

Pro-poorness of economic growth in Poland: contrasting cross-sectional and longitudinal approaches

[Czy wzrost gospodarczy w Polsce w latach 2005-2008 był korzystny dla ubogich? Analiza porównawcza ujęcia przekrojowego i panelowego]

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Abstract

Shortly after joining European Union, during 2005-2008 period, Poland experienced a high rate of economic growth associated with a sizable growth in personal incomes. However, not all individuals and social groups shared equally the fruits of growth. The present paper attempts to measure the distribution of benefits of economic growth during the period under study. In particular, the paper asks if the growth was pro-poor, both in an absolute and relative meaning. Using EU-SILC data, the paper applies some popular measures of pro-poor growth. Statistical inference is provided as well. The special focus is on contrasting the results of the cross-sectional and panel data approaches to measuring the pro-poorness of growth. Major result suggests that in general during the period studied economic growth was indeed pro-poor in both absolute and relative sense according to both cross-sectional and panel perspective.

Keywords: pro-poor growth, poverty, anonymity, longitudinal data, EU-SILC, Poland

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1. Introduction

After joining the European Union (EU) in May 2004, the rate of economic growth in Poland accelerated and reached on average 6.6% per year between 2006 and 2007. It is especially impressive if one compares this performance with the 2001-2003 period of lower economic activity with the average rate of growth of 2.4% per year. This fast GDP growth went hand in hand with a significant increase in personal mean incomes as estimated from household surveys (Brzezinski 2011). However, the aggregate increase in GDP or personal incomes say little about how these gains were divided among members of Polish society or how they were shared among various socio-economic groups (i.e. males vs. females, the young vs. the old, etc.). In particular, it is interesting to check if the benefits of growth contributed to the reduction of poverty and if the gains of the poor were, in a sense, larger or smaller than those of the non-poor. In other words, one may want to investigate whether the economic growth is “pro-poor” (the poor gain more than non-poor) or rather “anti-poor” (the non-poor gain more than the poor).

In recent few years, a substantive body of theoretical and applied literature on defining and measuring “pro-pooriness” emerged (see reviews by Essama-Nssah and Lambert 2009 and Araar et al. 2009). A number of different statistical approaches have been proposed to measure pro-pooriness of growth. For example, Essama-Nssah and Lambert (2009) introduced a family of general pro-pooriness indices, while Duclos (2009) and Araar et al. (2009) offered a stochastic dominance approach, which allows for evaluating pro-pooriness of growth robust to the choice of poverty line and poverty indices. The latter have introduced also statistical inference techniques, which allow for evaluating whether results estimated from household survey data are due to the sampling variability or correspond to the changes in the underlying income distributions in the population.

One of the most useful distinctions in the pro-pooriness literature concerns the so-called anonymity axiom. Until very recently, all relevant literature was based on this axiom, which requires that the pro-pooriness of growth between t_1 and t_2 points in time be evaluated for the poor in both points treated *independently*. In other words, the *anonymous approach* compares incomes of the initially poor (at t_1) with incomes of those finally poor (at t_2), without checking whether the finally poor are the same individuals as those initially poor. Therefore, the approach does not allow, for example, for evaluating if anti-poverty policies have really improved the lot of the persons to which they were originally targeted. It does not accommodate also such important concepts as economic mobility and chronic poverty. On the

other hand, the *non-anonymous* approach, explicitly focuses on the group of the initially poor individuals and checks how their incomes changed in the final point in time. It allows, therefore, to answer the question if there is high income mobility of the poor or if poverty is chronic (individuals are poor for an extended period of time) or rather transient (non-chronic). These advantages come, however, at a price of having longitudinal (panel) data to assess pro-poorness of growth in a non-anonymous way. For many, especially developing, transition and emerging countries, longitudinal household survey data are rather rare. It is, therefore, no surprising that most of the existing empirical studies on pro-poorness of growth relied on the anonymous approach for which relatively more accessible repeated cross-sectional data are sufficient.

The main objective of this paper is methodological. Using the non-anonymous pro-poorness framework of Grimm (2007), which draws on the anonymous approach of Ravallion and Chen (2003), and longitudinal EU Statistics on Income and Living Conditions (EU-SILC) data set for Poland between 2004 and 2007, the paper analyzes if there are important differences for evaluating pro-poorness of economic growth in Poland depending on whether cross-sectional or longitudinal perspective is used. We provide both point estimates of pro-poorness measures applied as well as simple statistical inference based on bootstrap confidence intervals. The substantive question which the paper attempts to answer is whether the fast economic growth in Poland between 2004 and 2007 was favorable to the poor according to the various definitions of “being favorable” introduced in the literature (more on this, see Section 2.1.).

Pro-poorness of economic growth in Poland was previously studied in a few papers using repeated cross-sectional data from the Polish Household Budget Surveys (HBS) conducted yearly by the Central Statistical Office (CSO).¹ Most notably, Paci et al. (2004) analyzed the impact of growth on poverty in Poland between 1994 and 2002 using, inter alia, the tools of Ravallion and Chen (2003). Their analysis was extended by Brzezinski (2011) for the period 1998-2008, who used also the more recent methods of Essama-Nssah and Lambert (2009) and Araar et al. (2009). Both papers are, however, based on the HBS data and therefore belong to the anonymous camp. The present paper complements previous analyses by contrasting the usual anonymous perspective with a non-anonymous one. Combined with the

¹ Van Kerm and Pi Alperin (2011) analyze distributional changes including pro-poorness of economic growth using EU-SILC data for 26 countries and period 2003-2007. However, due to data limitations their analysis for Poland is based on pooled two-year income pairs for 2005-2006 and 2006-2007. The present paper uses a four-year panel for 2004-2007 allowing for a more meaningful analysis of the impact of growth on poverty over time.

previous results, it gives a more complete picture of the distributional consequences of recent economic growth in Poland.

Section 2 presents the pro-poorness measurement frameworks used in this paper. The EU-SILC longitudinal data for Poland are shortly described in Section 3. Empirical results and discussion is given in Section 4, while Section 5 offers conclusions.

2. Methods

This section provides, first, a short review of various definitions and measurement frameworks for pro-poor growth, which have been proposed in the literature. Secondly, it presents the approaches of Ravallion and Chen (2003) and Grimm (2007), which are applied in this paper to Polish data for 2004-2007.

2.1. Definitions of pro-poor growth

Perhaps the most useful account of what is pro-poor growth was given by Klasen (2008). Klasen (2008) differentiates between two main approaches to measuring pro-poorness of growth, an absolute and a relative one, with the former itself existing in two versions – a strong one and a weak one. The strong absolute pro-poor growth is defined as growth experience during which absolute income gains of the poor were larger than average gains. The weak absolute pro-poor growth requires that the growth rate of the poor's incomes is greater than 0. In this paper, we focus on the weak concept of absolute pro-poorness as this approach has received the most attention in the literature. The relative pro-poor growth is defined as a growth process during which the incomes of the poor grow faster than the incomes of the non-poor. It requires, therefore, that income inequality between poor and non-poor must decrease.

The choice between absolute and relative approaches to measuring pro-poorness of growth involves several difficult positive and normative considerations (see, e.g., Klasen 2008 and Duclos 2009). The absolute approach should be preferred if one is interested in the impact of economic growth on absolute standard of living of the poor, while the relative approach is more appropriate if one is rather interested in relative inequality in the society. The former has certainly more prominence in developing countries since absolute poverty reduction is the main distributive policy objective in these countries. In developed countries, the relative approach may be equally interesting as inequality is often treated there as an equally important policy objective. Furthermore, as observed by Duclos (2009) the interest in relative pro-

poorness may be strengthen when one believes that inequality has negative impact on growth, or that it causes relative deprivation, social exclusions, unequal opportunities, political or social instability or that inequality is unacceptable from the ethical point of view.

2.2. Anonymous and non-anonymous (individual) growth incidence curves

Ravallion and Chen (2003) introduced probably the most popular framework for measuring pro-poor growth. It consists of a simple graphical tool to visualize rates of growth of all quantiles of income distribution, called the growth incidence curve (GIC), as well as an pro-poorness index, which can be used when the GIC approach fails to evaluate pro-poorness. The GIC is defined for two income distributions observed at dates $t-1$ and t . The growth rate of income y at the p th quantile, $g_t(p)$, is

$$g_t(p) = \frac{y_t(p)}{y_{t-1}(p)} - 1. \quad (1)$$

Letting p vary over the range of analyzed quantiles, gives Ravallion and Chen's (2003) GIC. The pro-poorness index based on the GIC is called the rate of pro-poor growth (RPPG). It is defined, at the time t , as the area under the GIC up to the headcount index of poverty at time $t-1$, H_{t-1} , normalized by H_{t-1} :²

$$RPPG_t = \frac{1}{H_{t-1}} \int_0^{H_{t-1}} g_t(p) dp. \quad (2)$$

With the help of the GIC and the RPPG one can measure pro-poorness in both absolute and relative meaning. If one assumes the former, then the growth is pro-poor (in a weak sense) when the GIC lies above 0 up to the quantile corresponding to the poverty line z , while it is not pro-poor (or it is anti-poor) if the GIC is below 0 everywhere over the same range of p .³

If the GIC lies above (below) 0 for all p , then there is first-order poverty dominance (Atkinson 1987, Foster and Shorrocks 1988) and therefore poverty decreases (increases) between $t-1$ and t for all poverty lines and all poverty indices within a broad class. When the GIC changes its sign up to the initial poverty line, then one cannot in general infer if growth is pro-poor using the GIC alone. In this case, the RPPG index can be used – if $RPPG_t > 0$, then growth is absolutely pro-poor and if $RPPG_t < 0$, it is not.

Ravallion and Chen (2003) show also that for small changes in income over time the RPPG is the annualized change in the Watts index of poverty divided by the initial headcount

² The headcount index of poverty is defined as the proportion of the poor in the society.

³ Poverty line is defined as a minimum standard of living below which people are considered poor.

index. Zheng (1993) shows that the Watts poverty index is the “ideal” poverty measure in the sense that it is the only measure satisfying all six desirable poverty axioms. The index is defined as:

$$W_{t-1} = \int_0^{H_{t-1}} \log \left[\frac{z}{y_{t-1}(p)} \right] dp. \quad (3)$$

The relationship between the RPPG and W_t can be seen after differentiating W_t with respect to time:

$$-\frac{dW_t}{dt} = \int_0^{H_{t-1}} \frac{d \log y_t(p)}{dt} dp = \int_0^{H_{t-1}} g_t(p) dp. \quad (4)$$

Therefore, the area under the GIC up to the headcount index gives the change in the Watts poverty index (times minus one).

The GIC and the RPPG may be used also to analyze the relative pro-pooriness of growth. Economic growth is pro-poor in the relative sense, if the GIC lies above the horizontal line at the growth rate in the overall mean income, μ , for all p up to the initial headcount index. Conversely, if the GIC lies below μ everywhere over the same range of quantiles, then growth is not pro-poor. Again, if the GIC switches its sign, no general conclusions can be drawn. In this case, one can compute the *RPPG* index: if $RPPG_t > \mu$, then growth is pro-poor in relative terms and if $RPPG_t < \mu$, it is otherwise. Moreover, the fact that the GIC is strictly increasing (decreasing) over all quantiles implies that inequality rises (falls) over time for all inequality measures satisfying the Pigou-Dalton transfer principle (Ravallion and Chen 2003). If $RPPG_t$ is equal to μ for all p , then all incomes grow at the same rate and inequality does not change.

The framework presented above is constructed assuming the anonymity axiom, i.e. the assumption that two distributions are equivalent whenever one distribution is obtained from the other by a permutation. Therefore it does not take into account the identity of persons before and after the growth experience. It compares income of a person at a specific quantile at time $t-1$ with income of a person at the same quantile at time t , ignoring the fact that the two persons may be (and usually are) different individuals. In other words, the anonymous framework of Ravallion and Chen (2003) does not allow for tracing incomes of individuals, who were initially poor. In effect, it is impossible to verify if the initially poor remained poor over the period of analysis, in which case poverty is rather chronic than transitory. Equivalently, one cannot say if there is income mobility among the poor, in which case at least some of the initially poor escaped poverty, possibly due to the implementation of poverty-reducing poli-

cies. For these reasons, a non-anonymous evaluation of pro-poorness of growth may provide some useful complementary insights into the nature of poverty in any given time and place.

In order to extend Ravallion and Chen's (2003) approach in a non-anonymous way, Grimm (2007) introduced new versions of the GIC and the RPPG, which assume that the identity of individuals at times t and $t-1$ is known.⁴ In particular, he assumes that we can order individuals, observed at $t-1$ and t , according to the information about the income quantile $p(y_{t-1})$ they belonged to at $t-1$.⁵ Then, individuals are ordered in ascending order according to their initial income quantile $p(y_{t-1})$. Next, one can compute quantile-specific mean incomes for $t-1$ and t and growth rates in mean income for $p(y_{t-1})$:

$$g_t(p(y_{t-1})) = \frac{y_t(p(y_{t-1}))}{y_{t-1}(p(y_{t-1}))} - 1. \quad (5)$$

Analogously to the GIC, the non-anonymous (or simply *individual*) growth incidence curve (IGIC) is defined by Grimm (2007) as $g_t(p(y_{t-1}))$ drawn for all analyzed quantiles $p(y_{t-1})$. Similarly to GIC, IGIC is horizontal if each quantile grows at the same rate, i.e. rate equal to the growth in the overall average income. If $g_t(p(y_{t-1})) > 0$ ($g_t(p(y_{t-1})) < 0$) for all $p(y_{t-1})$, then each quantile is richer (poorer) in t than in $t-1$.

On the basis of IGIC, Grimm (2007) derives a non-anonymous version of RPPG – individual rate of pro-poor growth (IRPPG) defined as:

$$IRPPG_t = \frac{1}{H_{t-1}} \int_0^{H_{t-1}} g_t(p_{t-1}) dp_{t-1}. \quad (6)$$

In other words, IRPPG is the area under IGIC up to the initial headcount index, H_{t-1} , divided by the initial headcount index.

The absolute and relative concepts of pro-poorness can be formulated in the non-anonymous framework in the following way. Growth is pro-poor in absolute terms, if IGIC lies everywhere above zero up to the quantile corresponding to the initial poverty line. It is not absolutely pro-poor, if the IGIC lies below 0 everywhere over the same range of p . If the IGIC changes its sign, then IRPPG may be used instead. In this case, growth is absolutely pro-poor if $IRPPG > 0$ and absolutely not pro-poor if $IRPPG < 0$.

When the relative pro-poorness definition is used, Grimm (2007) defines economic growth as pro-poor in his non-anonymous framework if the IGIC lies everywhere above the horizontal line at the growth rate in the overall mean income, μ , for all p up to the initial

⁴ Other non-anonymous frameworks to measure pro-poor growth have been proposed by Jenkins and Van Kerm (2006, 2001), Wagstaff (2009) and Bourguignon (2011).

⁵ This information is easily obtainable if we have access to longitudinal data on individual incomes at t and $t-1$.

headcount index. Conversely, if the IGIC lies below μ everywhere over the same range of quantiles, then growth is not pro-poor in relative terms. If the IGIC switches its sign, the IRPPG should be used. In this case, if $IRPPG_t > \mu$, then growth is pro-poor in relative terms and if $IRPPG_t < \mu$, it is otherwise.

3. Data

The main source of data for this paper is the EU Statistics on Income and Living Conditions (EU-SILC). EU-SILC is the EU reference source for comparative statistics on income distribution, living standards, and social exclusion (see Atkinson and Marlier 2010). EU-SILC started in 2003 and has been fully implemented in all EU countries since 2005. The main variables covered by EU-SILC are socio-demographic variables, as well as variables related to education, housing, labour status, social exclusion, health and income. EU-SILC is organized in the form of the 4-year rotational panel, which allows for collecting representative cross-sectional and longitudinal data. Every year since 2008, an EU-SILC sample consists of four representative of the whole population sub-samples, which have been in the survey for from 1 to 4 years. Every subsamples remains in the survey for four years; each year one of the 4 sub-samples from the previous year is dropped and a new one is added. The rotational panel method allows therefore for both analyzing cross-sectional (all sub-samples collected in a given year) as well as longitudinal samples (households followed by 2, 3 and 4 years).

In this paper, we use EU-SILC income data for Poland between 2004 and 2007.⁶ They were collected by Central Statistical Office (CSO) using two-stage sampling scheme with stratification by voivodships and clustering by enumeration census areas (see CSO 2011 for more details). We focus on the longest panel available – i.e. households observed for four years from 2004 to 2007. The sample size is 8620 persons living in 3027 households. The main welfare indicator used is yearly household disposable income defined as the sum of employee income, self-employment income, pensions, transfers, capital income and other sources of income minus current transfers paid (tax on income, social insurance contributions, etc.). In order to account for the different composition of households, we use household equivalized income by dividing total household disposable income by the so-called “modified OECD” equivalence scale. This scale gives a weight of 1 to the first adult, 0.5 to any other household member aged 14 and over and 0.3 to each child below 14. The resulting number is

⁶ These data were actually collected during 2005-2008 since in EU-SILC respondents are asked about incomes for the previous year.

attributed to each household member. All incomes are expressed in 2007 prices by using the overall consumer price index.

Our sample includes only persons with non-missing observations for all four years analyzed. Persons with zero or negative incomes in any of the years were dropped from the sample. Following Jenkins and Van Kerm (2006), we defined sample-specific outliers as observations for which the Mahalanobis distance of log-income pairs from the sample means, was excessively large. This affected about 1.5% of observations in the sample. In all analyses, we use personal longitudinal weights specific for 4-year panel duration (see Verma et al. 2007).

The yearly poverty line used ($z = 7398.8$ PLN) is the adjusted monthly poverty line for 2003 taken from Szulc (2008). It is multiplied by 12 and adjusted by the overall consumer price index to 2007 prices.

4. Results

Table 1 presents some basic distributional statistics for the period between 2004 and 2007 together with their bootstrap confidence intervals (CI).⁷ All analyses are performed for all population as well as for some chosen subpopulations, i.e. for the rural vs. urban residents, and for the young (0-17 years) vs. elderly (65 and more years) persons.⁸

The annual growth rate in income for the whole population was as high as 9% per year. However, it varied significantly for the subpopulations being the lowest for the elderly (5.7%) and the highest for the young persons (10.2%). Absolute poverty as measured by both headcount poverty index and Watts index has decreased in all cases; these results are statistically significant in the sense that bootstrap 95% CI for point estimates in 2004 and 2007 do not overlap. The fall in absolute poverty is rather large – in case of the whole population the poverty rate has fallen from 20.2% to 7.6%. It is similarly impressive for all subpopulations – the smallest relative decline can be observed for the elderly for which it has fallen from 8.3% to 3.4%.

⁷ Following Jenkins and Van Kerm (2011), we use a non-parametric block (panel) bootstrap procedure, as described by Cameron and Trivedi (2005, Chapter 11), which accounts for sample dependence due to the longitudinal nature of the EU-SILC data. This procedure forms a bootstrap replicate from the sample of households interviewed in the first year of the study (EU-SILC 2005). The bootstrap panel replicate includes information on all household members of the selected household and their incomes for both 2004 and 2007. We do not account for the complexity of EU-SILC sample design because data about stratification and clustering were lacking.

⁸ More precisely, rural areas correspond to areas of “low degree of urbanization” according to Eurostat’s terminology, while urban areas are those characterized by “high degree of urbanization”.

Table 1. Descriptive statistics

	All Population	Rural	Urban	Young (0-17 yrs)	Elderly (65+ yrs)
Annual growth rate in mean income	9.01 (8.17-9.88)	9.63 (8.45-10.77)	8.19 (6.69-9.64)	10.18 (8.90-11.59)	5.66 (4.87-6.46)
Poverty rate, 2004	0.202 (0.185-0.220)	0.268 (0.241-0.299)	0.118 (0.096-0.141)	0.292 (0.260-0.326)	0.083 (0.067-0.102)
Poverty rate, 2007	0.076 (0.065-0.086)	0.102 (0.083-0.122)	0.045 (0.031-0.059)	0.108 (0.088-0.131)	0.034 (0.022-0.046)
Watts, 2004	0.089 (0.079-0.098)	0.120 (0.104-0.138)	0.052 (0.039-0.066)	0.133 (0.112-0.153)	0.026 (0.017-0.034)
Watts, 2007	0.025 (0.020-0.030)	0.032 (0.025-0.039)	0.013 (0.008-0.019)	0.042 (0.031-0.055)	0.006 (0.003-0.009)
Gini, 2004	0.332 (0.320-0.343)	0.316 (0.300-0.332)	0.327 (0.308-0.346)	0.346 (0.326-0.369)	0.246 (0.231-0.261)
Gini, 2007	0.303 (0.290-0.316)	0.283 (0.269-0.297)	0.303 (0.281-0.323)	0.314 (0.292-0.338)	0.242 (0.224-0.261)

Note: yearly poverty line is 7398.8 PLN. Percentile-based bootstrap 95% CI given in parentheses.

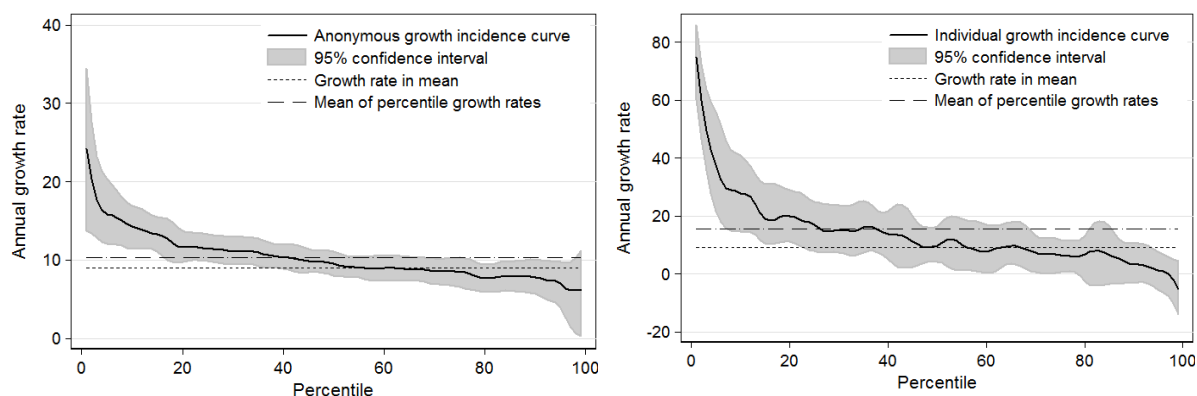
The analysis of results for the Gini index of inequality suggests that overall income inequality might have fallen by about 9% between 2004 and 2007. Point estimates for the Gini index suggest similar trends for all subpopulations but the results are statistically significant only for the rural residents. These results are consistent with those obtained by Brzezinski and Kostro (2010) and Brzezinski (2011), where repeated cross-sectional Household Budget Survey data (CSO 2008) were used. These studies suggest that, depending on the period, welfare indicator, and subpopulation studied, inequality changes during, respectively, 2003-2008 and 2005-2008, were either statistically insignificant or small and negative (i.e. inequality decreased).

The analysis of GICs and IGICs is presented on Figures 1-5. They plot point estimates for GICs and IGICs together with their bootstrap 95% CI, which may be used for inference.⁹ Figure 1 depicts GIC and IGIC for all Poland between 2004 and 2007. A look at the GIC suggests that annual growth rates for all percentiles were positive meaning that incomes for all groups of persons increased. During the analyzed period, the economic growth is absolutely pro-poor in the Ravallion and Chen's (2003) sense. The GIC curve is also negatively sloped, which suggests that the growth rates in income were higher for the poorer persons. Consequently, income inequality decreased (this was also suggested by changes in the Gini index, see Table 1). The lower bound of CI for GIC is above the horizontal line at the growth rate in the mean income for about up to 35% percentile, which means that the growth can be also

⁹ All curves presented on Figures 1-5 were smoothed using multiple running median smoothers.

called pro-poor according to the relative definition of Ravallion and Chen (2003). (The poverty line in 2004 for the whole population corresponds to the 20th percentile).

Figure 1. GIC (left panel) and IGIC (right panel) for all population, Poland, 2004-2007



The conclusions about the relative pro-poorness of growth can be also obtained if one compares the growth rate in mean income with the mean of the percentile growth rates (denoted by dash-dotted line on Figures 1-5). The latter is a population weighted statistics and thus gives more weight to the poorer population. Therefore, if the mean of percentile growth rates is higher than the growth rate in the mean income, then incomes of the poor grew relatively faster than the mean income. In fact, this is a case for virtually all analyses performed in this paper.

Figure 1 can also be used to compare the anonymous approach based on the GIC with the non-anonymous one based on the IGIC (right panel). This analysis reveals that according to the ICIG economic growth in Poland between 2004 and 2007 was even more pro-poor in both absolute and relative sense than in case of the GIC. The initially poor had higher absolute and relative growth rates than according to the GIC approach. This can be also observed if we compute the RPPG and the IRRPG (see first row in Table 2). The IRRPG is significantly higher (31.9%) than the RPPG (14.9%) suggesting that the upward income mobility of the initially poor is underestimated by the GIC approach. However, both indices agree that if all population is studied, the growth was both absolutely and relatively pro-poor.

Figures 2-5 provide results for the chosen sub-populations. In case of rural and urban subpopulations (Figures 2-3) initial poverty line corresponds to the 27th percentile. Therefore, growth has been clearly pro-poor according to the absolute definition. However, the lower bound of 95% CI for both curves crosses the line depicting growth rate in mean before the

27th percentile and therefore one cannot infer the relative pro-poorness on the basis of the GIC or the IGIC alone.

Table 2. Annual rates of pro-poor growth, Poland, 2004-2007

	RPPG (assumes anonymity)	IRPPG (assumes no anonymity)
All population	14.91 (12.51-17.50)	31.88 (29.15-34.23)
Rural residents	15.28 (12.49-17.95)	29.33 (26.06-31.94)
Urban residents	15.54 (10.53-20.53)	37.88 (31.54-43.52)
Young (0-17 yrs.)	15.47 (12.00-19.30)	30.28 (26.49-33.09)
Elderly (≥ 65 yrs.)	8.19 (5.13-11.95)	21.96 (16.25-26.72)

Note: yearly poverty line is 7398.8 PLN. Percentile-based bootstrap 95% CI given in parentheses.

Figure 2. GIC (left panel) and IGIC (right panel) for rural residents, Poland, 2004-2007

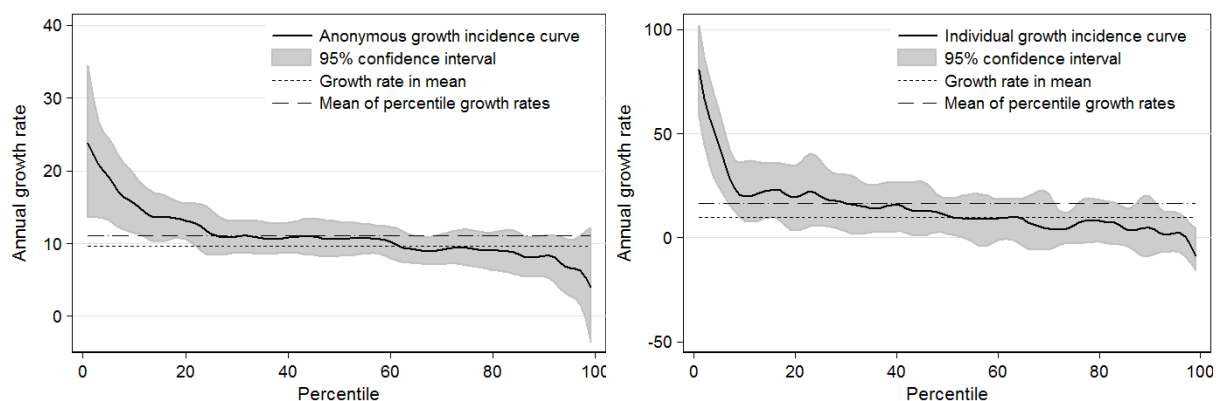
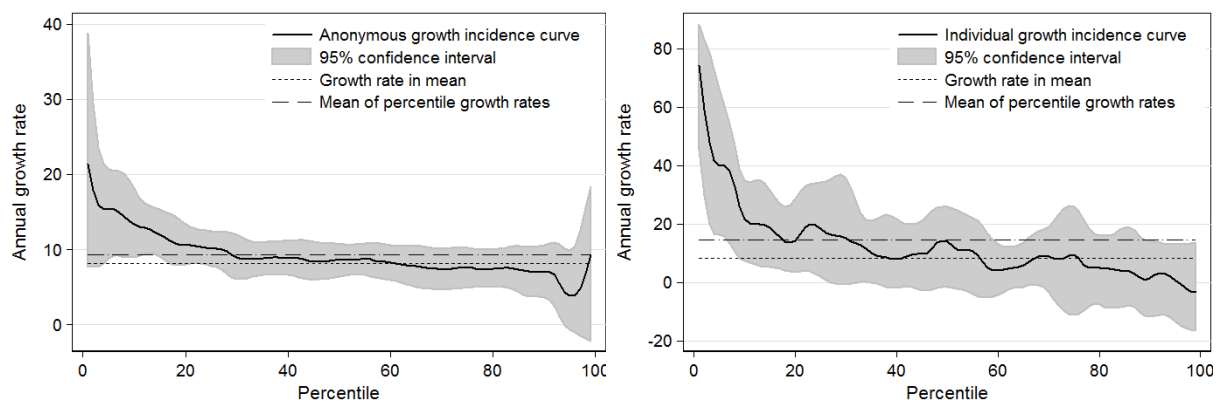


Figure 3. GIC (left panel) and IGIC (right panel) for urban residents, Poland, 2004-2007



However, we observe that the RPPG and IRRPG for rural residents (see row two in Table 2) are significantly higher than the growth rate in mean income (see Table 1). Therefore, the growth can be labeled relatively pro-poor in both anonymous and non-anonymous way also for rural residents. Similar conclusions can be drawn for urban residents (Figure 3), for which initial poverty line corresponds to the 12th percentile. Again, anonymous and non-anonymous provide a consistent picture with a remark that initially poor urban residents gained much more than the GIC approach suggests.

A final comparison concerns the results for the young and the elderly persons (Figures 4-5). In these cases, the initial poverty line is at, respectively, 29th percentile and 8th percentile. Both types of curves show that the economic growth was absolutely pro-poor for both sub-populations.

Figure 4. GIC (left panel) and IGIC (right panel) for young persons (0-17 yrs), Poland, 2004-2007

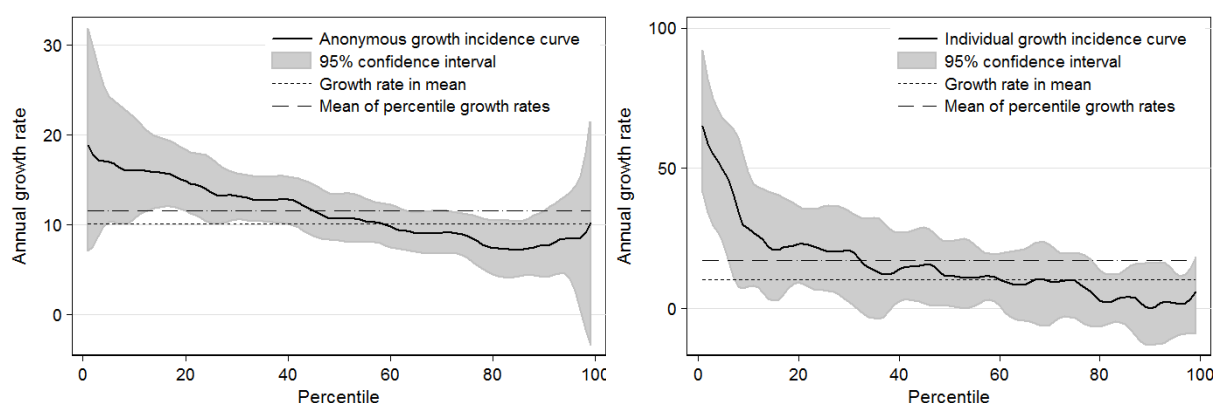
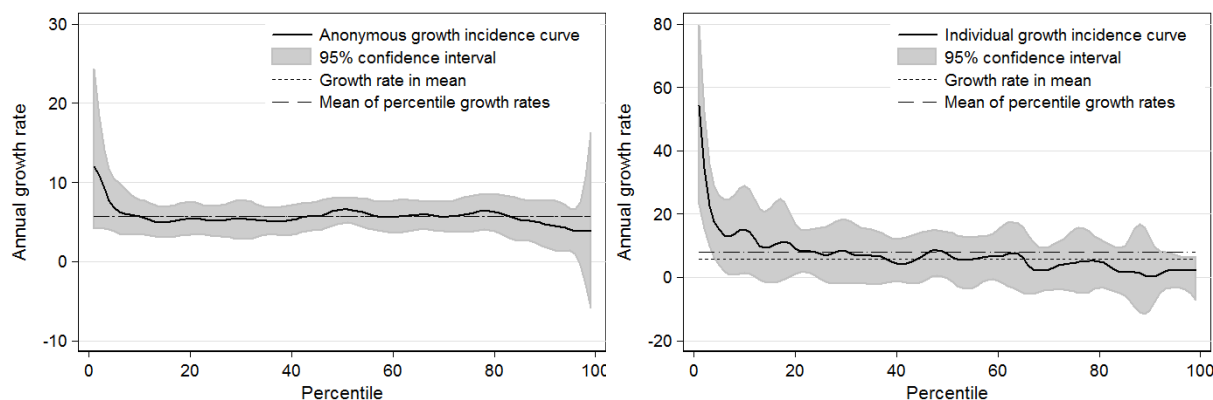


Figure 5. GIC (left panel) and IGIC (right panel) for elderly persons (65+ yrs), Poland, 2004-2007



For the young persons, the relative pro-poorness can be evaluated using the RPPG and the IRPPG indices. Using Tables 1 and 2, we can conclude that also for this subpopulation the growth was also relatively pro-poor according to Ravallion and Chen's (2003) definition.

The population of the elderly persons presents an interesting case. The GIC on Figure 5 shows that the rates of growth for this population according to the anonymous approach were remarkably equal. Only a small number of poor achieved rates of growth higher than the growth rate in mean income. It is therefore not surprising, that the Gini index (see Table 1) for the elderly is essentially unchanged between 2004 and 2007. Just like in previously analyzed cases, the curves agree that the growth was absolutely pro-poor and that the relative pro-poorness cannot be unambiguously assessed. Turning to pro-poorness indices does not help in the anonymous case as confidence intervals for the RPPG and the growth rate in the mean income for the elderly do overlap. However, similarly to previous cases, the IRPPG for the elderly is much higher than the RPPG showing that the growth rates for the initially poor elderly persons were sizeably higher than those of the non-poor. Comparing respective numbers from Figures 1 and 2, we can conclude that the non-anonymous approach allows to conclude that the growth was relatively pro-poor as the IRRG is significantly higher than the rate of growth in mean income.

The case of the Polish elderly between 2004 and 2007 shows that the two approaches – an anonymous one and a non-anonymous (individual) one – indeed provide sometimes conflicting evaluations of pro-poorness of growth and should therefore be used as complementary tools.

5. Conclusions

This paper used EU-SILC household survey micro-data for 2003-2007 to evaluate how the benefits of fast economic growth during this period were shared among the members of Polish society with the special focus on the incomes of the poor. Two methodological perspectives were employed – an anonymous one, which does not identify the identities of poor individuals throughout the analyzed period (Ravallion and Chen 2003) and a non-anonymous (or individual) one, which uses longitudinal data to trace the income history of individuals who were initially poor (Grimm 2007). We have analyzed pro-poorness of growth according to two definitions – absolute one and relative one.

The most important substantive conclusion from the paper is that for the whole population of Poland economic growth during the studied period was pro-poor according to both definitions. In other words, the rates of growth of poor's incomes were positive and higher than those of the non-poor. For this reason, income inequality as measured by the Gini index, decreased. These results are statistically significant. Similar conclusions were reached for almost all subpopulations studied.

The methodological conclusion from this paper is that for our data, the anonymous and the non-anonymous perspective on measuring pro-poor growth give qualitatively similar results – growth is pro-poor in both absolute and relative meaning for both perspective except for the population of the elderly. On the other hand, the pro-poorness index implied by the non-anonymous (individual) approach is usually at least two times the analogous index for the anonymous approach. This shows that the initially poor have gained more over the period than some persons who were initially not poor. Therefore, there was some upward income mobility between 2004 and 2007.

Finally, the results of this paper should not be interpreted as an evidence in favour of the general claim that economic growth in Poland during the transformation from socialism to capitalism has been universally pro-poor. The analysis in this period is restricted to a rather short period from 2004 and 2007. An analysis in Brzezinski (2011), which covers a longer period from 1998 to 2008, but uses only cross-sectional data, shows that while economic growth over this decade was pro-poor according to the absolute definition, it was anti-poor in the relative sense because of sizeable increase in income inequality during 1998-2005.

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Streszczenie

Wkrótce po wstąpieniu do Unii Europejskiej w okresie lat 2005-2008 odnotowano w Polsce szybkie tempo wzrostu gospodarczego, któremu towarzyszył wyraźny wzrost dochodów osobistych Polaków. Jednak nie wszystkie jednostki i grupy społeczne zyskały w takim samym stopniu. Niniejszy artykuł próbuje odpowiedzieć na pytanie w jaki sposób rozkładały się korzyści ze wzrostu gospodarczego w badanym okresie. W szczególności zadawane jest pytanie czy wzrost gospodarczy był korzystny dla ubogich, zarówno w sensie absolutnym jak i relatywnym. Wykorzystując dane *EU Survey on Income and Living Conditions* (EU-SILC), w artykule zastosowano popularne metody pomiaru wzrostu korzystnego dla ubogich (*pro-poor growth*) wraz z wnioskowaniem statystycznym. W szczególności położono nacisk na porównanie wyników badania przeprowadzonego na danych przekrojowych z wynikami uzyskanymi dla danych panelowych. Główny wynik pracy wskazuje, że w badanym okresie wzrost gospodarczy był zasadniczo korzystny dla ubogich według zarówno przekrojowej, jak i panelowej perspektywy badania danych.

Słowa kluczowe: wzrost korzystny dla ubogich, ubóstwo, anonimowość, dane panelowe, EU-SILC, Polska