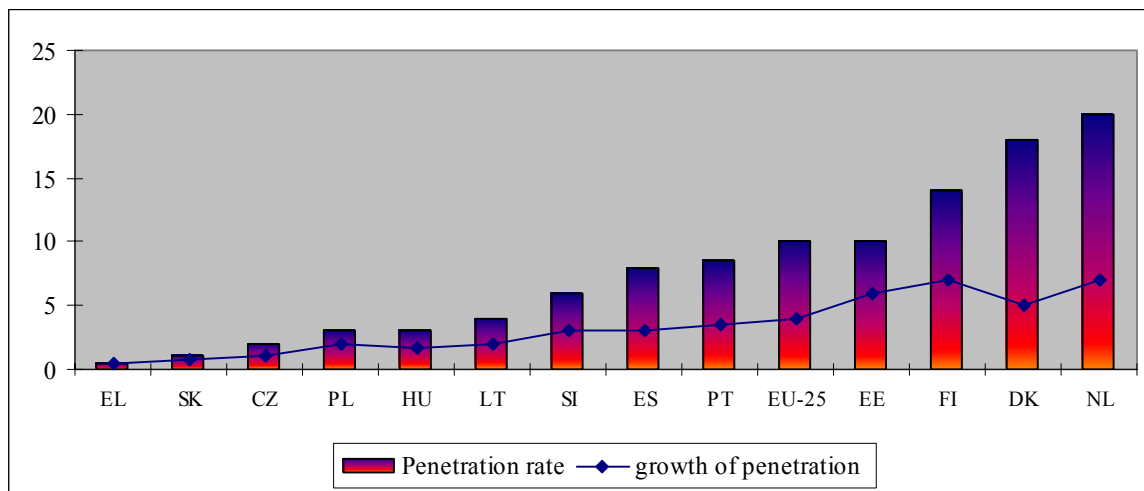
**Chart 3. The changes in broadband penetration rates in certain selected NMS and OECD countries (%)**



Source: OECD (2005)

Even with faster than earlier rise in penetration, the rate of growth remained below the EU-15 countries and the different speed of the growth of broadband penetration reveals also the broadening gap between the NMS and the EU-15 in broadband access. The chart below reveals that not only the penetration rates were much lower in NMS than in the EU-15 countries, but the speed of their growth was also much higher in the older member states. With the exception of Estonia where the growth of penetration in 2004 reached 5 percentage points, the growth rates in NMS were lower than in the EU-25 and were substantially below the growth rates of cohesion countries and especially Nordic ones. Unless major changes do not happen the NMS countries will experience increasing gaps vis-à-vis the EU-15 in their broadband penetration rates.

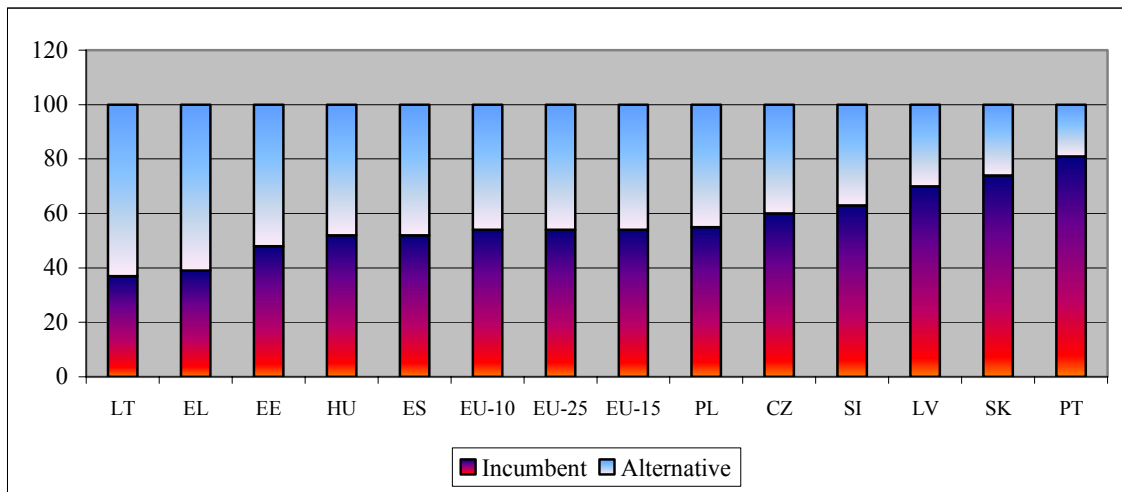
**Chart 4. The links between the penetration rate and growth of penetration (%)**



Source: Eurostat (2005)

Contrary to the expectations, the share of the incumbent and alternative operators in the provision of broadband services does not differ markedly in the NMS from their pattern in the EU-15. The major reason for that is the presence of relatively well liberalized markets in some of the NMS, particularly the Baltic states and Hungary. In other NMS however the role of the incumbent operator is higher than in the EU-15 and this raises their share in average in the NMS to the level of the EU-15.

**Chart 5. The share of incumbent and alternative operators in the provision of broadband access (%)**



Source: Eurostat (2005)

While the overall figures reveal a sizeable gap between the NMS and EU-15 in terms of broadband penetration, the gaps between the two country groups are not similar in all broadband or broadband related indicators. According to a recent study on the Hungarian broadband situation revealed that while the gap is of critical extent in household sector's broadband access and use of Internet in the workplace, it is less significant in the household sectors' Internet use and supply of the corporate sector with broadband access, while around the European levels in terms of the Internet and broadband access in primary and secondary schools. As both the growth of Internet access and broadband use has started with significant delays compared to the advanced countries, the share of broadband access in total is much higher in Hungary than in the advanced countries, as the share of broadband in new access is above the EU-15 level. Similarly, there are slight differences in terms of content, as while the level of B2B and B2C services is significantly below the EU-15 levels, the eGovernment services are more widespread.

### III. BROADBAND POLICIES IN THE NEW MEMBER STATES

The evaluation of broadband policies is rather difficult due to several reasons. One is the differences among the policy types applied in the eight NMS, second is the lack of available monitoring and evaluation of the policies carried out, and third, the short timeframe – the launch of the broadband policies started only in 2003, and in several NMS even later.

Broadband policies can be divided into two main groups. In the limited sense, a broadband policy mainly focuses on stimulating broadband coverage and broadband access, ensuring – mostly through regulatory means – that access is available for the potential users, both in technical and in financial terms. On the other hand, the “broad” version of broadband policies realizes the impact of attractive content, and expects these to pull the potential users towards the use of broadband compared to slower applications. Entertainment content is already known as a great impulse to broadband use, although this is rarely the direct subject of state policies themselves. On the contrary, eGovernment, eHealth, eBusiness and eLearning solutions are often included in broadband policies, but even “broader” versions can be found, where basically all important “classical” Information Society aims and actions are included under - and surrendered to - the broadband policy, acknowledging that broadband itself is not an aim but a means to achieve the Information Society goals in high quality.

An example for a very “broad” broadband policy could be the Hungarian case, where not only access, but content (mainly eGovernment and eBusiness), motivation, ICT literacy and security are also aimed at.

Those countries that have limited broadband strategies usually cover other topics in a main Information Society (IS) strategy. But the underlying advantage behind those “broad” broadband policies is that since broadband access is the *engine* of Information Society, other parts of that vehicle must match the engine that runs them. This approach allows for a more coherent planning and a more systematic and efficient use of funds.

Regarding the funding, the eight NMS, in order to achieve the broadband goals, rely heavily on using Community resources, most often the Structural Funds, but also other European Union projects such as eTEN, eContent, etc. Unfortunately national resources are very limited, due to several factors, including the heavy burden of co-financing for the incoming Structural Funds.

An important feature of the EU-15 approach to broadband, and in general, IS development, is the presence of local and regional IS and broadband-related initiatives, while in many NMS regional planning, capacity and activity is still much below those of the EU-15'. This might have a strong effect on broadband development, taking into account the capability of answering local problems by local policy makers in a local initiative. Regulatory actions are national issues, but broadband does have a local/regional aspect when it comes to either local broadband content development (eBusiness, eGovernment, etc), or facing the challenge of lack of broadband access in remote or less developed areas.

As pointed out in the beginning of the article, there are significant differences in broadband access among the eight New Member States. Estonia and Slovenia are standing out, while the other six are

showing rather similar performance. What can be the main underlying reasons behind the success of those two? What is the role of policy in these performances?

An important feature of both countries is that they started early (compared to other NMS-8 countries) the building of Information Society, and from the very beginning they have focused strongly on issues related to eGovernment. While in many countries, including Hungary, the Czech Republic, Slovakia and Poland, the implementation of IS strategies were either not well elaborated or just simply not carried out according to plans, Estonia and Slovenia have launched discreet and strongly focused projects, many of them related to the communication between the state and the citizens. The overall IS-development advantage the two countries have shown its effect on broadband penetration as well.

## IV. THE SPECIAL FRAMEWORK OF BROADBAND DEVELOPMENT IN THE NEW MEMBER STATES

The differences in broadband access between the NMS and the EU-15 are due to various factors, which have resulted in delayed and slow expansion of broadband in the former country group. As the NMS have relatively early liberalized their markets, have become economies open to international trade, technology constraints do not play a role in explaining the differences. There are five major factors that explain the speed of spread of broadband access in the NMS and the EU-15 countries:

- Income gaps and related affordability issue
- Presence of digital divide
- Content problems interacting with access issues,
- Policy priorities in the NMS
- Market structure and regulation of service and service providers

### *I. AFFORDABILITY AND INCOME DIFFERENTIALS*

In terms of affordability the major hindering factor is the relationship between disposable incomes and access prices. While income levels in the NMS countries are around half or even less of the EU-15, access prices are around or above the EU-15 levels. Measured by PPP the income levels of the NMS varied between 43,5% (Latvia) and 78,5% (Slovenia) of the enlarged EU-25 and were somewhat lower when comparing them with the EU-15. Measured by the underlying exchange rate the gaps were even bigger due to the deviation between PPP and market exchange rates. While growth rates of GDP and incomes are above in the NMS than in the EU-15, their current level reveals a huge gap between the two country groups.

On the other hand access prices are around or above the comparable price levels of EU-15. The high prices of phone calls, Internet access have been among the main reasons of lower Internet penetration, weaker information society indicators of the NMS countries according to a recent report surveying the state of IST in NMS and candidate countries (ICEG EC (2005)). Similar is true for broadband access, where two factors hindering significantly the affordability: the high price of the computer hardware and software in comparable price units as well as the expensive broadband access prices. Even considering the recent declines in prices as well as several indirect support (tax concessions, credits on favourable terms, etc.) the price gap remains sizeable and even bigger when the prices are compared with the existing income gaps.

The affordability issue comes into the picture once again when looking at the regional differences. The regional differences within the NMS countries are higher than in the EU-15 countries and the NMS have on average more remote, underdeveloped areas with depressed economic conditions and low purchasing power. The presence of deep regional differences, remote and underdeveloped areas is strongly linked to recent restructuring and structural changes in these countries, presence of declining sectors, low social mobility and relatively inflexible product markets, which were unable to prevent the emergence and consolidation of regional differences. The regional gaps strengthen further the affordability problem as they produce territories, where huge leapfrogs are needed to produce a sizeable increase in broadband demand.

## **2. DIGITAL DIVIDE**

The second explanatory factor is partly linked to the affordability issue but partly reflects the presence of other factors. The Digital Divide Index is a compound index of four indicators, measuring access amongst four “risk” groups in relation to the population average. The four risk groups measure the impact of gender, age, and income and education level on Digital Divide and gives a fairly good approximation of the level of digital divide if one accepts the premise that the index is built exclusively upon demand side aspects, neglecting the supply side ones.

In the EU-15 countries digital divide has been declining as age and gender based digital divide decreased, while education based increased with almost no change in income based one. The digital divide is above in the NMS than in the EU-15, with non-negligible differences among the individual countries. Besides the differences in levels the gender gap is narrower, while other three indicators are worse and have a bigger impact on the equality of access to digital services. The biggest inequalities emerge from the education gap, and as already mentioned income gap has also strong impact. What makes the contribution of digital divide especially significant to broadband development is its coincidence with stronger social and regional divides.

## **3. CONTENT PROBLEMS INTERACTING WITH ACCESS ISSUES**

While affordability seems to be the major problem for broadband penetration, the content side of the issue is also non-negligible in NMS countries. The contribution of the content problems is reflected among others in the extremely low level of online purchases, low values for B2B and B2C markets and very limited access to eGovernment services. While in case of online purchases the low market values are also due to security problems and lack of appropriate regulatory framework (eSignature among others), the lack of appropriate supply of online services seems to be the main issue.

The content problems are strong not only in case of household sector but also in the enterprise sector. The value of the B2B markets is less than third in the NMS than in the EU-15, the online purchases and sales by the corporate sector remain exceptional or are related only to special products and services, and companies generally did not rearrange their internal structure to become online buyers and sellers. The SME sector is especially strongly hit as the value of B2B in their case remains extremely low compared with the EU-15 countries or bigger firms in the NMS countries.

The weaknesses of content in the business sector are magnified by low level of eGovernment services. The public sector content is especially weak in the NMS countries as technical upgrading, content development and internal reorganisation of public sector units has been very slow due to financial and policy related constraints. With the exception of some countries (Estonia and Slovenia), where several centralised measures were introduced (like compulsory tax declaration through Internet, etc.), most countries have devoted insufficient attention to modernise their content in the public sector. The problems are deepened by the well known weaknesses of the public sector (health care and education, local governments and public administration problems in efficiency and cost effectiveness).

Altogether the weak content has contributed significantly to the low level of broadband penetration in the NMS, as it reduced the demand need for having broadband access due to the low quality and insufficient quantity of private and public sector services.

#### **4. POLICY PRIORITIES**

The development of the information society generally has received less attention and policy priority in the NMS than in most of the EU-15 countries. The ongoing institutional, structural, ownership and regulatory changes explain the reason behind the insufficient attention devoted in NMS to IST policy issues. Besides the lower level of awareness concerning the role of public policies in promoting IS developments, governments in the NMS started to turn their attention at access issues with considerable delay.

Increasing access of both the household and corporate sector as well as provision of sufficient content in the public sector has remained in most case only a priority with less policy measures including tax credit and other concessions for the private sector, supply of public institutions with hardware and software, special support given to the SME sector.

Finally, government policies directed at broadband development were also inappropriate as they did not utilise the available instruments (demand aggregation for example), were not specific enough to consider the problems of remote or underdeveloped areas, and did not provide the sufficient support for content development in the public sector (public networks, schools and hospitals and public institutions connected online).

#### **5. MARKET STRUCTURE AND REGULATION OF SERVICES AND SERVICE PROVIDERS**

As it was demonstrated the telecom and Internet market structures are less competitive in the NMS than in the EU-15 countries. This has partly to do with the ways the telecommunication sector was opened and privatized design the last decade but also with the regulation of market providers. While market structures remain more monopolistic, regulators were unable to weaken considerably the powers of the incumbent operators and create sufficiently competitive market conditions. Even in those countries where Internet services and broadband access is offered by adequate number of service providers, the markets are oligopolistic and the level of competition remains modest.

The weaknesses of regulation are visible in various areas: among them the following four are important. First, regulation of competition has remained quite weak both with *ex ante* and *ex post* instruments. Regulators were unable to set up easy entry conditions as well as prevent the emergence of oligopolistic market structures and presence.

Second, there is an insufficient level of informatics regulation in the areas of eSignature, eCommerce, regulation concerning spam: these are either nonexistent or have been introduced only recently and the question of enforcement arises. The lack of these regulations reduces the demand for broadband and creates additional uncertainty among users concerning the use of broadband.

Third, these countries are lagging behind convergence regulation, which would allow the provision of broader range of services from the same platform. The lack of convergence regulation is a serious problem as it may hinder further the introduction of *vita* services and slow down the rise in broadband penetration rates.

Fourth, insufficient efforts were made at standardization, which may prevent certain services and products to be available online and may thus hinder the spread of broadband. The lack of standardization affects especially the business sector and hinders both B2B and B2C to develop much faster.



## V. FUTURE POLICY PRIORITIES FOR NMS

The final part of the study answers two closely linked questions. First, are there any preconditions that could accelerate broadband development in the NMS? Second, what are the best practices in broadband development from the experience of NMS for broadband policies of other middle income countries?

The study demonstrated that NMS countries lag considerably behind the EU-15 and other advanced countries in terms of broadband use and penetration. While there is a relatively strong correlation between the level of economic development and information society indicators (including broadband penetration and other indicators), there are many countries at similar levels of economic development with different broadband indicators. This shows that other factors, including policies, regulation and non-economic ones (population structure and demographics, density, social values and preferences, etc.) also affect broadband developments. NMS countries have several options to accelerate the development of broadband and improve their relative position within the enlarged EU.

To determine what should be done in order to achieve this, two aspects should be considered. First, broadband development means simultaneous progress in three areas: infrastructure and its availability, access to services and supply of content. These three areas strongly influence each other and should develop almost simultaneously. Second, broadband policies should consider that the three major actors (Government, households and enterprises) differ in terms of their needs, constraints and thus applicable policies.

In order to accelerate broadband development in NMS four areas of policy intervention seem to be relevant for most of the countries:

- More appropriate regulation
- eGovernment and increasing content in the public sector
- Demand aggregation and support for lagging groups
- Funding for broadband development.

### *1. REGULATION*

Looking at the experience of the NMS countries, the differences in regulation played an important role in influencing the growth of broadband penetration. Countries could do more in several areas of regulation. First, they should regulate more consistently the service providers, the markets themselves: entry and exit from the market, maintenance or establishment of competitive market conditions should be the first priority for regulators. Appropriate regulation may keep prices at affordable levels could support the spread of broadband to market niches with lower demand and affordability rates.

Second, regulation concerning the compulsory provision of broadband infrastructure in public institutions, new real estate developments and offices, in public access points should be an integral part of policies to accelerate the supply of infrastructure.

Third, governments should provide better regulation for security, use of electronic signature and other indirect instruments that would support the use of Internet and online services.

Fourth, and closely linked to the next point, governments should switch towards electronic communication and administration with the public sector through electronic taxation and declaration, electronic signature, etc. which would force both household and corporate sectors to use broadband more extensively than before.

Finally, appropriate regulation in other areas (labour markets and employment, education, health care) could increase the demand for distance learning, atypical forms of employment, eCommerce, which could feed back to the growth of broadband applications both in the household and corporate, within that SME sectors.

## **2. EGOVERNMENT**

Governments in NMS with the exception of Estonia and Slovenia have devoted so far little attention either to the provision of universal coverage of public institutions with broadband or to the development of the quality and availability of content in the public sector. To support broadband growth, governments first need to accomplish the set up of a well functioning public net by supplying the public institutions (public administration units, education institutions, hospitals) with broadband and connecting them with each other. So far the coverage of public institutions with broadband lags considerably behind the EU-15 countries, even the less developed ones. This infrastructure development would have a simultaneous positive effect on demand for Internet services and also supply of relevant content from the public sector.

Second, government policies should give higher priority to content development in the public sector institutions as besides infrastructure weaknesses, public online services are seldom used due to the availability and quality of the content. This is partly a financial issue (more funds should be spent on IS related human and physical capital), partly a regulatory one (public institutions should be forced to provide these services), partly organizational one (besides front offices back offices should be rearranged as well).

## **3. DEMAND AGGREGATION**

Public policies should utilize more than earlier demand aggregation to increase broadband penetration. In general the development of the infrastructure background should be market driven and no direct government intervention is necessary, except the proper regulation of markets. However there are several market segments, where public intervention to support demand might be justified. One of them is the remote and underdeveloped areas, where demand generation and aggregation by the public sector would be justified. Similarly, governments may indirectly (through tax concessions, preferred access to broadband and other infrastructure) support the SME sector, especially the micro-enterprises, which constitute 90% of the corporate sector.

**4. FUNDS FOR BROADBAND DEVELOPMENT**

The funds provided for broadband development in the NMS countries have been relatively scarce: broadband (and IS) development did not receive a clear priority either in domestic or external funds. With the new budget cycle (2007-2013) and increased access to EU structural and cohesion funds the NMS countries have much more funds available to support broadband development. These sources should be spent either on promoting content in the public sector and increasing the coverage of public sector institutions with broadband access or on supporting the provision of content, electronic commerce by the SME sector.

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