

# Differences in the Characteristics of Impoverishment Between Northern Hungary and Southern Great Plain

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## SUMMARY

*In Southern Great Plain and in Northern Hungary, poverty is a big issue, not only in country, but also in European context. Both poverty rate and relative poverty gap exceed Hungarian and European average. As these regions are economically backward, too, my study examines whether economic growth (or recession) has an effect on poverty and if so, what kind of effect it is.*

*Key words: poverty; economic growth; economic crisis*

*Journal of Economic Literature (JEL) code: R11*

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## INTRODUCTION

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Even though information about the global economic crisis started in October 2008 is limited, economic recession, the decrease of real salaries and the significant decrease of the number of workplaces have rendered the life of many people more difficult. Changes in economic and social roles have accelerated, which affects the individuals' behaviour. It is not yet known how the crisis and its consequences affect the most deprived part of the society, those who lack social and cultural capital.

My study examines how recent economic crisis and the related unfavourable economic features affect poverty. As economic crisis goes together with economic recession, I am trying to determine to what extent it influences poverty. My paper is trying to prove that economic recession contributes not only to the impoverishment of an important portion of the society, but also increases the depth of poverty significantly. If I fail to reject this, it is worth examining to what extent one percent economic growth or economic decline can decrease or increase the rate of the poor and the depth of poverty.

The study examines two regions of Hungary: Northern Hungary (one of the most backward regions in 2008 in Hungary based on GDP per capita) and the Southern Great Plain (the third most backward region in 2008 based on GDP per capita). Eurostat reports that both of them are among the poorest twenty regions within the European Union (based on GDP per capita PPP, the South Plain is the 255th and Northern Hungary is the 259th among the 271 regions of the European Union).

## POVERTY

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There is no exclusive definition for poverty. According to the most general definition, one is considered to be poor if (s)he does not have the minimal amount of money necessary to make ends meet, that is his/her income does not exceed a minimal level (Bokor 1987).

Four main conceptions of poverty are distinguished in the poverty literature (refer to Table 1). Absolute concepts of poverty assume that minimum material needs can be defined regardless of space and time. Those who are not able to satisfy these needs are considered to be poor. The relative conceptions define poverty as being below some relative poverty threshold. People can be considered to be poor if they fall behind some average wealth level of the society to a certain extent (for example 50 or 60 percent of mean or median income level). The other approach using the relative poverty concept defines poverty line as an income level below which a certain part (one tenth or one fifth) of the population lives (Hegedűs and Monostori 2005).

Subjective well-being can be reflected by the so-called subjective poverty concept. This concept was elaborated by two research groups. Van Praag (1971) worked out the Income Evaluation Question (IEQ) to collect data on subjective well-being. Deleeck and his staff defined CSP (Subjective Poverty Line). Subjective poverty concept can be used in two ways. On the one hand, poverty can be defined by examining who people consider to be poor. It can also be defined by collecting peoples' beliefs about their own position in a system of inequalities (Spéder 2002).

Table 1. Concepts of poverty

| Concept of poverty | Income   | Living conditions            |
|--------------------|--|------------------------------|
| Absolute           | Subsistence level  | Not possessing certain items |
|                    | Regional minimum   | Being in crisis              |
| Relative           | Living below the 50 or 60 percent of mean or median income | Deprivation index            |
|                    | Lower decile, quintile                                     |                              |
| Subjective         | Subjective poverty   | Minimal living conditions    |

Source: own compilation based on Spéder (2002, p 53).

Besides its monetary definition, there are multidimensional concepts of poverty as well. In this sense, deprived is the person who is in an unfavourable position from different views, so handicaps are accumulated. Accumulated poverty and social exclusion are, however, not exactly the same things. In the case of accumulated poverty, emphasis is put on the output, namely on the deprivation from certain goods and services. Exclusion, however, primarily focuses on the process leading to poverty (Havasi 2002). Complex view of poverty is important because deprivation is much more widespread if more dimensions are taken into consideration rather than define poverty by only one dimension (Bokor 1987).

Table 2. Laeken indicators

| Primary indicators                                | Secondary indicators                                   |
|---|--|
| At-risk-of poverty rate                           | Dispersion around the at-risk-of-poverty threshold     |
| S80/S20 income quintile share ratio               |  |
| Persistent at-risk-of poverty rate                | At-risk-of-poverty rate anchored at one moment in time |
| Relative median at-risk-of-poverty gap            |  |
| Regional cohesion                                 | At-risk-of-poverty rate before cash social transfers   |
| Long term unemployment rate                       |  |
| Persons living in jobless households              | Gini coefficient                                       |
| Early school leavers not in education or training | In-work at risk of poverty rate                        |
| Life expectancy at birth                          | Long term unemployment share                           |
| Self defined health status                        | Very long term unemployment rate                       |

Source: KSH (2008b) pp 1-3.

The European Union worked out the system of Laeken indicators in 2001 (refer to Table 2), which defines several – mainly relative – measures of poverty. Its application makes it possible to compare different level NUTS regions. My paper applies the most common measure of poverty defined by EU using the 60 percent of median income.

Using poverty line, the most important measures of poverty can be defined. The most common measure is poverty rate (H) that expresses the ratio of those living

below the poverty line in the whole population (Ravallion 1996).

$$H = \frac{p}{n} \quad (1)$$

where  $p$  is the number of persons living below the poverty line and  $n$  is the number of population. This measure describes the extent of poverty. It does not give any information, however, about the depth of poverty. If the financial conditions of a poor person worsen, the value of the poverty rate will not change at all.

That is why it is worth computing poverty gap as well, that measures the distance between the average income of the poor and the poverty line. In order to make it suitable to measure changes over time and space, this measure can be expressed as a percentage of the poverty line (this is the so called relative poverty gap (PG)).

$$PG = \frac{1}{p} \sum_{i=1}^p \frac{g_i}{z} \quad (2)$$

where  $g_i$ 's are the poverty gaps and  $z$  is the poverty line (Hajdú 1997).

## THE EFFECT OF ECONOMIC GROWTH ON POVERTY

Economists have long been debating about the relationship between economic growth and poverty. It is not known exactly how economic growth affects the conditions of the poor. It is obvious that faster economic growth goes together with faster poverty reduction, but experts have long been debating about the exact nature of the relationship between these two factors. If economic growth can significantly reduce poverty, strategies relying on economic growth to reduce poverty are probably justified (Bourguignon 2002).

In the 1970s many economists believed that economic growth is not enough to reduce poverty. In 1974, Chenerey and his staff (1974) found that growth has benefit only to two persons out of three. Adelman and Morris (1973) had similar opinion. They said that economic growth reduces the income of the poor in absolute and relative terms as well. In this way those who live in extreme poverty were rather hurt than helped by economic development. Ravallion (2009) drew the same conclusion. By analysing 100 developing countries, he found out that conditional convergence, i.e. the growing advantage of starting from a lower development level, cannot be realized because of the high poverty rate.

In the evaluation of the theories about the relationship between poverty and economic growth, Kuznets (1955) and his hypothesis played an important role. It says that the two variables are related in an inverted U-shaped curve. It means that in the early stages of economic growth, income distribution worsens and it does not

improve until countries reach middle-income status. At the beginning of economic growth income inequalities increase, which does not allow the improvement of the poor's conditions. Kuznets hypothesis was based on data derived from cross-sectional data and on theory. Later, economists started to use time series besides cross-sectional data to characterize that relationship (similar research was carried out by Ravallion; Deininger and Squire; Schultz; Brno, Ravallion and Squire). All of these more recent studies tend to reject the Kuznets hypothesis. Empirical findings showed that economic development does not have any significant impact on income distribution (Adams 2003). Deininger and Squire (1996) found several countries where per capita gross domestic product (GDP) increased significantly while the value of Gini coefficients which is used to measure income inequalities hardly changed at all.

Later some new findings appeared that supposed a significant relationship between poverty and economic development. According to Dollar and Kray (2001), the average income of the poorest part of the society increases proportionately with average incomes. Their statement was based on an empirical research based on data from 92 countries for four decades. If we use the absolute concept of poverty – which supposes that the minimal need can be defined irrespectively of time and place and those who cannot satisfy these needs are considered to be poor – than let us suppose that economic development tends to improve the conditions of the poor as well. After a while – even without redistribution – they can cross the poverty line and get out of poverty. To some, it is suggested that "trickle down" can solve the problem in due course. In case of a developing country, however, it takes more than twenty years to be lifted out of poverty (Kanbur 1987). Adams (2003) carried out a research based on 50 countries and found that economic development reduced poverty significantly as it has little or no impact on income inequality.

A research examining Northern Hungary between 2000 and 2007 concluded that economic growth can reduce significantly poverty rate and poverty gap defined based on the existence minimum (Siposné Nándori 2009).

On the basis of this study and that of Adams (2003), I hypothesise that economic growth can reduce poverty rate and the depth of poverty at the same time in Northern Hungary and in Southern Great Plain. Taking into account the available data, the effect of economic growth on poverty can be examined between 2000 and 2008. In order to examine these effects, the measurement of the two concepts is necessary. Poverty can be measured by poverty rate and relative poverty gap described above.

Measuring economic growth is also possible in several ways. Per capita GDP on purchasing power parity or per capita average income / average consumption are usually used to measure economic growth (in poverty analysis, per capita income or per capita consumption are used as a measure of economic growth by Kuznets (1955), Kanbur (1987), Kakwani (1993), Ravallion and Chen (1996),

Bourguignon (2002). Per capita real GDP or GNI is used by Cashin (1995), Collier and Dollar (1999) and both measures are used by Adams (2003)). These two kinds of measures do not often agree. Differences are the result of the different definitions of the two measures. Average income and average consumption values come from household surveys, so they are usually highly correlated with household expenses. Per capita GDP and GNI values, however, are derived from national accounts, where household expenses are residuals. So any errors or omitted items in national accounts result in the deviation of household expenses. Measuring average income or average consumption can also have different results. People usually are not very keen on talking about their income and they tend to reject answering the questions related to their income level. According to a study made at the beginning of 1990s in Eastern Europe, average consumption level exceeds average income level in 82% of the cases (Milanovic, 1998). Many economists believe that data derived from national accounts are more accurate than the results of a representative survey, but Daeton (2001) believes that this is without any basis. In the analysis, real GDP per capita derived from national accounts and average income per capita derived from personal income taxation database are both used. As both data are published in current values, it is desirable to compensate for changes in the value of money.

## METHODOLOGY

The effect of economic growth on poverty can be described by graphs and regression analysis. Graphs can help in determining the trend of this effect.

In order to describe the nature of the relationship between economic growth and poverty exactly, the method of regression analysis is used. Poverty at country  $i$  at time  $t$  can be expressed in the following way (Ravallion-Chen 1996):

$$\lg P_{it} = \alpha_i + \beta \cdot \lg \mu_{it} + \gamma \cdot t + \varepsilon_{it} - \beta \cdot v_{it} \quad (3)$$

where  $P$  is the measure of poverty in country  $i$  at time  $t$ ,  $\alpha_i$  is a fixed effect reflecting time differences between countries in distribution,  $\beta$  is the growth elasticity of poverty with respect to the given measure of economic growth given by  $\mu_{it}^*$ ,  $\gamma$  is trend rate of change over time  $t$  and  $\varepsilon_{it}$  is a white-noise error term that includes error in the poverty measure. This model ignores every other factor that can influence the relationship between economic growth and poverty. That is why the following extended form of this model is used in the further analysis:

$$\lg P_{it} = \alpha + \beta_1 \cdot \mu_{it} + \beta_2 \cdot EDUC_{it} + \beta_3 \cdot REG_{it} + \varepsilon_{it} \quad (4)$$

where  $P$  is the poverty measure (poverty rate or relative poverty gap) in county  $i$  at time  $t$ . The model contains three explanatory variables:  $\mu_{it}$  as the measure of economic growth (average income level or per capita real

GDP), EDUC, the rate of secondary school students in the whole population and REG as the measure of regional correlation (the average level of the GDP of surrounding counties).  $\alpha$  is the constant term,  $\beta_1$  expresses the economic elasticity of poverty,  $\beta_2$  provides information about the effect of human development on poverty and  $\beta_3$  provides information about the effect of regional correlation on poverty.

Including REG and EDUC variables in the model makes it possible to control for the different levels of human development and regional correlation among the counties. The optimal regression function is determined using backward method. It involves starting with all candidate variables and testing them one by one, deleting any of them that are not significant.

Data about income levels are derived from the personal income tax returns of the Northern Hungarian and Southern Great Plain Regional Directorates. Even if data can include biases (like hidden income, income from the black economy), the analysis is carried out using these data because of the lack of more reliable data sources. Data about per capita real income, rate of secondary school students and per capita income of surrounding counties are from the database of Hungarian Central Statistical Office. Data about surrounding counties outside the country are derived from the database of Eurostat and IMF (in the case of Slovakia and Romania, it was possible to use GDP data of NUTS3 level counties. Serbia, however, does not use NUTS levels of territorial units and therefore does not publish data about NUTS3 level counties. In this case country level GDP data can be used for the calculations). Per capita real income is calculated from the monthly net average income of the employed and the inflation rates. So it does not take into consideration the unemployed, the inactive and their income. It means that data can include biases. As there are no more reliable data sources at regional and county level about income levels, analysis is carried out based on these data.

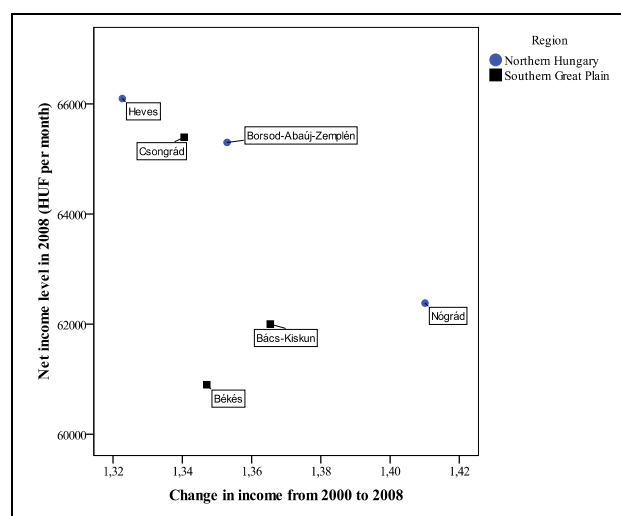
## RESULTS

### *Income level*

To get a closer view of monetary poverty, it is worth examining the net income level and the change in income in the case of the counties of interest (Figure 1). Increase in income between 2000 and 2008 was the highest in Nógrád county (41%), while it was the lowest in Heves county (32%). In the counties of Southern Great Plain, the dispersion of income is smaller than in the counties of Northern Hungary.

The income level of 2008 is defined controlling for the effect of inflation. Its values in Northern Hungary exceed the values of Southern Great Plain. The lowest values can be found in Békés and Bács-Kiskun counties, while Heves and Csongrád counties are characterized by the highest values.

The joint analysis of the two variables highlights that Békés county is in the most unfavourable condition from economic point of view, as both income level and change in income are low there. Based on income level, Heves county is in a favourable condition, the increase in income, however, is really low. The position of Nógrád county is exactly the opposite: economic growth is significant, but it is not yet enough to reach a high level of development among the counties of interest.



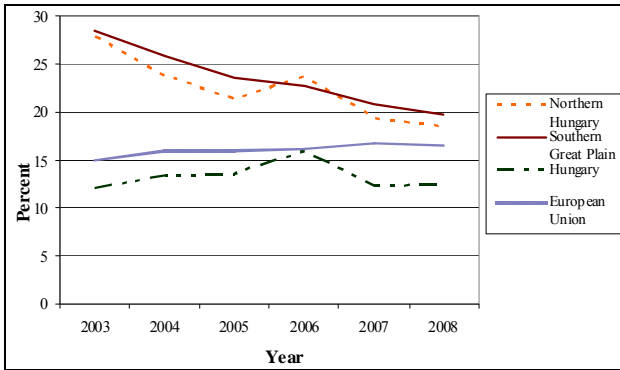
Source: own compilation based on the database of Hungarian Central Statistical Office

Figure 1. Distribution of counties of the Northern Hungarian and Southern Great Plain regions by change in income from 2000 to 2008 and by net income level in 2008

### *Poverty*

Poverty rate (Figure 2) exceeds the Hungarian average and the EU average in both regions. The difference, however, increased from 2003 to 2008. In Southern Great Plain, poverty rate decreased from 29 to 20 percent. Within the region, the rate of the poor is the highest in Békés county (30 percent in 2003 and 21 percent in 2008).

Poverty rate is nearly the same in Bács-Kiskun and Csongrád counties. The only difference is that in Csongrád county the poverty rate decreased evenly, while in Bács-Kiskun county the dynamic decrease of the beginning of the period was followed by an increase in 2006.



Source: own compilation based on the database of APEH and Eurostat (Values of the European Union refer to 15 counties before 2003, to 25 counties between 2004 and 2006 and to 27 counties from 2007. The source of the poverty rate in Hungary for 2004: Vukovich (2008) p 14.)

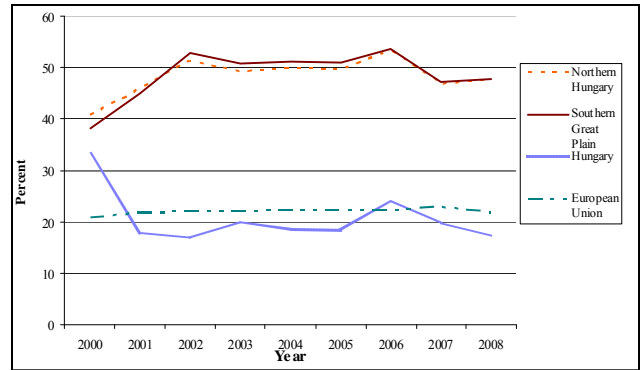
Figure 2. Poverty rate (%) in the examined regions, compared to the national and European averages, 2003-2008

In Northern Hungary, trends are similar to that of Southern Great Plain. In the examined period, poverty rate fell, except for the year of 2006. Within the region, the poverty rate is the highest in Nógrád county, while Heves county is in the best position where the poverty rate was less than 17 percent in 2008 (no other counties reached this value in the examined regions).

The increase of relative poverty gap (Figure 3) shows that the average income level of the poor got farther from the poverty line, which means that they became poorer. The increase of poverty gap thus means the increase of the depth of poverty.

The backward of the regions under study from the Hungarian and European average is apparent, the change in relative poverty gap has the same trends. Between 2000 and 2008, there was a slight increase (7 percent in Northern Hungary and almost 10 percent in Southern Great Plain). In all counties of Northern Hungary, relative poverty gap significantly increased between 2000 and 2002. Then, in the following 3 to 4 years, it stagnated at around 50 percent. The only exception was Borsod-Abaúj-Zemplén county, where its value was almost 56 percent in 2006. This dynamic increase was followed by a dynamic decrease, which resulted in the lowest value of the region in 2007 and 2008.

In the counties of Southern Great Plain, the depth of poverty significantly increased between 2000 and 2002. In the following years, the value of this measure remained at around 50-52 percent. Similarly to Borsod-Abaúj-Zemplén county, relative poverty gap increased radically in Bács-Kiskun and Csongrád counties. In Békés county, this radical increase was not present, the depth of poverty was only about 46-47 percent there.



Source: own compilation based on the database of APEH and Eurostat (values of the European Union refer to 15 counties before 2003, to 25 counties between 2004 and 2006 and to 27 counties from 2007. The source of the poverty gap in Hungary for 2004: Társadalmi Kirekesztés Elleni Bizottság (2006): Helyzetelemzés a Szociális védelemről és társadalmi összetartozásról szóló Nemzeti Stratégiai Jelentés c. dokumentum 1. fejezetéhez)

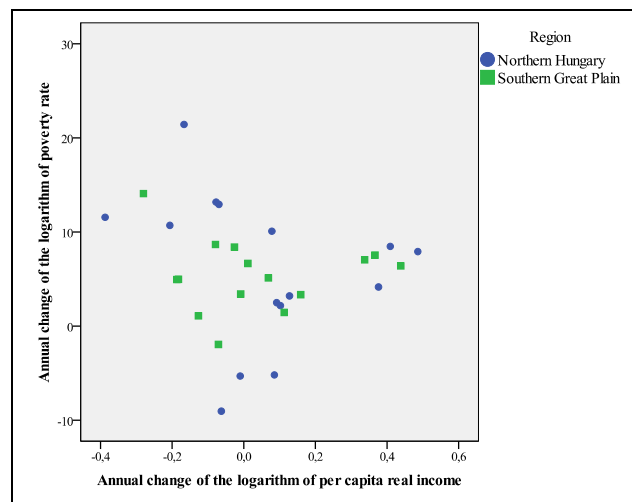
Figure 3. Relative poverty gap (%) in the examined regions, compared to the national and European averages, 2000-2008

### Analysis of the effect of economic growth on poverty

Graphs can help to determine the trend of the effect of economic growth on poverty.

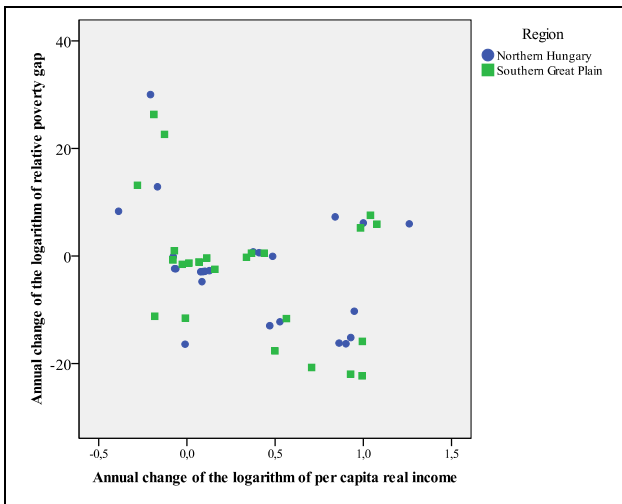
Determining the direction of the relationship between income and poverty rate is not unambiguous (Figure 4). Nearly the same rate of observations can be found in the upper left and lower right quarters (which illustrate a negative relationship) than in the upper right and lower left quarters (that indicate positive relationship).

Relationship between average income level and relative poverty gap seems to be negative based on graphs (Figure 5) in both regions. Most of the observations can be found in the lower right and upper left quarters (14 out of 24 in Northern Hungary and 15 out of 24 in Southern Great Plain).



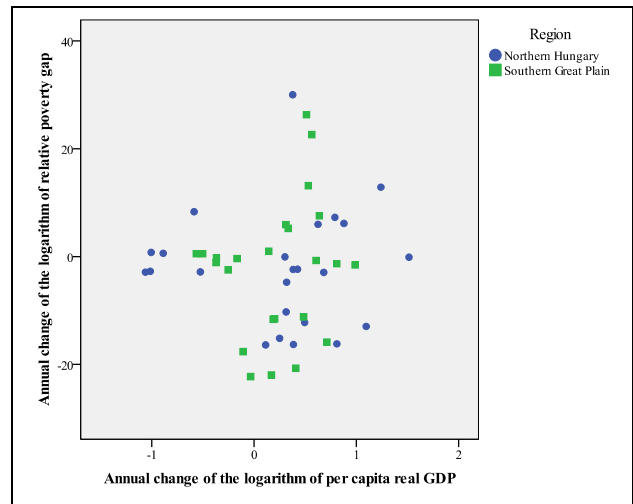
Source: own compilation

Figure 4. Relationship between economic growth and poverty (using average income level and poverty rate)



Source: own compilation

Figure 5. Relationship between economic growth and poverty (using average income level and relative poverty gap)



Source: own compilation

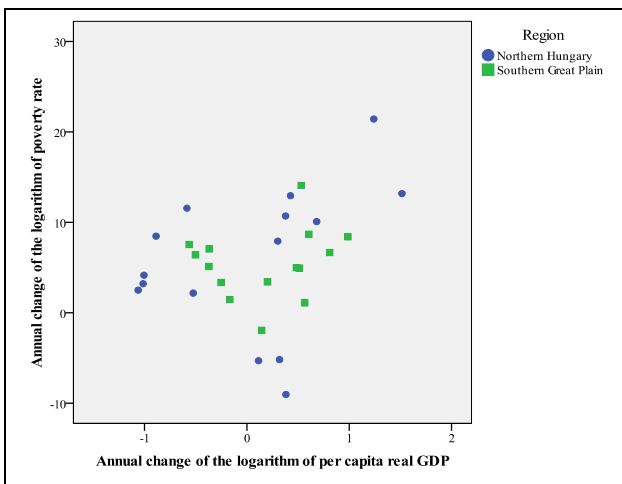
Figure 7. Relationship between economic growth and poverty (using per capita real GDP and relative poverty gap)

Measuring economic growth with per capita real GDP, the relationship between economic growth and poverty can be illustrated with graphs similarly to the previous case. Direct relationship can be found between the change of GDP and the change of poverty rate in Northern Hungary (Figure 6), though 60 percent of the observations (9 out of 15) is in the upper left and lower right quarters. In Southern Great Plain, the direction of the relationship cannot be determined based on the plot of observations. 47 percent of the observations can be found in the upper left and lower right quarters and 53 percent of them are in the lower left and upper right quarters.

*The effect of the change of per capita GDP on poverty*

The parameters of regression equation can be found in Table 2. The increase of per capita gross domestic product can decrease poverty rate significantly in both regions.

Table 2. Economic elasticity of poverty (measuring economic growth with per capita GDP)



Source: own compilation

Figure 6. Relationship between economic growth and poverty (using per capita real GDP and poverty rate)

As for the relationship between per capita real GDP and relative poverty gap, the direction cannot be determined unambiguously based on the scatter plot (Figure 7). The relationship is probably very weak.

| Variables of poverty and coefficient of determination | Partial regression coefficients when Y = HI (t values) |                      | Partial regression coefficients when Y = PG (t values) |                      |
|---|--|----------------------|--|----------------------|
|   | Northern Hungary                                       | Southern Great Plain | Northern Hungary                                       | Southern Great Plain |
| Constant  | 55.414 (12.125)  | 47.245 (16.664)      | 0.494 (97.768)   | 0.503 (73.325)       |
| Per capita real GDP                                   | -0.013 (-4.929)  | -0.009 (-3.489)      | a  | a                    |
| Rate of secondary school students                     | a  | a                    | a  | a                    |
| Average GDP of surrounding counties                   | -0.003 (-6.074)  | -0.002 (-8.605)      | a  | a                    |
| R <sup>2</sup>  | 0.806  | 0.897                | 0.000  | 0.000                |

a The effect of the given variable is not significant.

Source: own computation

A one thousand forint increase in per capita real GDP decreases poverty rate by 13 percent in Northern Hungary and 9 percent in Southern Great Plain. The effect of EDUC is not significant, the average GDP of surrounding counties, however, is in an inverse relationship with poverty rate. The 1000 HUF increase of the per capita real GDP in the surrounding counties decreases poverty rate by three percent in Northern Hungary and by two

percent in Southern Great Plain. Explanatory variables account for more than 80 percent of the variation of the dependent variables.

When relative poverty gap is the dependent variable, none of the explanatory variables has a significant effect on it either in Northern Hungary or in Southern Great Plain.

### *The effect of real income on poverty*

Measuring economic growth with per capita real income (Table 3), results are different than in the previous model. Economic growth decreases poverty rate only in Southern Great Plain (1000 HUF increase in per capita real GDP increases it by one percent). Results are similar in the case of average GDP of the surrounding counties. Its increase by 1000 HUF decreases the rate of the poor by four percent in Northern Hungary and by three percent in Southern Great Plain. Using per person real income as dependent variable, the effect of human development is significant. The increase of the rate of secondary school students decreases poverty rate in Northern Hungary, and increases it in Southern Great Plain. Independent variables account for more than 80 percent of the variance of the poverty rate in this case, too.

If the indicator of economic growth is the income, it has a significant effect on relative poverty gap. The regression coefficient, however, is extremely low (0.000002 and 0.000006) so this effect is negligible.

In the two regions under study, the effect of economic growth on poverty is similar, taking into account GDP as a measure of growth. Income level, however, has a different impact on poverty in the two regions.

*Table 3. Economic elasticity of poverty  
(measuring economic growth with  
per capita real income)*

| Variables of poverty and coefficient of determination | Partial regression coefficients when Y = HI (t values) |                      | Partial regression coefficients when Y = PG (t values) |                           |
|---|--|----------------------|--|---------------------------|
|   | Northern Hungary                                       | Southern Great Plain | Northern Hungary                                       | Southern Great Plain      |
| Constant  | 61.528<br>(11.029)                                     | 69.406<br>(9.034)    | 0.388<br>(7.153)                                       | 0.242<br>(3.708)          |
| Per capita real GDP                                   | a  | -0.001<br>(-3.893)   | 0.000002<br>(0.065)                                    | 0.000006<br>(4.061)       |
| Rate of secondary school students                     | -318.249<br>(-4.907)                                   | 217.352<br>(1.829)   | a  | a                         |
| Average GDP of surrounding counties                   | -0.004<br>(-6.397)                                     | -0.003<br>(-10.140)  | a  | -<br>0.000014<br>(-2.410) |
| R <sup>2</sup>  | 0.805  | 0.920                | 0.168  | 0.482                     |

<sup>a</sup> The effect of the given variable is not significant.

Source: own computation

## SUMMARY

In Southern Great Plain and in Northern Hungary, poverty is a big issue, not only in country, but also in European context. Both poverty rate and relative poverty gap exceed Hungarian and European average. As these regions are economically backward, too, my study examines whether economic growth (or recession) has an effect on poverty and if so, what kind of effect it is.

The analysis carried out for the two regions partly has similar results. Increase of per person real GDP decreases the rate of the poor in both regions, it does not have any effect on the depth of poverty, though. The per capita real income decreases poverty rate only in Southern Great Plain, it does not effect relative poverty gap, though.

I fail to reject the initial hypothesis depending on the measure of economic growth. Per capita real GDP can decrease poverty rate in both regions, it does not affect, however, relative poverty gap. Real income decreases poverty rate only in Southern Great Plain, while its effect on relative poverty gap is negligible in both regions. Result of the analysis about Northern Hungary between 2000 and 2007 are only partly supported by the current analysis. The different results are probably due to the different concepts of poverty. While the previous study is based on the absolute concept of poverty, and poverty line is defined by the existence minimum, this study uses relative concept of poverty (in accordance with the recommendations of the European Union) and defines poverty line as the 60 percent of the median income.

The fact that economic growth can decrease poverty rate implies that economic recession that goes together with global economic crisis increases poverty along with many other unfavourable social consequences. It means that the income of more and more people falls below the poverty line and they become poor.

Economic growth plays an important role in poverty alleviation as the growth of real GDP decreases the extent of poverty.

In the two examined regions, economic growth is currently not enough to reduce depth of poverty. Other means are also necessary to improve the conditions of those living in poverty. Malnutrition leads to the worsening of the state of health, to social stress and these consequences increase the cost of public health, public safety and so on.

*“The described work was carried out as part of the TÁMOP-4.2.1.B-10/2/KONV-2010-0001 project in the framework of the New Hungarian Development Plan. The realization of this project is supported by the European Union, co-financed by the European Social Fund.”*

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