

The indicators of internet usage: Does the net conceal or reduce inequalities according to regions and settlement size in Hungary?

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Budapest, October 2007

Publication of this report is supported by:



Education and Culture

Leonardo da Vinci

This project has been funded with support from the European Commission. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use that may be made of the information contained therein



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Abstract

According to recent findings of the World Internet Project, computer- and internet access at home have produced significant growth in the last five years – over 1.5 million households have a computer and nearly 800,000 are connected to the internet from home in Hungary. Regarding internet access traditional inequalities along commonly used development indicators are not represented as markedly. Center-periphery and the east-west divides can be seen in a regional breakdown; however, the north-east division is far less noticeable. Digital inequalities among settlements have not become permanent, since townships have started to catch up. Compared with previous years, three quarters of Hungarian households with an internet connection have broadband, while the ratio of broadband access has grown especially in villages.

Keywords

Hungary, ICT, regional and settlement size measurement, growth in rural areas

Introduction

There have traditionally been stark differences between Hungary's regions, which on the one hand can be attributed to geographical factors and on the other hand to historical ones. The objective of the article is to examine whether or not regional differences can be perceived and if they can, in what way information communication technologies (ICT) are in use (i.e. in the case of technologies that have played a significant role in reducing geographical factors) and their proliferation in the population. The issue also came under examination in regard to what kind and how extensive the differences were that we found in growing inequality according to decreasing settlement size, i.e. capital-town-village. Data was utilised for the analysis from the World Internet Project, which spanned from 2002 to 2006.

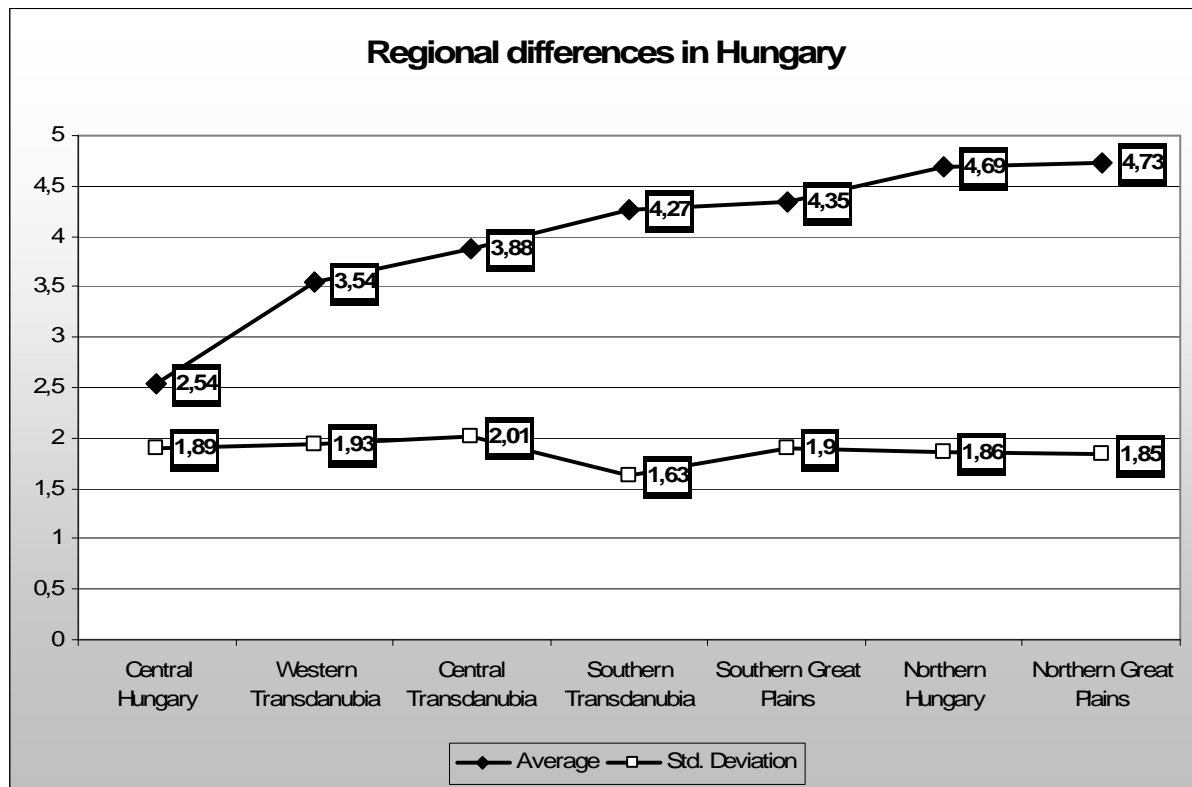
Regional differences in Hungary

It is characteristic of Hungary that in its spatial layout the very serious inequalities that have existed for a long time have primarily developed because of historical and geographical reasons. Various studies have found that these differences have not decreased since the change in the system and indeed they have become even starker. The capital has consolidated its already dominant role, while backward regions have fallen even further behind. The richer regions developed and started bridging the gap that separated them from the capital.

We can therefore find significant differences between the capital and the countryside and also between the east and west of the country. Those parts of the country that are located closer to European centres found themselves in more favourable circumstances compared with the more remote areas. These differences are made starker by the deficiencies that could be perceived in the infrastructure of these regions. Due to the various factors, differences have evolved in the degree of economic development within the country and this is reflected in numerous indicators.

Numerous articles have attempted to interpret these differences numerically but we have opted to use the work of Pummer and Vajsz (2005), which integrates 26 variables to show inequalities (1st Figure), to give a quick overview of the differences between regions. Based on the value of the indicators the regions were ranked. The graph shows the averages and standard deviation for the ranked regions.

1st Figure: The averages and standard deviation of indicators showing regional differences



Source: Pummer and Vajsz, 2005

As can clearly be seen, the three regions of Eastern Hungary are significantly lagging behind the rest of the country, while the central part of the country and Western Transdanubia are far more developed than the

other regions. The explanation for Southern Transdanubia's indicators being close to the average of the eastern part of the country can probably be attributed to its settlement structure being mostly comprised of tiny villages.

According to the authors, the above ranking is further validated by seven indicators:

- GDP per capita
- difference resulting from domestic migration
- the proportion of flats with a drainage system
- the number of private cars per 1,000 inhabitants
- the number of main telephone lines per 1,000 inhabitants
- net income, HUF/per person
- the rate of investment, HUF/per person

The extant inequalities raise the question of whether these differences are also reflected in the use of information and communication technologies (ICT), which on the one hand can play an important part in bridging physical distances and on the other hand in enhancing competitiveness. In addition to regional differences it is also interesting to look at what kind of differences can be found between settlements of varying sizes and how the differences have developed in recent years.

The proliferation of ICT tools in Hungary

According to recent findings of the World Internet Project, computer- and Internet access at home have produced significant growth in the last five years. **More than one third of Hungarian households have a computer, and slightly more than one fifth of households also have Internet access.** This means that nowadays over 1.5 million households have a computer and nearly 800,000 are connected to the Internet from home in Hungary.

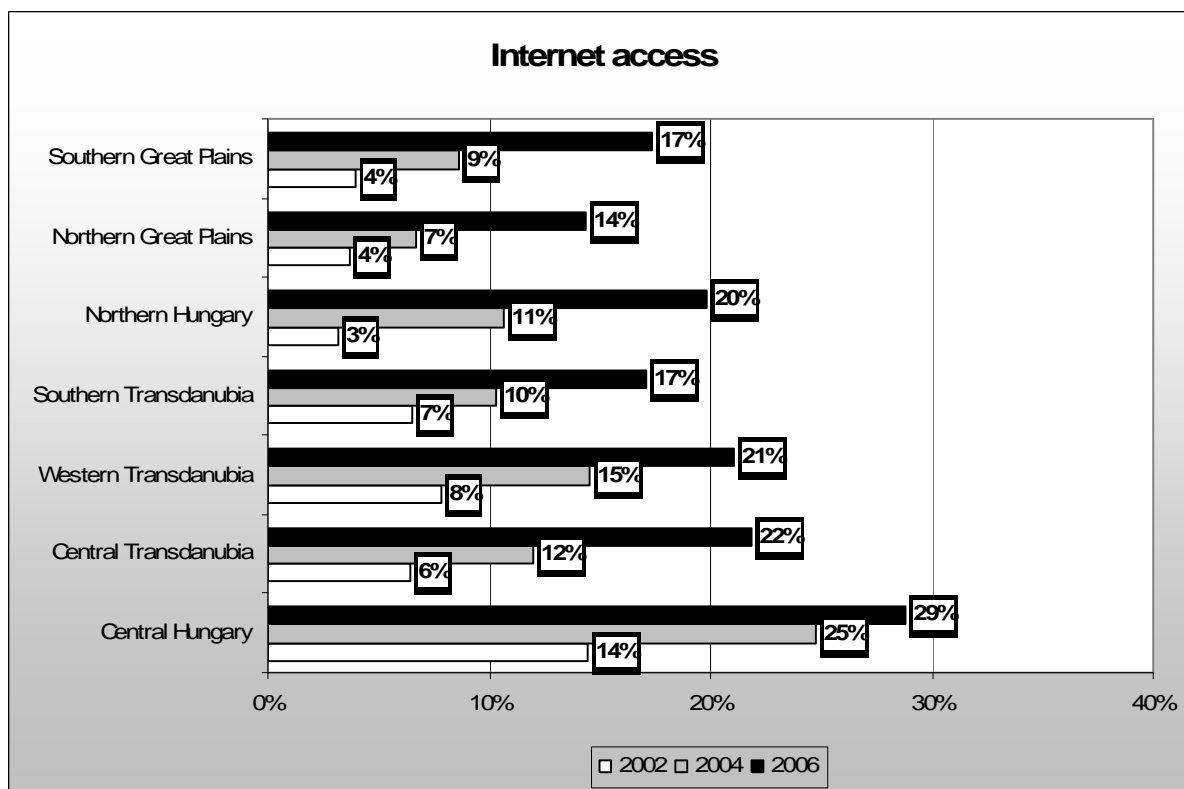
I. Regional differences

As can be seen in the previous chapter, Hungary has been struggling with stark regional differences for many years. The declining industry and a restructured economy that resulted from the change in the system have further increased the already existing differences. However, can these differences also be found in the sphere of information technology?

In the case of the regions we primarily examined which areas demonstrated an outstanding achievement in the proliferation of the Internet and broadband during the last five years. In summary, it can be stated that the general differences that we found can also be identified in this respect too. However, we also found that in the regions with unfavourable circumstances a start has been made to catch up with the central regions, which continue to occupy the leading positions. In 2002, the first year of the study, the proportion of households equipped with Internet access in Central Hungary was three to four times bigger than that which characterised the other regions; however, the majority of these have quickly begun the process of catching up.

In the graph below it can clearly be seen what dynamic growth households of disadvantaged regions produced in the interval of the four years studied. Although the majority of them were successful in reducing the differences compared to the leading regions, by 2006 the Northern Great Plains region was lagging behind more than the other regions that started off from a similar position in 2002.

2nd Figure: Internet access in households according to regions

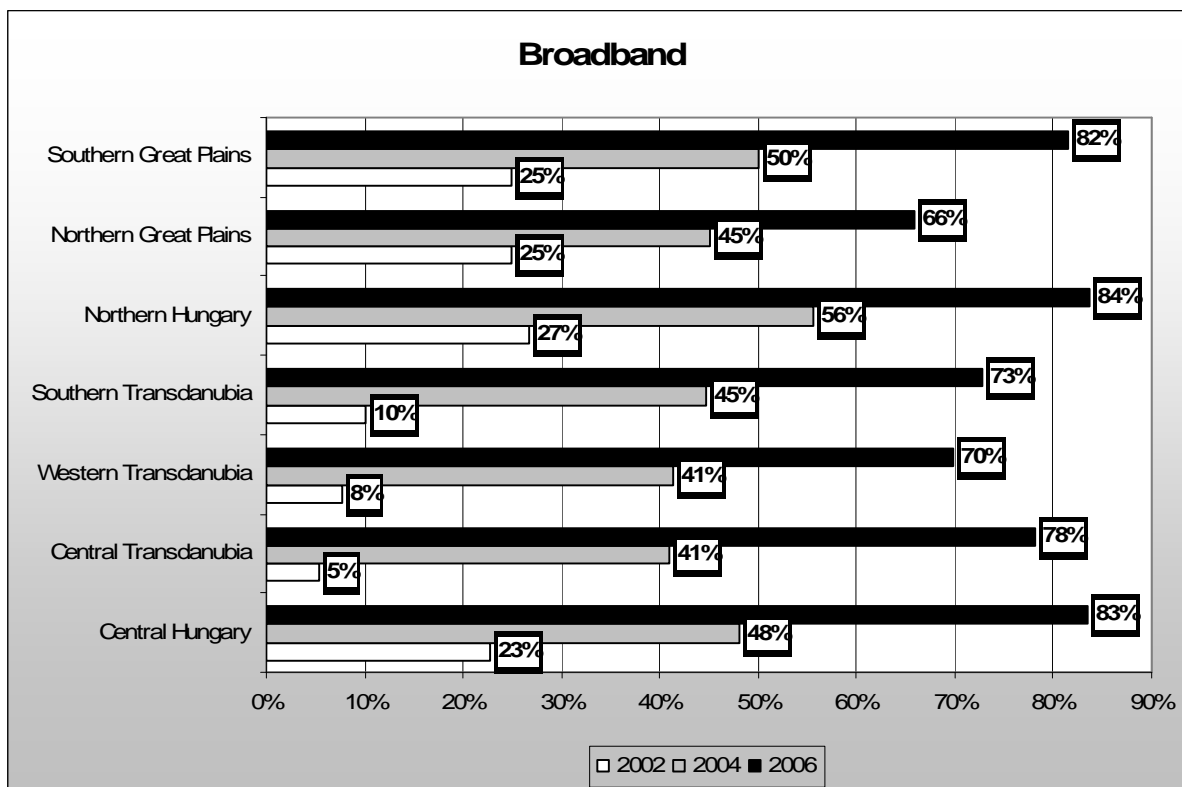


Source: WIP 2002-2006

In the spread of broadband connections (in which the situations of the respective regions have developed somewhat differently) some changes can be observed. The Northern Great Plains region stopped being among the regions that were neck to neck in their ranking in 2002, and what is more, it became the county lagging behind the most.

The proportion of households with Internet access and the types of connection allow us to conclude that the citizens of the Northern Great Plains who regard it as important and/or can afford a quality Internet subscription – by which we mean broadband access – are keeping up with their peers in similar circumstances in other areas of the country who had already joined the information society in 2002-2004. Those that were not able to join are more difficult to involve in the process; in 2006 the Northern Great Plains regions lagged 20 percent behind the leading regions.

3rd Figure: Broadband access in households according to regions

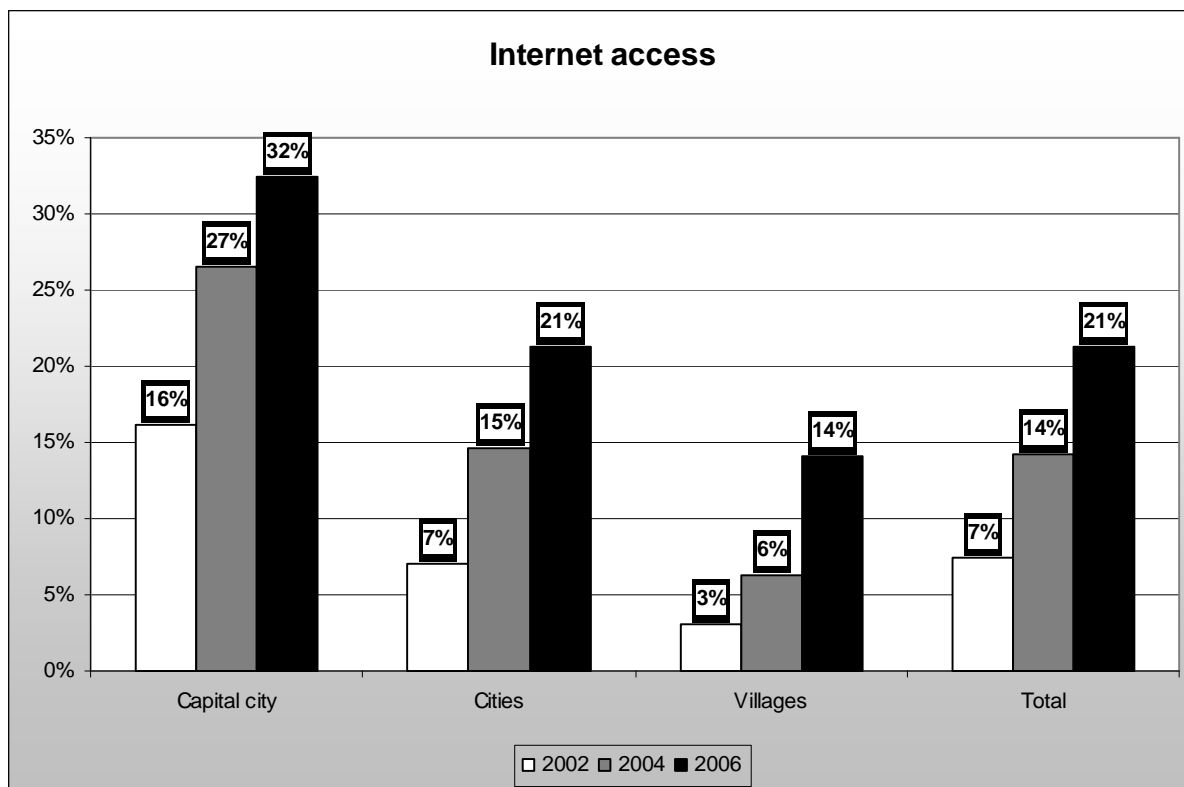


Source: WIP 2002-2006

2. Differences according to settlement type

The differences based on the size of settlements is also at least as interesting as the ones based on the differences between the capital and the rest of the country and the ones between the towns and villages. When we look at settlement type the trend for regions to catch up is perceptible to a more noticeable degree, i.e. the capital's leap forward was followed/is being followed with somewhat of a delay by the other settlements.

4th Figure: Internet access in households according to settlement type

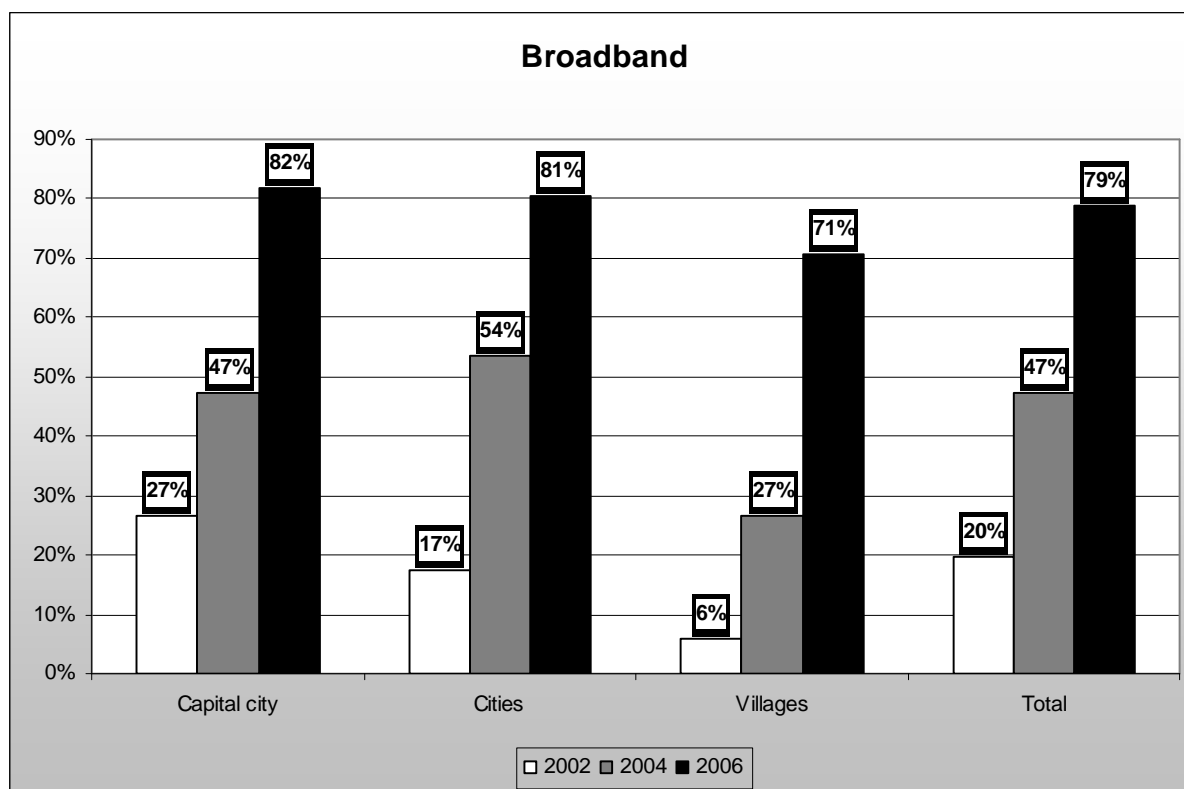


Source: WIP 2002-2006

Every third household in the capital has an Internet subscription, while in other towns this proportion is 20%, and in villages it is 14%. The average for towns on the whole well reflects the average for the country, while the capital significantly deviates from this average in an upward direction and the villages deviate in a markedly downward direction. If we examine the changes that have taken place over time, it becomes clear that while the rate of growth was the greatest in the capital between 2002 and 2004 the other towns and villages did their catching up between 2004 and 2006. To some extent this corresponds to what can be stated about the Hungarian population as a whole in regard to Internet use: the top third of society, i.e. the predominantly young, well-educated, skilled layer are Internet users. This stratum of society started to use the Internet relatively quickly, after which the upswing lost momentum, thus allowing the other settlement types to decrease their disadvantage with some degree of delay because of distance but with the same social stratum adapting to technology.

This same trend can be clearly observed in the number of those with broadband access. Compared with previous years, three quarters of Hungarian households with an Internet connection have broadband, while the ratio of broadband access has increased the most in villages. Wherever it became physically possible to obtain a broadband connection those already using the Internet switched over to it; thus, the proportion of broadband use among all Internet users increased dramatically. Compared to its neighbouring countries Hungary has a high proportion of broadband access, while the penetration per capita is still low.

5th Figure: Broadband access in households according to settlement type



Source: WIP 2002-2006

3. Changes in access and use

In the following we examined how the digital divide according to settlement type and region changed in regard to access and use. We summarised¹ the digital divide according to type of region and settlement in an aggregated index, which is an aggregated index-number similar to the Digital Divide Index (DIDIX).² Based on the DIDIX methodology we examined computer and Internet access in the home and computer and Internet use (anywhere). We adjusted the proportion of access and use of the group which was in a disadvantaged position in regard to access and use, i.e. inhabitants of small towns and villages in the case of settlement type and those living in unfavourable circumstances where we examined regional differences (this was mostly the Northern Great Plains region), to the proportions³ of access and use we discovered in the entire sample.

¹ The generally employed dimensions are as follows: age, sex, school qualifications, financial situation, social background. The value of the index shows the proportion of access to and use of ICT tools in a given disadvantaged group (e.g. women, the elderly etc.) and the entire population (e.g. home Internet use in the over 50 age group as a proportion of the main average). The value of the index is set between 0 and 100. The lower the index value, the more a disadvantaged group is lagging behind compared to the average. The index value can be computed for individual disadvantaged groups. DIDIX is received with the weighted aggregation of the indices. Weighting means that the access and use indexes have a different weight in the summative DINDEX value.

² Computer and Internet access, as well as computer and Internet use generally and at home. For a detailed description of DIDIX see SIBIS New eEurope Indicator Handbook; 2003 and The Digital Divide Index – A Measure of social inequalities in adoption of ICT; 2001 by Hannes Selhofer and Tobias Hüsing.

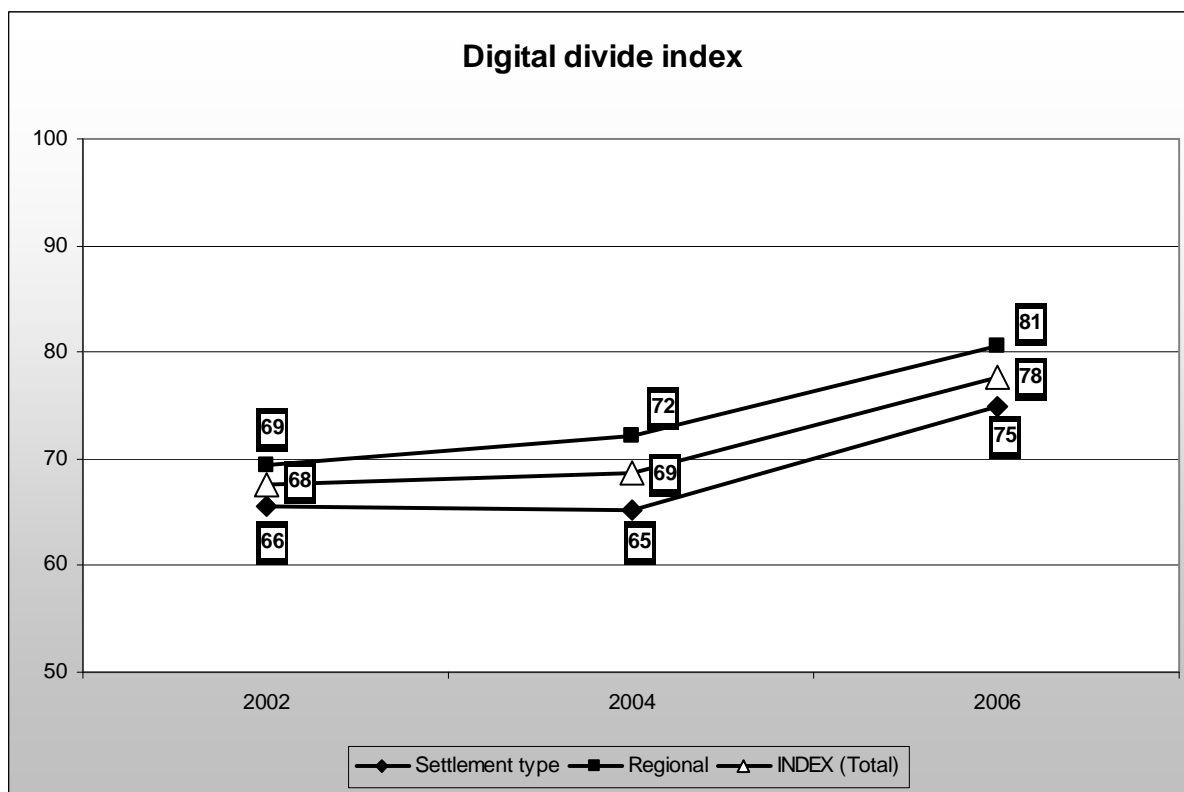
³ $\frac{x_i}{x_T}$

We weighted the proportions we received, ascribing 0.3 to use and 0.2 to access and summarised them in each index.⁴ We computed the annual aggregated index using the arithmetical average of the partial indices.⁵

The partial indices that we created and the aggregated INDEX equally contain the indicators relating to access and use of computers and the Internet. During the time interval studied the value of the aggregated INDEX rose from 68 points to 78, which can be regarded as a significant result. The conclusion that can be drawn from the graph below is that small settlements have been more successful in whittling down their disadvantage than the regions that were lagging behind. It is perceivable that regional differences have decreased more slowly, and while in 2002 the difference between the digital divide according to region and that according to settlement type was a mere three points, by 2004-2006 it had risen to six points.

All of this means that when everything is considered the digital divide according to settlement type has decreased; however, in the case of the regions the situation is changing more slowly, i.e. in Hungary the regional differences are more significant and change more slowly than the disadvantageous situation because of settlement type (settlement size).

6th Figure: Changes in the digital divide according to settlement type and region



Source: WIP 2002-2006

$$D_j = \sum_{i=1}^n w_i \frac{x_i}{x_T}$$

$$INDEX = \sum_{j=1}^n \frac{D_j}{N}$$

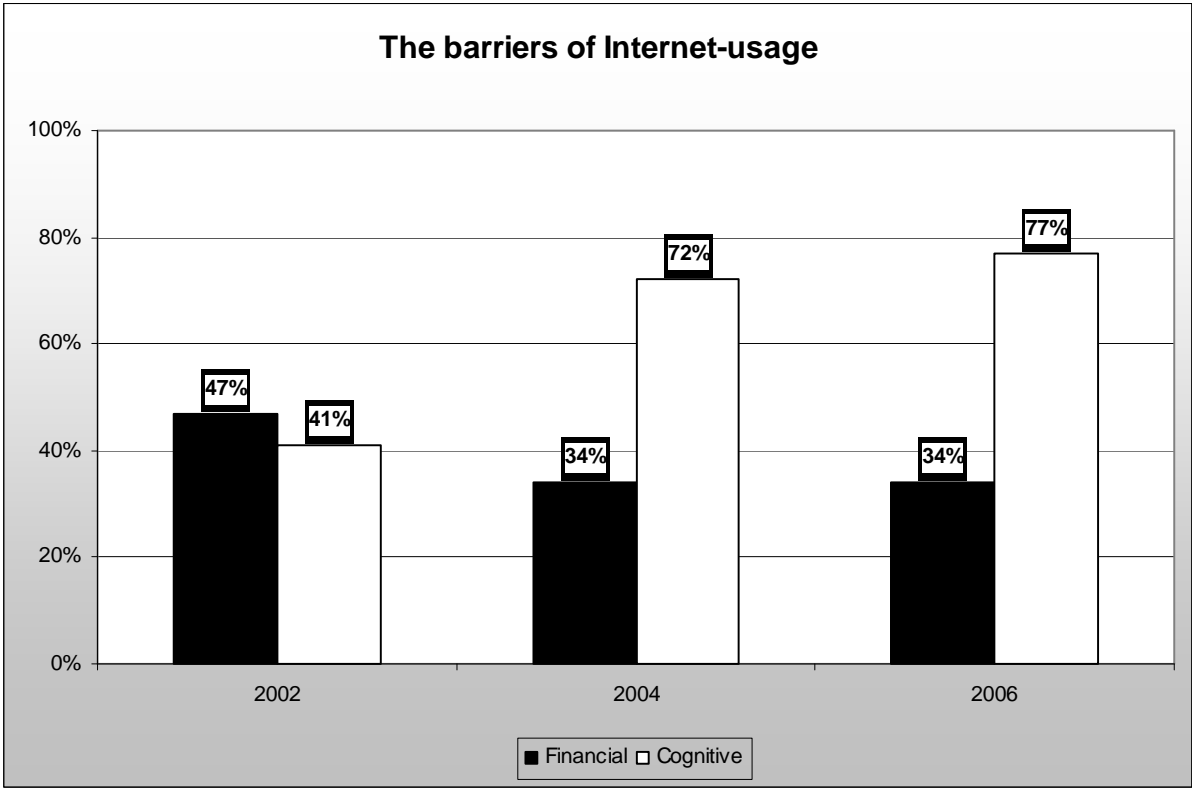
4. Reasons for non-use

Finally, after a study of the use and proliferation of ICTs it is also worth looking into *why* certain people refrain from using them, and whether regional characteristics can be found among these reasons. Based on the opinions of those who do not use the Internet they can be classified into two large groups: one of the groups is composed of those who do not use the Internet due to financial considerations, i.e. they cannot afford to do so because of the high costs. The other group is composed of those who do not use the Internet because of cognitive reasons, i.e. they do not need it, they are not interested in it, they cannot use it, etc.

According to those questioned who do not use the Internet due to cognitive reasons, they refrain from use because they do not need it, they are not interested, they do not know how to use it, they are afraid of technology, they think it is not suitable for children, pornography is cited, they wish to protect their personal data, because of viruses, there are too many advertisements, or they do not have time for it. Among the financial reasons given of those questioned were: their computer was not good enough, they did not have a computer, technology is too expensive, access is too slow, it is difficult to establish a connection.

Among those who do not use the Internet the proportion of those who refrain for financial reasons has steadily been decreasing since the first WIP measurement, i.e. since 2001, and along with this the proportion who refrain because of a lack of interest has been steadily rising. This gives rise to the question as to whether the limit of the increase in use has been reached since further price decreases most probably cannot influence cognitive inhibition, thus allowing for a possible increase in the gap between users and non-users.

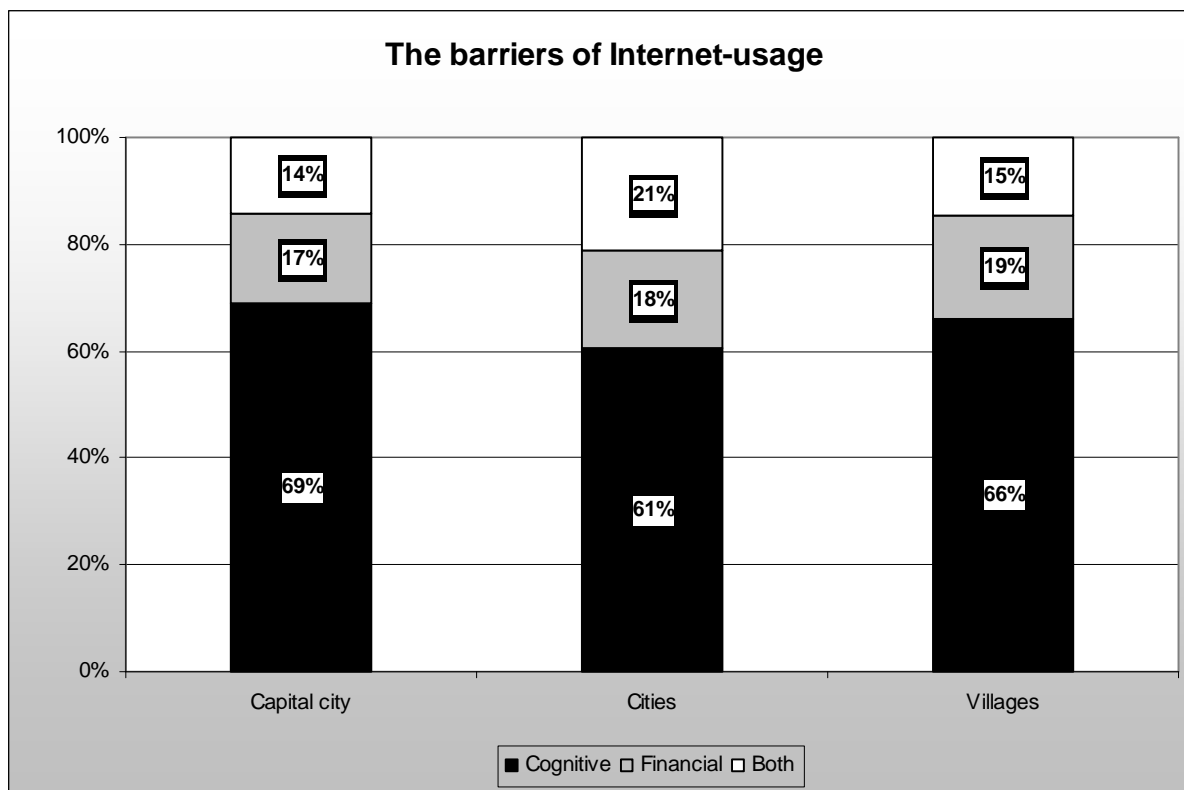
7th Figure: Reasons for refraining from use of the Internet



Source: WIP 2002-2006

Regional inequalities influence non-use of the Internet. The effect exerted by settlement type can be clearly seen on the graph. It can be observed that more people cite cognitive reasons for non-use in the capital than in towns or in villages where the highest proportion (19%) cited purely financial reasons.

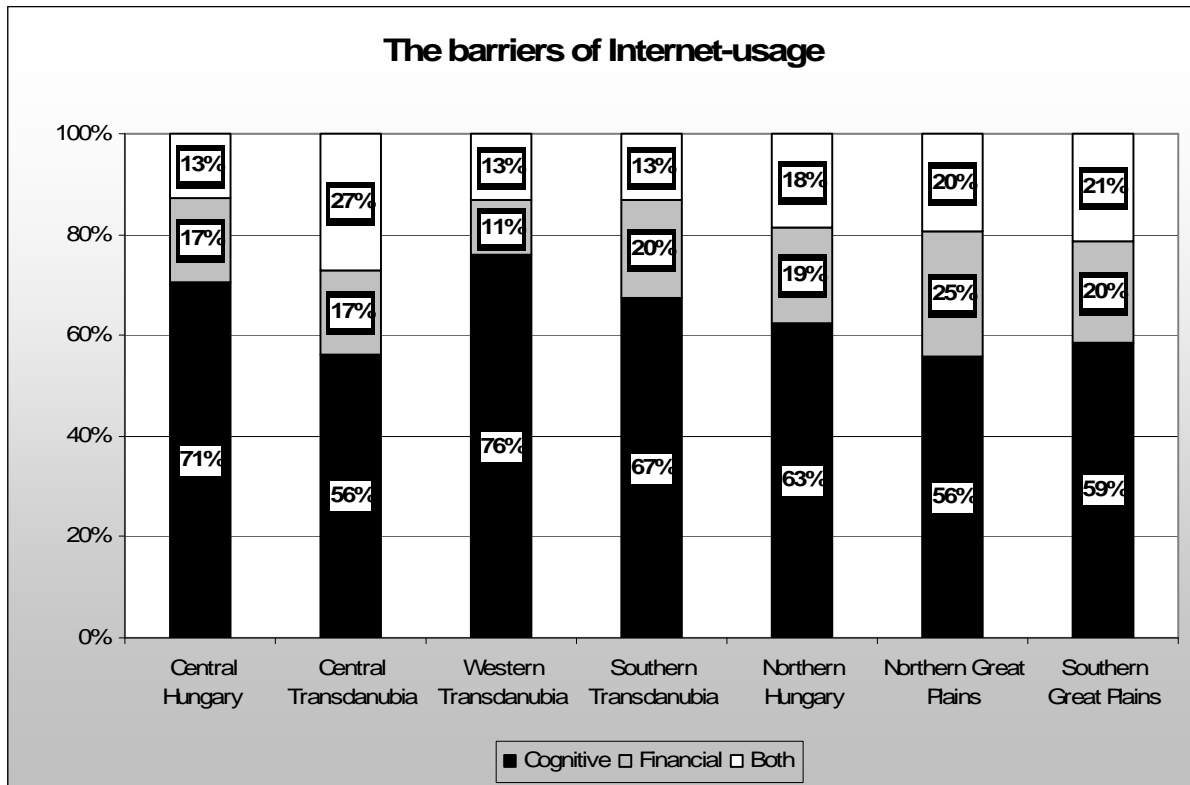
8th Figure: Reasons for refraining from Internet use according to settlement type



Source: WIP 2006

Differences according to the regions can be observed in the 2006 data of the WIP. It is no surprise that in the least developed Northern Great Plains region the largest proportion (25%) of non-users cite purely financial reasons. In the developed regions, i.e. Central Hungary and West Transdanubia, it was rather the case that purely cognitive factors dominated.

9th Figure: Reasons for refraining from Internet use according to regions



Source: WIP 2006

Conclusion

The data reveal that in the use and proliferation of ICT the regional differences that we have discovered practically reflect the other kind of inequalities. The central region of the country stands out from the others, while the east-west “contrast” is markedly present. The trend of inequality growing according to decreasing settlement size presents a similar picture with the villages lagging way behind the towns and even more significantly behind the capital.

At the same time it becomes clear from the timeline data that there has been some catching up in the last four years – while the Northern Great Plains, which underwent a serious nosedive, demonstrably lost its position during this time. The changes over time are similar according to settlement types although at times a more dynamic picture can be seen; the villages and towns equally produced a faster pace of growth in the last two years than the capital. It can also be observed from the data that the regional differences are perhaps more deeply rooted than the contrast between town and village.

The most spectacular trend in closing the gap was in broadband use: where broadband connection became physically achievable Internet users switched over to it and because of this the proportion of broadband within the entire subscription to the Internet increased dramatically, especially in villages. In regard to this indicator it must nevertheless be noted that a high proportion of broadband within the entire Internet access even by European comparison is to no avail if the proportion of users in the population is very low. However, this group changed over to the latest technology as soon as it became possible.

It is our view that this leap in growth consolidates the country’s achievements: Internet use predominantly spread in the top layer of the population, which consciously uses it. When the possibility arises this layer become users and adapt to the latest technology; this takes place more quickly in the developed regions. After this takes place growth slows down and a catching-up period follows in the more backward regions (in which the greater proportion of those who refrain from use is occupied by those citing purely financial reasons) although it is probably the case that there too only a certain layer become users – or at least this can be inferred from the data up to 2006.

For the time being the Internet does not represent a bridge and is not a factor that eradicates competitive disadvantage, however, it can be inferred from the preliminary data of WIP 2007 that there has been a major leap in the number of Internet users. The latest data will be worth comparing to the data so far in order to ascertain whether the leap forward will again take place in the more developed regions and whether new social group(s) have been taken with the Internet or perhaps the sudden increase can be attributed to something else.

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