Analysing Inclusive Growth:
Empirical Evidence from the Slovak Republic[1]

Tomáš DOMONKOS – Miroslava JÁNOŠOVÁ – Filip OSTRIHOŇ*

Abstract

The presented paper aims to discuss the measurement of inclusive growth, using an abstraction, through which the inclusive growth is approximated as the pro-poor growth. Furthermore, we aim to provide an empirical evidence from the Slovak Republic. The analysis examines whether the economic growth achieved in the Slovak Republic during the time period from 2004 to 2009 had decreased the inequality of the income distribution of the households or not. During the analysis the Headcount index, the Poverty gap index and the Severity of poverty index are calculated and evaluated. The paper also provides estimation of the actual income distributions through the theoretical distributions, for the examined years. The results show rather negative relationship between growth and the decrease of income inequality.

Keywords: *inclusive growth, poverty, pro-poor growth, income distribution of Slovakia*

JEL Classification: I32, O47

Introduction

Slovakia, as a member state of the European Union, has an obligation to achieve the targets defined in the pillar inclusive growth of the Europe 2020 strategy. The targets are to raise employment rates for the part of population aged 25 – 64 up to 75% and lift 25% of population at risk of poverty from below the national poverty lines (European Commission, 2010). In order to achieve the above-mentioned targets of the Europe 2020 strategy, the past development and the current state of inclusive growth should be subject to detail review.

　* Tomáš DOMONKOS – Miroslava JÁNOŠOVÁ – Filip OSTRIHOŇ, Institute of Econo-mic Research SAS, Šancová 56, 811 05 Bratislava, Slovak Republic; e-mail: tomas.domonkos@ savba.sk; miroslava.dolinajcova@savba.sk; filip.ostrihon@savba.sk

The discussions in the scholarly literature which deal with the measurement of inclusive growth present a rather wide variety of different approaches. Hence, the main aim of our research is to suggest the most suitable approach for measuring inclusive growth and then present empirical evidence regarding the Slovak Republic.

In order to reduce the range of methods available, this paper further relies on an assumption, in line with the World Bank (2009), that pro-poor growth under an absolute definition is the closest approximation of inclusive growth.[2] Consequently, we will use the terms pro-poor growth in absolute sense and inclusive growth interchangeably.

Literature Review

Currently, the issue of inclusive growth has become ever more intensively examined by researchers throughout the world. For instance, the study *What is inclusive growth* (World Bank, 2009), aligns the definition of inclusive growth along with other similar concepts such as pro-poor growth, sustained growth and broad-based growth. Inclusive growth is defined as economic growth that allows ever more members of the society to contribute and benefit from produced growth (World Bank, 2009). Therefore, inclusive growth is in line with similar concepts such as equality of opportunities, equity or safety nets for the unemployed. The study of the United Nations (UN) *System Task Team on the Post-2015 UN Development agenda* (UNCTAD, 2012) provides a similar definition of inclusive growth with emphasis on growth's amplifying effect. Such an effect causes greater inclusiveness which, in return, further enhances economic growth itself. A study made for the Asian Development Bank (Klasen, 2010) revised the same features of inclusive growth and further extends it by the concepts "non-discriminatory" and "disadvantage-reducing". The afore-mentioned study also emphasizes the fact that the notion of inclusive growth should not be restricted to the poor and marginalized groups but should rather envelop all strata of society.

The scholarly literature has described a wide variety of options how to measure poverty, poverty reduction, growth and conclusively inclusive growth.[3] Unfortunately, the distinction between the former terms and the inclusive growth is

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[2] In this paper we distinguish between pro-poor growth in relative and in absolute sense. Pro-poor growth in relative sense is when the poor have received relatively more of the benefits from growth than the non-poor and in absolute sense, when the poor have received more benefits from growth than the non-poor in absolute units. For more details see DFID (2004).

[3] For example, the methods described in World Bank (2009) an UNCTAD (2012).

crucial. While we cannot apply to it methods used to measure poverty or growth separately, as it is the holistic, long-term view at these two partial but connected phenomena that truly defines the inclusive growth (World Bank, 2009). Therefore, a set of methods that analyzes poverty and growth jointly was developed. For instance, the approach devised by Ravalion and Chen (2003) is based on income distribution, the Lorenz curve and Watts index, creating a framework capable of capturing the complexity of pro-poor growth. Thanks to similarities among the concepts of inclusive growth and pro-poor growth we can under some restrictions[4] consider pro-poor growth as an approximation of inclusive growth (DFID, 2004). Another approach is the Growth Analytics Framework (GAF), first introduced by the World Bank (2009). It differs from the previous approach by taking into account a long-term perspective towards inclusive growth and by trying to assess where the constraints of inclusive growth might be. GAF is unique thanks to its method of analysis, which is done through the prism of the individual instead of companies or economies. The main concept is based on a detailed analysis of the sources of income available in society and, subsequently, examining those that are available to the poor.

A similar method to GAF for evaluation is the Growth Diagnostics Approach which, in its original form, is meant to assess the main constraints of economic growth, not the inclusive growth or poverty (Hausmann, Rodrik and Valesco, 2005). Based on the theory of second best and partial reform, it uses a heuristic top-down approach in a standard endogenous growth model in order to find the cause of distortion. The removal of causes of such distortion will hopefully result in the highest growth of welfare in society. Unfortunately, due to its focus on economic growth, rather than inclusiveness or poverty reduction, this approach seems inappropriate for our intentions.

Ali and Son (2007) provide a rather different measure that, instead of focusing on economic growth, evaluates the distribution of opportunities in society. Opportunities are captured via so-called Social Opportunity Function, which can be used to determine the distribution of opportunities. The study also introduces the opportunity index derived through the integration of the distribution of opportunities and equity index of opportunity that explicitly denotes whether the distribution is pro-poor or not. The shortcoming of this approach is that it does not explicitly capture the development of economic growth and focuses solely on the distribution of opportunities.

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[4] The two concepts are similar for the absolute definition of pro-poor growth, therefore when we use pro-poor growth, we will refer to the absolute sense (if not stated otherwise). For further details see World Bank (2009) [although there are opinions contradicting this notion (Klasen, 2010)].

A similar approach to the one presented by Ravalion and Chen (2003) for measuring pro-poor growth is the Poverty Equivalent Growth Rate (PEGR) proposed by Kakwani and Son (2008). By using mentioned approach, it is possible to determinate the growth rate which would be needed to achieve the same reduction or increase in poverty as was provided by actual economic growth, given that the benefits of the growth are distributed proportionally to all strata of society. By a simple comparison of the PEGR to the actual growth rate, one can easily evaluate whether the growth in the given country was pro-poor or not (Kakwani and Son, 2008).

Data and Methodology

Definitions

Among many features that are dealt with by inclusive growth, the key one is poverty. Poverty may be defined as one's inability to secure an adequate level of consumption (Black, 2002). The impoverished person is, therefore, deprived of satisfying his basic needs, such as food, drinking water, hygiene etc. (European Commission, 2011). Even though we recognize that there are more aspects of poverty than mere income, for the purposes of our analysis we disregard them. We will therefore align the term "poor" with the relative definition of Eurostat (2010) according to which an individual is considered to be threatened with poverty, when his annual income is below the poverty threshold, which is known as the at-risk-of-poverty indicator. The given indicator is calculated as 60% of national equalized median income.

Data

The primary source of data which were used is the European Union Statistics on Income and Living Conditions (EU-SILC), which is an integrated framework of national representative sample surveys (Eurostat, 2010). During 2010, it was conducted in 27 EU member states as well as in Iceland, Norway, Switzerland and Turkey. As a sample survey, it is carried out on members of selected households older than 16.[5]

Among the variables that capture the income of population, we found as most suitable the real equivalised disposable income of households.[6] The equivalised

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[5] There is a strict limit for the representative sample to be valid. For a cross-sectional component for the whole Europe, the minimum is 131,000 households or 273,000 individuals. In case of Slovakia, which is of our main interest, the minimum is 4,250 households or 11,000 individuals (Eurostat, 2010).

disposable income of households is also used by Eurostat for measuring income inequality and it was also used by Kakwani and Son (2008). The number of observations per year varies from 4,900 to 5,500. Due to the fact that Slovakia became a member of the Eurozone in January 2009, all of the data preceding this date are measured in the former currency, which was the Slovak crown (SKK). Therefore we converted the data in SKK to EUR using the fixed converse rate.[7] Household disposable income in current prices was transformed to real prices using the consumer price index (base year 2009) published by the State Statistical Office of Slovak Republic. We used the year 2009 as a base year because the EU-SILC data published for a particular year are gathered for the previous year e.g. data published for 2010, which is the last year used in our analysis, are based on the data from 2009.

Income Distribution Analysis

One of the key tasks this research faces is the identification of the distribution which fits most appropriately to our income distribution data. We followed a four-step approach presented by Banks et al. (2005) with the application of EasyFit, a specialized software tool for identifying types of distributions and parameters of these distributions. The four steps recommended by Banks et al. (2005) are as follows:

1. *Data gathering* – collecting and preparing the data for the analysis.

2. *Identification of a distribution which likely describes the input data* – frequency distribution and histogram.

3. *Selecting the parameters of the distribution family* – if data are available, the parameters can be estimated using the data.[8]

4. *Evaluation of the distributions using goodness of fit tests e.g. Kolomogorov-Smirnov test, Chi-Square test or Anderson-Darling test*[9] – if the selected distribution family fails the tests, then the analysis returns to step two and iterates again.

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[6] According to Eurostat Glossary, the equivalised disposable income is „*the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults; household members are equalised or made equivalent by weighting each according to their age, using the so-called modified* OECD *equivalence scale*". Available at: <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Equivalised_disposable_income>.

[7] By using the fixed converse rate 30.126, we were able to compare the data over time with the same units. Due to this analysis is not an intercountry comparison, we rather put aside the fluctuations of the SKK to EUR.

[8] For further details of estimating the parameters of the distributions see (Banks et al., 2005).

According to Banks et al. (2005), the final selection of the distribution cannot rely only on the results of an automatic selection of distribution and its parameters and goodness of fit tests, but also expert knowledge of the processes and graphical methods are recommended to be taken into consideration.

Kakwani (1980) states that when it comes to explaining the actual distribution of income among the population, it all comes down to two main schools of thought: the theoretical statistical school and the socio-economic school. The crucial difference is that the former disregards all possible factors and uses stochastic models to describe particular distribution of income. On the other hand the latter approach relies on economic and institutional factors, such as age, gender, occupation, wealth etc., in order to describe a given distribution of income.

According to Kakwani (1980) income can be treated as a random variable. Thus, a number of density functions can describe the properties of income. The first suggested was the Normal distribution, which was rejected due to inconsistent properties with observed distributions of income (such as positive skewness which is typical for income data). One of the first density functions, which were devised to capture the observed income distribution, is the Pareto distribution, or Pareto law. It has been criticized as well. Based on analysis of the distribution, it became obvious that Pareto distribution is only valid for incomes greater than mode. The number of valid cases is rather hard to quantify but it is ought to be less than 50% of whole income distribution. Conversely, Champornowne proved that, under suitable conditions, any initial distribution of income will converge to the Pareto distribution (Kakwani, 1980).[10]

There is a history of using density functions for modeling the distribution of income, which do not satisfy the relaxed Pareto law properties. One such distribution is the Lognormal distribution, which exhibits suitable properties such as positive skewness and reasonable fits for about 60% of the population. The disadvantages are poor fits for the tails, a tendency to symmetry and limitation to positive income levels. Another such distribution is the Gamma density function, which in some cases can provide a better fit than the Lognormal distribution (Kakwani, 1980), but still can deform the skewness of the data.

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[9] Goodness of fit tests have certain limitations which are explained in detail in Vose (2010). Despite this, currently these tests represent standard evaluation tools in many specialized software e.g. Easyfit, Statfit. Hence, we also partially rely on these tests during the distribution identification procedure.

[10] Additionally distributions, which satisfy the relaxed Pareto law properties, were identified. Such distributions are, for example, the Burr distribution, a second kind of Pareto distribution, Champornowne's distribution and Fisk's distribution (Kakwani, 1980).

PEGR Methodology

The key tool for evaluating whether Slovakia achieved inclusive growth in the selected period 2004 – 2009 is the Poverty Equivalent Growth Rate, developed by Kakwani and Son (2008). The PEGR can be explained as the growth rate "*that would result in the same proportional change in poverty as the present growth rate, if the growth was not accompanied by any changes in relative inequality…*" (Kakwani and Son, 2008). This unique measure allows us to determine through a simple comparison of the PEGR to the actual growth rate, whether the given growth was pro-poor or not.

The basis of the framework is composed of a particular income distribution density function $f(x)$ and homogeneous function $P(z, x)$, which evaluates the actual poverty of a particular household. Combining the previously stated functions, we obtain an arbitrary poverty measure θ in the following form (Kakwani and Son, 2008):

$$\theta = \int_0^z P(z, x) f(x)\, dx \tag{1}$$

where

   z – the poverty line,
   x – the individual's or household's income.

Based on the particular form of $P(z, x)$, a different poverty measure may be obtained. Kakwani and Son (2008) also devised an approximation of the PEGR which we use for the practical evaluation of Slovak economic growth.[11]

We use the formula (1) for computing the poverty measure by fitting the actual data to the theoretical statistical density functions and computing the integral numerically using Trapezoidal's and Simpson's rule. Such an approach should not affect the outcome or the consequent steps of the PEGR calculation. The poverty line in each year is computed as 60% of the median for the given sample used to estimate the distribution of income. After obtaining the values for the PEGR for every period, we will evaluate whether growth in that period was pro-poor or not. We further distinguish between relative and absolute pro-poor growth. For the economic growth to be relative pro-poor growth, the PEGR index has to be greater than the index of actual growth for the same period. On the other hand, economic growth is pro-poor in the absolute sense if the following condition is satisfied:

$$\hat{\gamma}^* > \hat{\gamma}[1 + (\varphi - \varphi^*)] \tag{2}$$

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[11] For the theoretical derivation of the mentioned relations, see Kakwani and Son (2008).

given condition (2) can be derived through the decomposition of the PEGR index γ^*, which denotes the growth rate necessary to result in the same shift in poverty as was achieved by the actual growth γ, provided that the inequality does not change. For computation of the PEGR index, the pro-poor growth index is vital. We distinguish between relative φ and absolute φ^* pro-poor growth index. It determines whether the poor are enjoying more of the benefits of economic growth or not. The distinction depends on whether the value of φ is greater than one (relative pro-poor growth) or less than one (not the case of pro-poor growth). Conversely, during periods of economic decline, the loss is relatively pro-poor if φ is less than one. The same properties are also valid for the absolute pro-poor growth index φ^* (for further details, see Kakwani and Son, 2008).

Equation (2) is a key measuring tool for this paper, while it allows us to determine whether economic growth was pro-poor or not and thus whether it was inclusive or not (for further details see Kakwani and Son, 2008). We do recognize that there are more aspects to the concept of inclusive growth and that the income is just one of them (Klasen, 2010), but for the sake of simplicity and consistency of the used framework we abstract from them.

Poverty Measures

Following the example of Kakwani and Son (2008), we have selected the Foster-Greer-Thorbecke class of measures as the most suitable for evaluating poverty. We introduce the measures only as homogenous functions and not the measures itself, so the description is compatible with relation (1). For practical use, without the PEGR methodology, the following formula would have to be amended according to Haugton and Khandker (2008). The general description of the class is the following relation:

$$P(z,x) = \left(\frac{z-x}{z}\right)^\alpha \tag{3}$$

where P denotes the kind of Forster-Greer-Thorbecke measure, for observed individuals (households), whose income x is below the poverty line z (Foster, Greer and Thorbecke, 1984). α can be interpreted as the parameter of inequality aversion (Kakwani and Son, 2008). Based on the value of α, we may obtain various poverty measures of the Foster-Greer-Thorbecke class of measures. The parameter α can be set to 0, 1 and 2. The measure for value 0 is known as the Headcount index, which gives the proportion of the population which is exposed to a risk of poverty. Value 1 gives the Poverty gap index and value 2 gives the Severity of poverty index. These indices assign weights to the Headcount index, where the weight for the given income represents how far it is below the poverty line in the case of the Poverty gap index. The identical concept for Poverty gap

index only squared gives the Severity of poverty index. Therefore, relatively more weight is assigned to the extremely poor by the Severity of poverty index, than by the Poverty gap index (Haugton and Khandker, 2008).

Results and Discussion

The distribution selection procedure was carried out following the four-step approach according to Banks et al. (2005) described above. We also took into account the research presented in Kakwani (1980), which explains e.g. that the Pareto and Burr distributions were developed for modeling income distribution, and that the Gamma distribution does not meet the Pareto principle i.e. the 80 – 20 rule. The histograms and the goodness of fit tests of income distribution data tend to show similarities to Gamma, Generalized Pareto, Burr, Person or Fatigue Life distributions.

According to the goodness of fit tests' results, further graphical tests and expert knowledge, the Generalized Pareto distribution was selected as the distribution which fits the income distribution best. The goodness of fit tests, and also the graphical tests, proved their appropriateness for representing the distribution of income (see Appendix A). Furthermore, due to this distribution having been specially developed for modeling the distribution of income, it also seems to be, according to the theoretical foundations, the most appropriate among the analyzed distributions.[12]

The Generalized Pareto distribution's parameters for each analyzed year are listed in Table 1.

T a b l e 1

Results of the Automatic Distribution Identification from EasyFit – the Parameters of the Generalized Pareto Distribution for the Analysed Years 2004 – 2009

	Shape – k	**Scale – s**	**Location – m**
2004	−0.145	3358.4	2179.4
2005	0.063	2890.1	2529.8
2006	−0.192	3823.8	2759.7
2007	−0.225	4178.6	2794.6
2008	−0.204	4404.9	2923.6
2009	−0.223	4879.3	3187.6

Source: Authors' own calculations based on EU-SILC data by using EasyFit.

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[12] The Gamma distribution also performed very well according to the graphical and goodness of fit tests, but the results were less straightforward in comparison to the Generalized Pareto distribution.

While the parameters are different, they show a certain level of similarity. We used these distributions for a further analysis of inclusive growth over the selected reference period.

Results

For the computation of the actual PEGR indicators for Slovakia, we have followed the procedure outlined by Kakwani and Son (2008), although we have altered a few steps in order to achieve more reliable results. Therefore, we used the Generalized Pareto distribution density function, which parameters' estimates are stated above (Table 1), to compute the poverty measures necessary for the PEGR indicators. The results for the Foster-Greer-Thorbecke class of measures are listed in the following table.

T a b l e 2
PEGR Computed on the Basis of the Generalized Pareto Distribution

Period	Actual growth rate (log)	Headcount index		Poverty gap index		Severity of poverty index	
		PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$	PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$	PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$
2005	0.093	−0.446	−0.201	−0.505	−0.313	−0.535	−0.367
2006	0.061	0.381	0.310	0.443	0.417	0.476	0.470
2007	0.039	0.082	0.088	0.090	0.109	0.093	0.118
2008	0.059	0.004	0.061	0.002	0.060	0.001	0.059
2009	0.087	0.019	0.098	0.022	0.104	0.023	0.106

Source: Authors' own calculations.

In the second half of the last decade Slovakia experienced a period of stable economic growth, which achieved its minimum in 2007 (almost 3.9%) and its climax in 2005 (almost 9.3%). On the other hand the PEGR indicator shows controversial results. In 2005 the PEGR is negative for all the selected measures. This means that the situation of moderately and extremely poor deteriorated. We can also notice that the magnitude of the absolute value of the PEGR grew in every period with the growth of the parameter of inequality aversion. Such results mean that the households mostly exposed to poverty are deprived of economic growth more than households which are closer to the poverty threshold.

The only exception is in 2008 when the conditions of the extremely poor improved with slower pace than in the case of moderately poor. Unlike the other years, during which the conditions of the extremely poor improved more intensively than the conditions of moderately poor. Furthermore, the magnitude of the PEGR in 2006 indicates that economic growth can be classified as pro-poor growth both in the relative and absolute sense, since the computed PEGR is greater than the actual economic growth and the condition (2).

As verification of the obtained results, we have computed the same PEGR indices through the methodology described by Kakwani and Son (2008) on the data used for the estimation of the distributions. We have diverted from their approach though, by using original data instead of those normalized to the poverty line. The results for the Foster-Greer-Thorbecke (1984) class of poverty measures are listed in the tables below.

T a b l e 3

PEGR Computed on the Basis of the Actual Distribution of Income, for the Headcount Index

Period	Actual growth rate (log)	Headcount index		Poverty gap index		Severity of poverty index	
		PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$	PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$	PEGR	$\hat{\gamma}[1 + (\varphi - \varphi^*)]$
2005	0.093	0.053	0.093	0.097	0.117	0.126	0.144
2006	0.061	0.017	0.061	0.020	0.066	−0.014	0.055
2007	0.039	−0.015	0.040	−0.004	0.039	0.012	0.045
2008	0.059	0.006	0.059	−0.052	0.046	−0.033	0.044
2009	0.087	−0.006	0.086	0.010	0.089	−0.002	0.086

Source: Authors' own calculations.

The resulting the PEGR indicators show rather different results than the previous outcomes. It seems that the conditions have worsened throughout the years 2005 – 2009. Beside the period of 2005 no other period showed pro-poor growth either in relative or absolute sense. In 2005 except the Headcount index all other poverty measures indicate pro-poor growth in relative sense. During 2006 – 2009 the conditions of the poor have worsened, since the economic growth among the poor was either marginal or negative, which contradicts the condition allowing to classify the economic growth as inclusive growth.

Taking a closer look on the Headcount index the PEGR values are negative in 2007 and 2009, i.e. the proportion of the population that is exposed to poverty has grown throughout these periods. Therefore, we can't speak about pro-poor growth in any sense, for the examined years 2007 and 2009 at all. During the periods 2005, 2006 and 2008, the situation slightly improved for the poor, according to the PEGR measure, but the economic growth in Slovakia was not accompanied with pro-poor growth neither in relative and nor in absolute sense.

In case of the Poverty gap index the PEGR is negative in 2007 and 2008. Compared to the Headcount index PEGR, which was non-negative in 2008 and captures the absolute number of poor, the weighted Poverty gap shows that the conditions of the poor has actually declined in the same year. In the rest of the observed years the PEGR is positive. In 2005 the PEGR indicates pro-poor growth in relative sense, but in 2006 and 2009 there was no pro-poor growth.

Since the Severity of poverty index exaggerates the extremely poor we are able to notice that their situation compared to the moderately poor fell off in years 2006 and 2009. In the rest of the analyzed years their situation improved. From 2006 to 2009 we cannot speak about pro-poor growth in any sense at all, since the PEGR was negative in 2006, 2008, and 2009 and positive but very low in 2007. In 2005 we may notice pro-poor growth in relative sense.

Conclusion

When comparing the two approaches used for the computation of the PEGR, we can see that the results are different. The differences among the results are ever more evident when we look at the chart of the PEGR evolution computed for the Severity of poverty measure for both approaches (see Appendix B). It is obvious that the results computed for the experimental approach using income distribution estimation are of significantly higher order than the results of the original approach of Kakwani and Son (2008). Given distortion may be explained by the weaknesses of the selected theoretical distribution used for modeling the original data. As it was stated before, the used Pareto distribution is only valid for the income greater than the mode. Since the analysis is dealing with the poverty the income is naturally on the left tail of the domain of the distribution. Therefore it may be expected that the examined part of the distribution is below the mode. Because of that the Pareto distribution significantly overestimates the probability of income lower than the mode and therefore overestimates the relative proportion of poor households. Such case is clearly visible on the figure for the Pareto distribution estimate for the period 2006 in Appendix A. Based on the premises one of the conclusions is that despite its historical significance, for such analysis the Pareto distribution seems simply inappropriate, since it overestimates the measures of poverty.

Because of the extensive bias of the Pareto distribution introduced to the analysis we draw final conclusions based only on the PEGR indices computed by the original methodology of Kakwani and Son (2008). Overall there is no single period which could be classified as pro-poor in absolute or relative sense according to all three measures simultaneously. Anyhow the most positive for the impoverished is the year 2005. Although according to the Headcount index the living conditions of the households have improved not so significantly that we can pronounce the period as pro-poor, according to Poverty gap and Severity of poverty index the period is definitely pro-poor in relative sense. Besides this observation no other year has shown signs of relative or absolute pro-poor growth nor was the PEGR index positive for every poverty measure simultaneously.

Nevertheless based on the assumption that the inclusive growth is being achieved when pro-poor growth in absolute sense is achieved, we may only conclude that inclusive growth was not achieved in any of the examined periods.

In conditions of Slovakia the economic growth alone was not sufficient for mitigating the level and severity of poverty and the gaps between different strata in society. Such features would allow us to proclaim past economic growth as inclusive growth, which unfortunately was not the case. Conclusively, we may assume that the economic growth by itself is not the necessary condition for lowering the poverty in conditions of Slovakia. Therefore, additional mechanisms could prove useful in steering the distribution of participation and subsequently the benefits of economic growth to ensure inclusive growth. Further research would have to be conducted to determine which measures can help to improve the development of pro-poor growth in the future. The obvious result of the paper is that economic growth, by itself, is not enough to decrease poverty and the differences in conditions among the strata of society of Slovakia in the short run. The main cause of this development is that poor are not involved enough into the production and the growth, thus they cannot benefit proportionally from this growth to achieve pro-poor growth in absolute sense.

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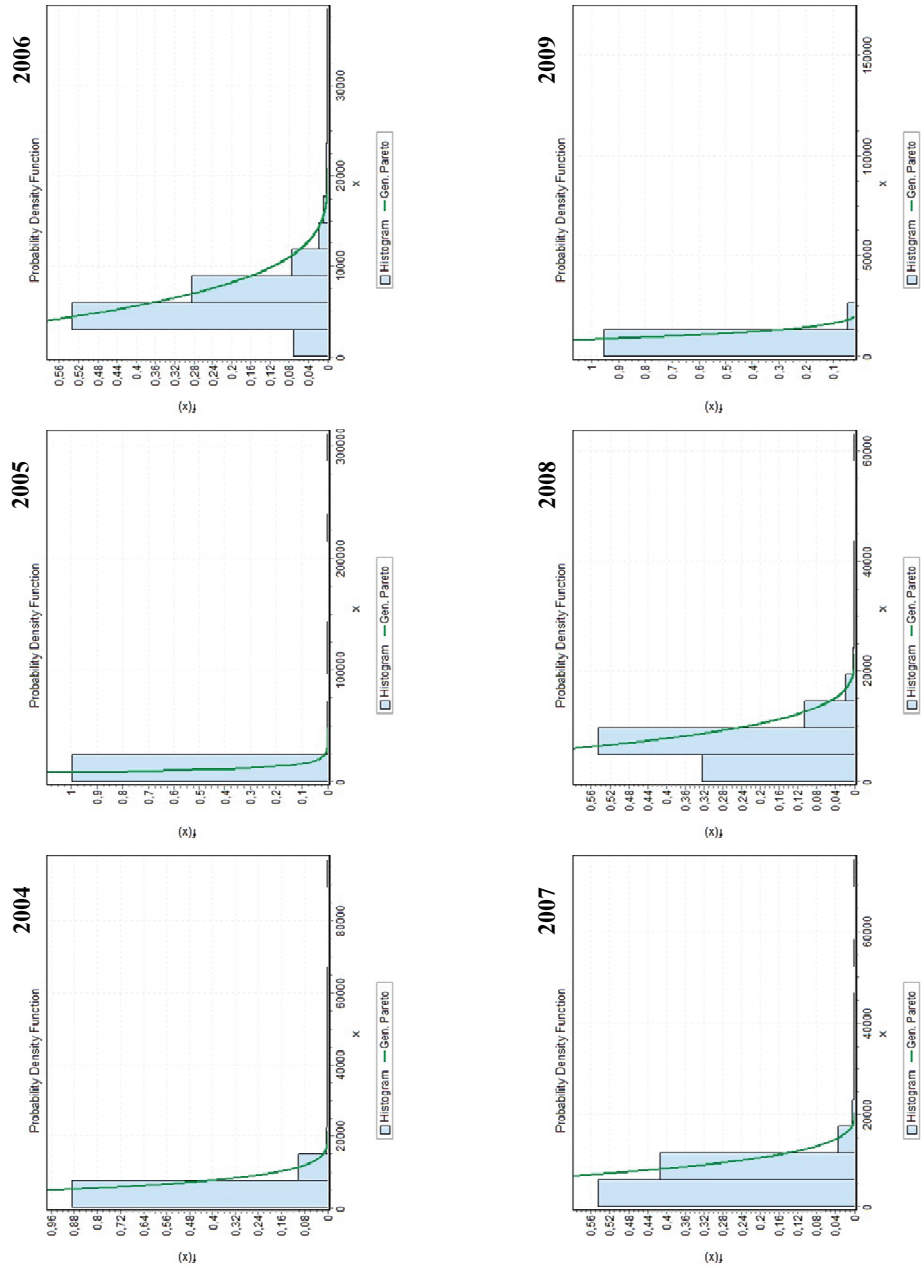
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A p p e n d i x A

G r a p h A.1

Estimated Generalized Pareto Distributions for the Analysed Years 2004 – 2009 and the Histograms of the Income Distribution Data (EU-SILC)
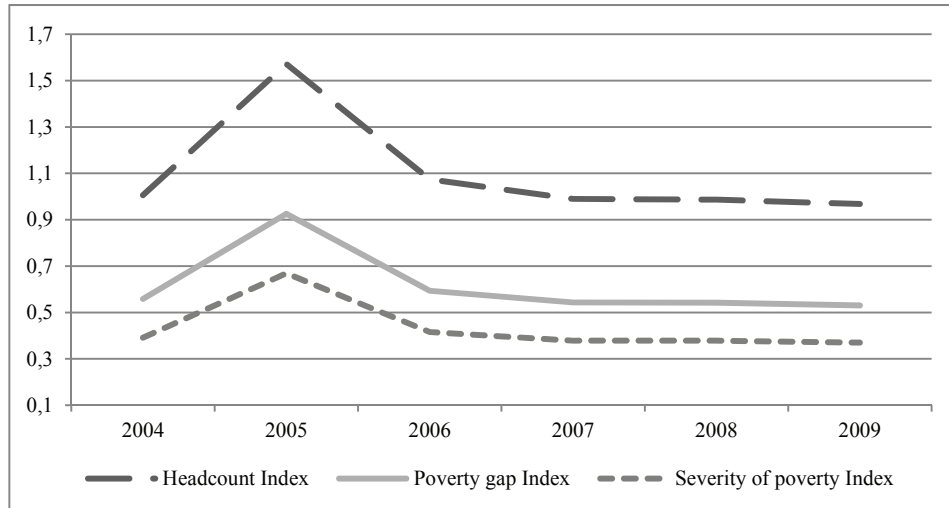

Source: Authors' own calculations computed through the EasyFit software.

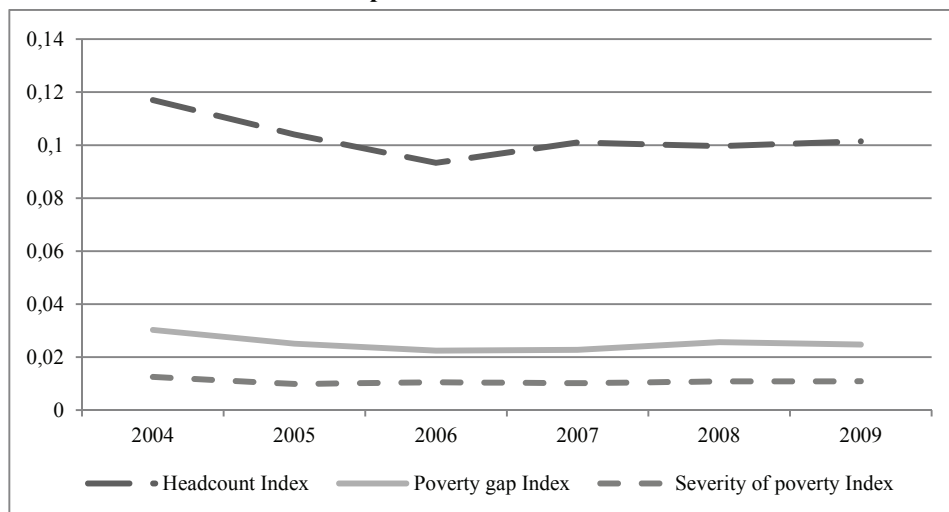# A p p e n d i x   B

G r a p h B.1

Values of Given Poverty Measure for the Analysed Years 2004 – 2009 Based on the Estimated Generalized Pareto Distribution

Source: Authors' own calculations.

G r a p h B.2

Values of Given Poverty Measure for the Analysed Years 2004 – 2009 Based on the Actual Income Date Sample

Source: Authors' own calculations.