

*Eszter Siposné Nándori, assistant professor*  
Institute of World and Regional Economics, University of Miskolc

## THE EFFECT OF ECONOMIC GROWTH ON POVERTY IN EASTERN EUROPE

### Summary

Economists have long been debating about the relationship between economic growth and poverty. In my research I am interested in the effect of economic growth on poverty and income inequality concerning upper-middle income Eastern European countries. I examine this relationship after 1990. Based on Adams' research, my hypothesis states that in upper-middle income Eastern Europe economic development has significantly reduced income inequalities and poverty since 1990. Besides economic growth, I examine the effect of human development on poverty and inequality as well.

To test my hypothesis, I carry out regression analysis and I use data from household surveys and national accounts. Results show that economic growth has had a significant effect on poverty, but not on income inequalities since 1990. It means that economic growth can promote the decrease of the extent and the depth of poverty. Human development, however, has significant effect nor on poverty, neither on income inequalities. So if a country's government is willing to decrease poverty, it has to concentrate on economic growth, rather than on human development.

**Key words:** economic growth, poverty, inequality

### Introduction

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. In the 1970s many economists believed that economic growth was not enough to reduce poverty. In 1974 Chenery and his staff found that growth had benefit only to two persons out of three. [Chenery et al., 1974] Adelman and Morris had similar opinion. They said that economic growth reduced 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 [Adelman, Cynthia 1973].

In the evaluation of the theories about the relationship between poverty and economic growth Kuznets 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 improves only when 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 [Kuznets, 1955] Later, economists started to use time series besides cross-sectional data to characterize that relationship<sup>1</sup>. 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 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 [Deininger, Squire, 1996].

Later some new findings appeared that supposed a significant relationship between poverty and economic development. According to Dollar and Kray, 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 [Dollar, Kray, 2001]. If we use the absolute concept of poverty – which supposes that the minimal need can be defined regardless 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 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 [Adams, 2003].

Economists usually analyse developing countries when they would like to find out more about the relationship between economic growth and poverty. Less attention is paid to middle income countries like those in the Eastern European region. This paper is examining the relationship between economic growth and the extent of poverty in case of the Eastern European countries ranked into the upper-middle income category by World Bank. Nine countries (Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russia, Slovak Republic) belong to this group [Poverty Monitoring Database]. The aim of my research is to find out the nature of the relationship between poverty and economic growth. My hypothesis is that economic growth has significantly decreased both income inequalities and poverty since 1990.

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<sup>1</sup> Similar research was carried out by Ravallion; Deininger and Squire; Schultz; Brno, Ravallion and Squire.

## Methodology and database

Database to analyse poverty is mainly from household surveys as these are the most reliable sources of information in poverty analysis. The result of household surveys concerning poverty can be found in the database of the World Bank<sup>2</sup>. Taking into account the above mentioned nine countries of Eastern Europe, 39 observations are available since 1990. As the effects of changes in economic growth on the changes in poverty and income inequality are to be examined, at least two observations are necessary for each countries. Using these two observations for a given country an interval can be defined which means the base of the analysis. Using the 39 observations for the nine countries, 30 intervals can be created (in creating the intervals the same „welfare-indicator” must be used – either income per person or expenditure per person). When constructing the intervals it is necessary that each interval should be at least two-year-long and they must come from nationally-representative surveys. [Adams 2003] Taking into account these criteria 24 out of the 30 intervals can be included in the research.

Changes in poverty can be measured by poverty rate, relative poverty gap and squared poverty gap. In order to ensure the comparability of the data, the same (4.3 dollar a day) poverty line is used for each measure and for each country. Changes in income inequality can be measured by Gini-coefficient. Data about poverty measures and the Gini-coefficient come from the World Bank database.

Measuring changes in economic growth is also possible in several ways. The most often used measure is GDP per capita in purchasing power parity and the income/expenditure per person derived from household surveys. Both indicators of economic growth are used for the analysis. The values of expenditure/income per capita can be found in the World Bank database, while GDP per capita (PPP) in USD are from IMF database. Besides GDP and expenditure/income per capita HDI is also used as a measure of human growth. Data for HDI can be found in Human Development Reports published by UN.

The effect of economic growth on poverty is measured with the method of regression analysis. Poverty at country  $i$  at time  $t$  can be expressed in the following way:

$$\lg P_{it} = \alpha_i + \beta \cdot \lg \mu_{it}^* + \gamma \cdot t + \varepsilon_{it} \quad (1)$$

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 mean expenditure / income, mean GDP or HDI 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.

It is not possible to observe the true mean  $\mu_{it}^*$ , it is only feasible to observe the following estimate:

<sup>2</sup> <http://iresearch.worldbank.org/PovcalNet>.

$$\lg\mu_{it} = \lg\mu_{it}^* + v_{it} \quad (2)$$

where:  $v_{it}$  is a country-specific, time-varying error term that is assumed to be white-noise. Using equation (2) equation (1) becomes:

$$\lg P_{it} = \alpha_1 + \beta \cdot \lg\mu_{it} + \gamma \cdot t + \varepsilon_{it} - \beta \cdot v_{it} \quad (3)$$

Taking first differences,  $\alpha_1$  can be eliminated in order to obtain<sup>3</sup>:

$$\Delta \lg P_{it} = \gamma + \beta \cdot \Delta \lg\mu_{it} + \Delta \varepsilon_{it} - \beta \cdot \Delta v_{it} \quad (4)$$

Equation (4) is used to carry out the analysis. The optimal regression analysis is found by using the backward method. In my analysis a 0.95 percent confidence level is applied.

## Results

Changes in poverty, income inequalities and economic growth are shown in Table 1. Each poverty measure falls by about 10 percent yearly. In case of income inequalities, however, increase could be experienced on average. Each measure expressing growth has increased on average. There are differences, however, in the extent of growth. Increase was the highest in case of GDP per person (8.11 percent) and was the lowest in HDI (0.45 percent). Table 1 contains the changes of the different measures.

Table 1  
Change in poverty, income inequality and growth in upper-middle income Eastern European countries since 1990

	Number of intervals where decrease was experienced	Number of intervals where increase was experienced	Average annual change (%)
Poverty rate	15	6	-10.07
Poverty gap	12	8	-10.58
Squared poverty gap	12	9	-9.77
Gini coefficient	11	12	1.22
Average income/ expenditure	7	16	4.86

<sup>3</sup> A more detailed explanation can be found in [Ravallion, Chen, 1996].

GDP per capita (PPP) US dollar	1	20	8.11
HDI	4	19	0.45

Source: own computation.

The coefficients of the regression analysis can be found in Table 2. As for income inequalities, economic growth (income or GDP) does not have any significant effect on it. The slope of the regression equation ( $\beta$ ) shows that with the increase of economic growth income inequalities tend to raise, but as the coefficient of determination ( $R^2$ ) is really low, the two features can be assumed to be independent. Even when the effect of human growth is examined, the relationship tend to be independence.

Table 2

## Economic elasticity of income inequalities and poverty

Measures of economic growth, income inequality and poverty	Trend ( $\gamma$ )	Growth elasticity ( $\beta$ )	R <sup>2</sup>
<b>Gini coefficient</b>			
Average income/ expenditure	0.009296 (0.849)	0.06999 (0.714)	0.024
GDP (PPP) per capita, US dollar	-0.0174 (-0.941)	0.315 (1.613)	0.120
HDI (without outliers)	0.001517 (0.143)	0.439 (0.579)	0.017
<b>Poverty rate</b>			
Average income/ expenditure	-0.0139 (-0.428)	-2.000 (-7.110)*	0.727
GDP (PPP) per capita, US dollar	0.04128 (0.385)	-2.041 (-1.801)*	0.146
HDI	-0.116 (-1.924)	-1.880 (-0.487)	0.012
<b>Poverty gap</b>			
Average income/ expenditure	-0.0102 (-0.330)	-2.131 (-7.899)*	0.767
GDP (PPP) per capita, US dollar	0.04237 (0.381)	-2.101 (-1.785)*	0.144

HDI	-0.110 (-1.780)	-3.211 (-0.810)	0.033
Squared poverty gap			
Average income/ expenditure	-0.0492 (-0.093)	-2.029 (-4.411)*	0.506
GDP (PPP) per capita, US dollar	0.0446 (0.329)	-1.989 (-1.401)	0.094
HDI	-0.079 (-1.118)	-5.930 (-1.311)	0.083

\* correlation is significant at the 0.05 level.

Source: own computation.

To sum it up, the initial hypothesis cannot be accepted, so growth does not decrease income inequalities. Instead, nor economic neither human growth has significant effect on income inequalities.

As for the different poverty measures, many significant correlations can be found in Table 2. Poverty rate (i.e. the rate of the population living below the poverty line) and poverty gap (i.e. the average gap of the poor's income and the poverty line) can be significantly decreased by economic growth, so both income per capita and GDP per capita can decrease them. Squared poverty gap can be decreased only by increase in average income. Human growth, however, does not have any significant effect on any poverty measure. So the initial hypothesis can partly be accepted concerning decrease in poverty. Economic growth can indeed decrease poverty, but human growth does not have any significant effect on it.

The growth elasticity of poverty is nearly the same in case of using average income and GDP. If income per capita increases by one percent, poverty rate will fall by 2 percent, while in case of GDP growth this value is 2,14 percent. One percent change in income per capita decreases poverty gap by 2,13 and one percent change in GDP per capita has 2,10 percent effect. Decrease in squared poverty gap is around 2 percent in case of increase in income and increase in GDP. While the values of growth elasticity are similar in case of the two measures of economic growth, there are important differences in the strength of the relationship between growth and poverty in case of the two growth measures. While the relationship between income per person and poverty is always strong or middle strong (the value of coefficient of determination is always higher than 0,5), changes in GDP has a weak relationship with poverty (the coefficient of determination is always below 0,5).

Another interesting finding is that the different measures of growth have about the same effect on the poverty measures with different sensitivity<sup>4</sup>. This is

<sup>4</sup> The less sensitive poverty measure is poverty rate, while the most sensitive one is squared poverty gap.

a different result that was experienced by Adams for developing countries. In case of those countries growth has a greater impact on the more sensitive measures of poverty [Adams, 2003].

## Conclusions

Since 1990 economic growth has had a significant effect on poverty, but not on income inequalities. Economic growth can significantly decrease both poverty rate and poverty gap. It means that economic growth can promote the decrease of the extent and the depth of poverty. Human development, however, has significant effect nor on poverty, neither on income inequalities. So if a country's government is willing to decrease poverty, it has to concentrate on economic growth, i.e. on the increase of GDP per capita or income per capita rather than on human development.

As economic decline has increased the extent and the depth of poverty importantly since the end of 2008, promoting economic growth has become crucially important. One way to promote it is to reduce the development disparities between regions. Most of the Eastern European countries have gone through important changes since the beginning of 1990s, which resulted in great contrasts in prosperity within cities [Sykora, 1999]. While certain parts of the cities, usually the commercial parts or the parts with tourist attractions, look like any city in Western Europe, other parts are on the edge to decay [Dingsdale, 1999], [Polańska, 2008]. Neighborhood planning can be a useful tool in doing so, as it tries to tackle the problem of economic marginalization. It includes the design of new neighborhoods and the revitalization of older ones as well [Rohe, 2009].

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