

**CHANGES IN THE RELATIVE SITUATION
OF THE POOR IN A GROWING ECONOMY
– THE CASE OF POLAND*****Marek Kośny**

Abstract. The permanently positive economic growth in Poland over the last twenty years has resulted in a significant improvement in the economic situation of households. The distribution of this increase in wealth was not, however, homogenous, and the pattern of income growth proved to be a crucial factor determining the situation of the poor. The aim of the paper is to investigate to what extent the characteristics of the households influence the income growth pattern. Three main groups of households will be considered: the self-employed and blue- and white-collar workers. The analysis is based on the relative concept of changes in income distribution. Besides the commonly known income growth curves, diagrams related to the Zenga inequality index will be applied.

Keywords: economic growth, pro-poor growth, poverty, income distribution.

JEL Classification: J31, I32, E24.

1. Introduction

The aggregated characteristics of the economic situation, such as GDP or GDP *per capita*, play a crucial role in the assessment of the economy's condition. They inform us about the affluence of the population, but give no information about the distribution of wealth – while distributional aspects strongly influence the actual situation of individuals. Both the current distribution and the pattern of its changes are significant determinants of the economic situation of the population's members. The growth of the economy can be accompanied by a worsening of the actual situation of the poor, and recessions with an improvement in their relative (or even absolute) position. Among many

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factors underlying the patterns of such changes, one can indicate the situation on the labor market, the structure of the economy and the level of innovations.

As innovations are the primary, long-term source of growth, it would be recommended to concentrate on the development of innovation-oriented branches of the economy. However, this raises a question about the distributional consequences of such a policy. If gain from innovations is transferred “down” – through the market mechanisms – to the other, less innovative branches, such balanced growth is not going to cause social problems. In other cases, non-market mechanisms can be necessary to prevent a too high inequality and polarization.

This fundamental problem of the identification of the growth pattern has been intensively analyzed over the last decade. Several empirical papers devoted to this problem (see Kakwani, Pernia, 2000; Dollar, Kraay, 2002; Kraay, 2006; Bibi, Duclos, Verdier-Chouchane, 2011) did not give the unambiguous answer to the question about the growth pattern. This suggests the necessity of more detailed analysis, concentrated on the sources of distributional changes.

The analysis proposed in this paper aims at the identification of the broad relationship between pattern of growth and the kind of work that is linked to the qualifications and innovativeness. To this end, three main groups (with respect to the main source of income) were distinguished: blue-collar workers, white-collar workers and the self-employed. Other large groups – such as pensioners and farmers – were omitted because the income of their members (and its changes) was not directly related to their skills and activity on the labor market.

The structure of the paper is as follows. The methods used for the analysis are presented in the next section. The third section is devoted to the presentation of data and the empirical findings for Poland. The last section concludes.

2. Methods

There are several methods of the growth pattern’s identification proposed in the literature. They are usually divided into two main groups: absolute and relative. Absolute analyses require an increase in the income of the poor¹ to categorize change as pro-poor. In the case of more demanding relative analyses, an improvement in the situation of the poor is not a suffi-

¹ Or, more broadly, improvement in their welfare.

cient condition:² for growth to be pro-poor higher rates of growth have to occur for low-income households (the poor). The latter kind of analyses is said to be more appropriate for mid and high-income countries (analogously to the analysis of absolute and relative poverty, see for example Ravallion, Chen, Sangraula, 2009). This concentrates on changes in the situation of the poor, but with respect to the whole population – in developed countries, a crucial role is played by the relative position of the individual in society.³ The growth in income⁴ of the poor, if accompanied with an even higher growth in the income of the non-poor, results in the enlargement of the social distance between both of these groups. Therefore, measures used to analyze the growth pattern in the next part of this paper belong to the relative group.

The most popular measure used to analyze the growth pattern is the Growth Incidence Curve (or income growth curve, see Ravallion, Chen, 2003; Duclos, 2009). It is defined by the formula (see Duclos, 2009, p. 45):

$$\Gamma(p) = \frac{Q^2(p) - Q^1(p)}{Q^1(p)} \quad (1)$$

where $Q(p) = F^{-1}(p)$ denotes income at the position $p(0 \leq p \leq 1)$ in the income distribution X with cumulative distribution function $F(x)$. Superscripts indicate the beginning (Q^1) and the end (Q^2) of the analyzed period.

The basic advantage of this measure is its simplicity and ease of interpretation: $\Gamma(p)$ denotes change in income level at a given position in the distribution, between the beginning and the end of the analyzed period. This value can be interpreted as a percentage change – both negative and positive values, denoting an absolute decrease and increase in income level respectively. The lower (higher) values for the poor than for the rich denote that the growth pattern is anti-poor (pro-poor). In this way, in the case of monotonic $\Gamma(p)$ the conclusion is explicit. For non-monotonic income growth curves, unequivocal judgment is possible when the value g^* exists, such that the income growth curve is beneath (above) this value for all the poor and above (beneath) for all the non-poor.

² In fact, it is even not necessary – a decrease in income of the poor could be classified as pro-poor when the non-poor lose more.

³ In the case of less developed, poor countries, the problem of minimal resources, necessary to survive, attracts more attention. Obviously, distribution of wealth is also very important.

⁴ Or some other determinant of wealth.

To supplement the characteristic of the growth pattern, the second method will be used. The basic concept of this measure is based on the Zenga diagram (see Zenga, 2007), reflecting the relation between the lower and upper mean, i.e. the relation between groups of people with lower and higher incomes. These means are defined as:

$$M^k{}^-(p) = \frac{\sum_{i=1}^{\lfloor n^k p \rfloor} x_i^k}{\lfloor n^k p \rfloor}, \quad (2)$$

$$M^k{}^+(p) = \frac{\sum_{i=\lfloor n^k p \rfloor + 1}^{n^k} x_i^k}{n^k - \lfloor n^k p \rfloor} \quad (3)$$

for lower and upper mean respectively, where x_i^k denotes income of the i -th person (in the income distribution X) at the moment k ($k = 1$ for the beginning and $k = 2$ for the end of the analyzed period); n^k stands for the number of observations (people, households) at moment k ; $\lfloor n^k p \rfloor$ denotes rounding down to the integer closest to $n^k p$ and p – position in the income distribution ($0 \leq p \leq 1$). For a given p , point measure of relative income change, denoting changes in distribution of income in a time interval, will be defined as (see Košny, 2011):

$$RIC(p) = \frac{M^2{}^-(p)}{M^2{}^+(p)} - \frac{M^1{}^-(p)}{M^1{}^+(p)} \quad (4)$$

Plotting $RIC(p)$ against p gives the relative income change curve. This informs us about changes (in percentage points) in the share of the average income of the poorer in the average income of the richer. The possible values of $RIC(p)$ range between -1 and 1 , where negative values denote a worsening (in relative terms) of the situation of the poorer and positive – an improvement. The global maximum (minimum) of this curve allows identification of the subgroup that relatively benefit (lose) the most: at this position in the income distribution, the change in share of income of the poorer in the income of the richer is the biggest. For RIC curves that are monotonically increasing (decreasing), the richest (the poorest) in the population gain the most.

3. Results

The analysis will be based on the data from the Household Budget Survey, conducted yearly by the Polish Central Statistical Office. Within this research, more than 30,000 Polish households are surveyed each year and this is the biggest data set on households' income and expenditure for Poland. The description provided for each household allows for the division of the whole population into subgroups, *inter alia*, with respect to the main source of income.

The survey has been conducted in Poland since 1950, but a relatively homogenous methodology has been used since 1998. Therefore, the presented analysis will concentrate on the period between 1998 and 2009.

The primary aim is to verify if the source of income influences the growth pattern. To this end, three groups of households will be distinguished with respect to the main source of income declared in the survey: blue-collar workers, white-collar workers and the self-employed. In order to concentrate on the situation of people working outside the agricultural sector, other groups – farmers, pensioners and social aid beneficiaries – are omitted. Such choice of subgroups allows the analysis of transmission of benefits between the groups differing with skills, qualifications and risk taken. The number of households declaring a particular source of income as the main one is presented in Table 1.

Table 1. Structure of the Household Budget Survey sample

| Year | Overall | Blue-collar workers | | White-collar workers | | Self-employed | |
|------|---------|---------------------|------|----------------------|------|---------------|-----|
| | | | % | | % | | % |
| 1998 | 31.575 | 7.937 | 25.1 | 5.426 | 17.2 | 1.994 | 6.3 |
| 1999 | 31.246 | 7.697 | 24.6 | 5.373 | 17.2 | 1.980 | 6.3 |
| 2000 | 35.952 | 8.641 | 24.0 | 5.865 | 16.3 | 2.355 | 6.6 |
| 2001 | 31.679 | 7.098 | 22.4 | 5.509 | 17.4 | 2.053 | 6.5 |
| 2002 | 32.190 | 6.650 | 20.7 | 5.793 | 18.0 | 2.028 | 6.3 |
| 2003 | 32.292 | 6.634 | 20.5 | 6.091 | 18.9 | 2.015 | 6.2 |
| 2004 | 32.054 | 6.727 | 21.0 | 6.205 | 19.4 | 2.044 | 6.4 |
| 2005 | 34.569 | 8.790 | 25.4 | 7.013 | 20.3 | 2.164 | 6.3 |
| 2006 | 37.282 | 9.868 | 26.5 | 7.619 | 20.4 | 2.325 | 6.2 |
| 2007 | 37.131 | 10.352 | 27.9 | 7.823 | 21.1 | 2.423 | 6.5 |
| 2008 | 37.107 | 10.548 | 28.4 | 8.086 | 21.8 | 2.472 | 6.7 |
| 2009 | 37.031 | 10.057 | 27.2 | 8.156 | 22.0 | 2.545 | 6.9 |

Source: own calculation.

The first part of the analysis is based on the commonly used income growth curves. These curves – for given sources of income – are presented in Fig. 1. In each case, the overall pattern of growth is anti-poor in the analyzed period – the growth rate is increasing with income. The highest rates of growth are generally observed for the self-employed and the lowest for blue-collar workers with two exceptions. Mid-income white-collar workers showed the highest rate of growth among all the analyzed groups, while low-income white-collar workers – the lowest.

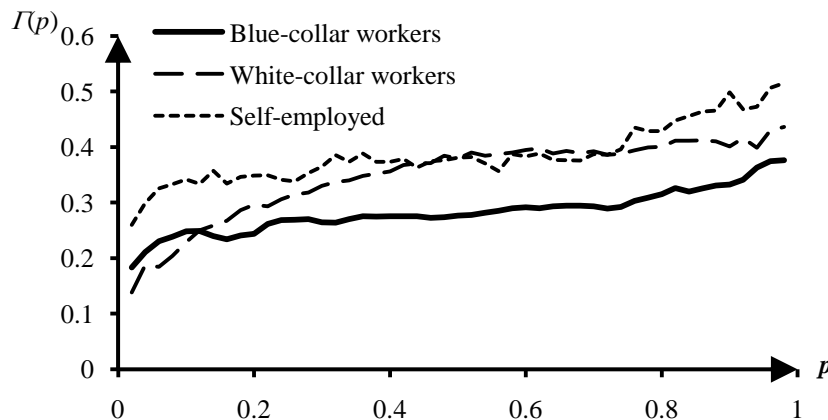


Fig. 1. Income growth curves for 1998-2009

Source: own elaboration.

The courses of curves obtained for the whole period 1998-2009 are not, however, identical in subperiods. A detailed analysis of year-to-year income growth curves (for details see Fig. A1 and Fig. A2 in Appendix) suggests distinguishing two periods that differ significantly with respect to the growth pattern: 1998-2004 and 2004-2009.

In the first period – see Fig. 2 – the observed changes in income distribution were definitely anti-poor. The rates of growth were increasing with income, making the distance between the poor and the rich even bigger. Moreover, the income growth rates were negative for the poor in the population⁵ for all the analyzed groups, which denotes a real loss. Among blue-collar workers almost all lost out in this period and the income of the poorest self-employed decreased – in real terms – by almost 30%. While the situation of blue-collar workers remained the worst, there was a change of leader – the situation of white-collar workers was relatively the best.

⁵ Taking into account the relative poverty line, the percentage of the poor in the population varied between 15.8% and 20.4% in the analyzed period.

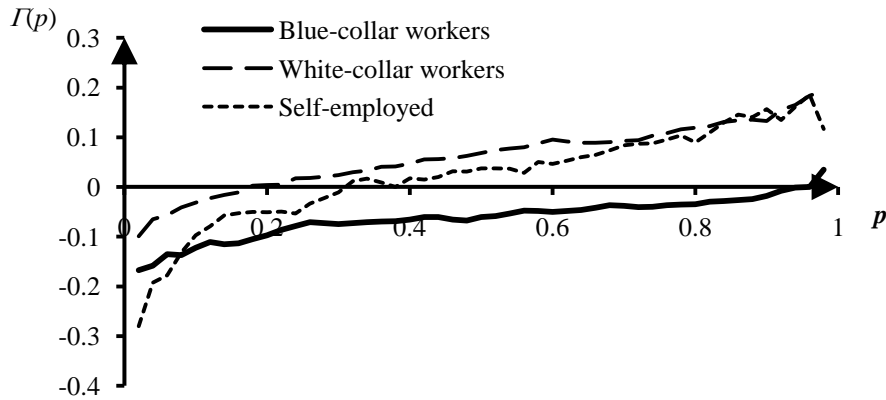


Fig. 2. Income growth curves for 1998-2004

Source: own elaboration.

Between 2004 and 2009 the pattern of changes was completely different (see Fig. 3). Firstly, no negative values appeared in this period, which denotes an increase in the real value of income at every position in the distribution. Secondly, high growth rates are observed for the poorest, which can be interpreted as a pro-poor growth.

What is worth noting is that the highest values of growth rates among the poorest are observed for the self-employed. This group experienced the highest decline in the previous period, which suggests its high exposition to the market situation. The highest growth rates in the upper tail of the income distribution are shared by the blue-collar workers – a group of qualified specialists.

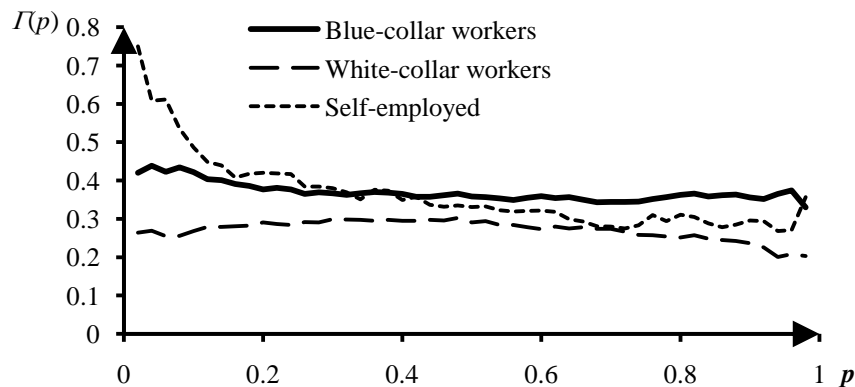


Fig. 3. Income growth curves for 2004-2009

Source: own elaboration.

An explanation of the observed evidence requires an analysis of changes in the macroeconomic situation of Poland. Between 1998 and 2004, high unemployment rates (up to 20%) resulted in an “employer’s market”. This situation significantly changed after 2004 – the year of the accession to the European Union. Very large emigration, caused by the opening of some labor markets in Europe, together with high rates of GDP growth, resulted in a significant income growth in all the analyzed groups. This particularly influenced the situation of well-qualified blue-collar workers. Supply, lowered by the emigration, which was very high in this group, was not able to meet the increasing demand. The same mechanism is supposed to generate growth among low income self-employed, who often do the same work.

Differences in growth pattern among subperiods indicate changes in the source of growth. What is interesting is that the most stable was the situation of high income white-collar workers and the self-employed. The income in these groups rose at almost the same rate in both subperiods. This suggests the quite stable demand for their work and a much lower emigration rate.

At the same time, high income white-collar workers and the self-employed are the most qualified on the labor market. In this sense, they participate directly in the innovation-driven growth. This growth is not transmitted to lower skilled workers unless it is forced by the market situation.

Though growth patterns differ among subperiods, the overall effect is anti-poor and the groups mostly benefitting from growth are high income self-employed and white-collar workers.

The unambiguous identification of the growth pattern on the basis of income growth curves is generally restricted to the case of monotonicity – in the whole domain or up to a given position in the income distribution. As noted earlier, for non-monotonic income growth curves, however, it is also possible to identify growth as pro-poor if growth rates exceed a given value g^* for the poor and are below g^* for the richer (or anti-poor, if the opposite conditions are met). In this sense, the pattern of growth is anti-poor for all groups in the periods of 1998-2009 and 1998-2004. Strictly pro-poor growth is, however, observed only for the self-employed between 2004 and 2009. Despite high rates of income growth for blue- and white-collar workers, the results are ambiguous in this period.

However, some additional information can be obtained from the analysis of relative income change curves. Like income growth curves, they hold the general information on the growth pattern, but – in contrast to them – they enable a direct comparison of the poorer and the richer, involving information about incomes in the whole population. Relative income change curves for the entire analyzed period are presented in Fig. 4.

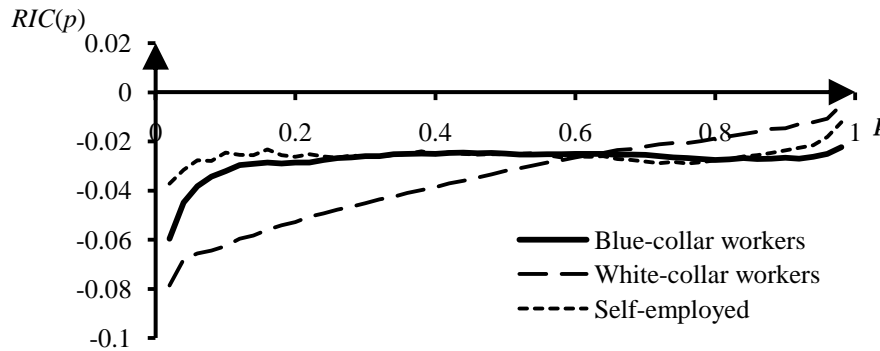


Fig. 4. Relative income change curves for 1998-2009

Source: own elaboration.

The negative values indicate an anti-poor pattern of growth which confirms previous findings. At every position in income distribution, the ratio between the lower mean (mean income of all that are below this position) and upper mean (mean income of all that are above this position), expressed in percentage points, is decreasing with time.

The curves presented in Fig. 4 indicate that for the self-employed the lower the income, the bigger is the loss with respect to the group of all people with the higher income. This means that everyone in the population lost (with respect to the richer) and that the loss of the poorest was the biggest – the minimum is achieved at the lowest income. For the other two groups the situation is more stable: except for the poorest blue-collar workers, the ratio between the incomes of the richer and the poorer does not depend on income level.

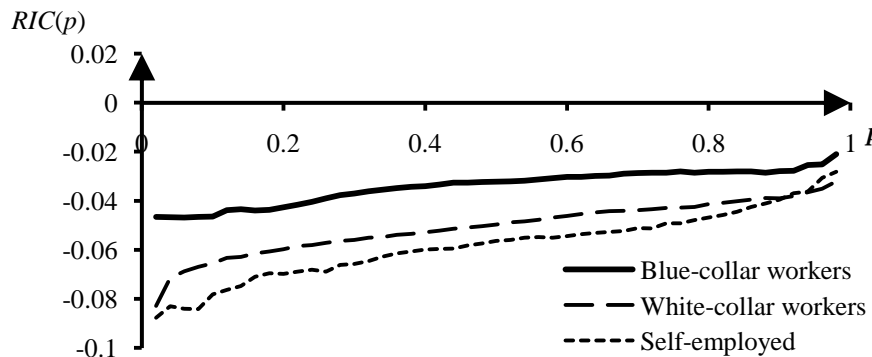


Fig. 5. Relative income change curves for 1998-2004

Source: own elaboration.

More explicit patterns of changes are observed between 1998-2004. Relative income change curves for these years are presented in Fig. 5. In all the cases the anti-poor pattern of growth was strengthened by the highest values of RIC for the highest incomes. This means that the distance between the average income of the poorer and the richer was on the increase with the enlargement of the group of the poorer.

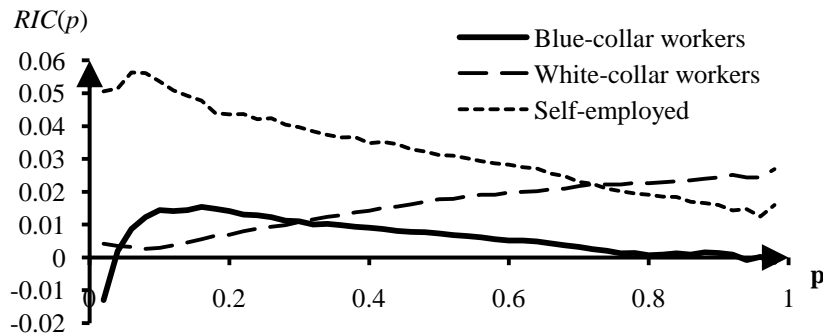


Fig. 6. Relative income change curves for 2004-2009

Source: own elaboration.

The reverse phenomenon appeared after 2004. The positive values in Fig. 6 denote pro-poor growth – both for the self-employed and white-collar workers (for this group, analysis based on income growth curves was ambiguous).

In the subgroup of self-employed, the maximum value of RIC observed for $p = 0.06$ denotes that relative growth in income of the poorest 6% of the population with respect to the richer 94% was the highest. This denotes that the reduction in average income distance between groups of the poorer and the richer was the biggest for these two groups.

On the contrary, in the case of white-collar workers, the relative income change curve has its minimum for $p = 0.08$. The positive values for all p indicate that at every position the distance between the poorer and the richer diminished, but the relative increase in the income of the poorer with respect to the richer, is the lowest for the group of 8% of the white-collar workers. This means that, despite the generally pro-poor character of the growth in this group, the reduction in the relative distance increased with income growth.

What is the most complex is the interpretation of the curve for the group of blue-collar workers. It shows the anti-poor character of the growth

and an increase in the distance of the poorest with respect to the richer (for $p < 0.04$). The slightly more affluent blue-collar workers are, however, in the best relative position (the maximum is attained at $p = 0.16$). The relative distance of the poorer and the richer remain unchanged in the analyzed period for p above 0.75.

The presented relative income change curves denote relative gains of two groups – the poorest, which managed to find work in the growing economy (for blue-collar workers and the self-employed), and the richest, which experienced a significant increase in the demand for their high qualifications (for white-collar workers). What is worth stressing is that the situation of the poorest blue-collar workers (probably jobless, taking into account their very low income) relatively deteriorated, despite the growth of their income (see income growth curves for this group).

4. Conclusions

The presented analysis showed the diversity in growth patterns in the analyzed period. The subperiod of anti-poor growth (1998-2004) was followed by the subperiod of more pro-poor growth (2004-2009). Such changes in growth patterns over time do not seem to be characteristic only for Poland – in their broad comparison Son, Kakwani (2008) show that analogous shifts are common world-wide (also in Poland before 1998).

What is more interesting from the point of view of this paper is that differences in growth patterns were also observed among groups. Though the overall anti-poor character in the whole period did not depend on the source of income, some important diversity – especially in the second subperiod – can easily be observed. Looking at the whole period (1998-2009) the growth in the income of the self-employed and white-collar workers was definitely higher than for blue-collar workers. But blue-collar workers with an income above the average were those whose income grew most in the second subperiod.

The results obtained for the population analyzed in the paper suggest the privileged position of highly-qualified, enterprising people in subperiod of moderate income growth. High qualifications helped them to compete effectively on the “employer’s market”. This growth was partially transmitted in the subsequent period to the groups in the worst situation – low-income blue-collar workers and the self-employed. However, the situation of both groups, experiencing real losses in the first subperiod, was different. In the case of the self-employed, this resulted from the risk of running their

own business, which is particularly high for micro-entrepreneurs (growth in this group in the second subperiod was the highest observed). However, when it comes to the blue-collar workers, it seems to be a problem of low competence – this lack of competence hinders their participating in the transmission of income growth.

The presented analysis does not refer directly to the extent of poverty, but to the relative changes in the income distribution involving changes in poverty. The observed changes in income distribution denote the worsening of the relative situation of the poor. In this sense, the economic growth – which was steadily positive in the analyzed period – cannot be treated as a mechanism that is going to automatically solve social problems in the long run.

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Appendix

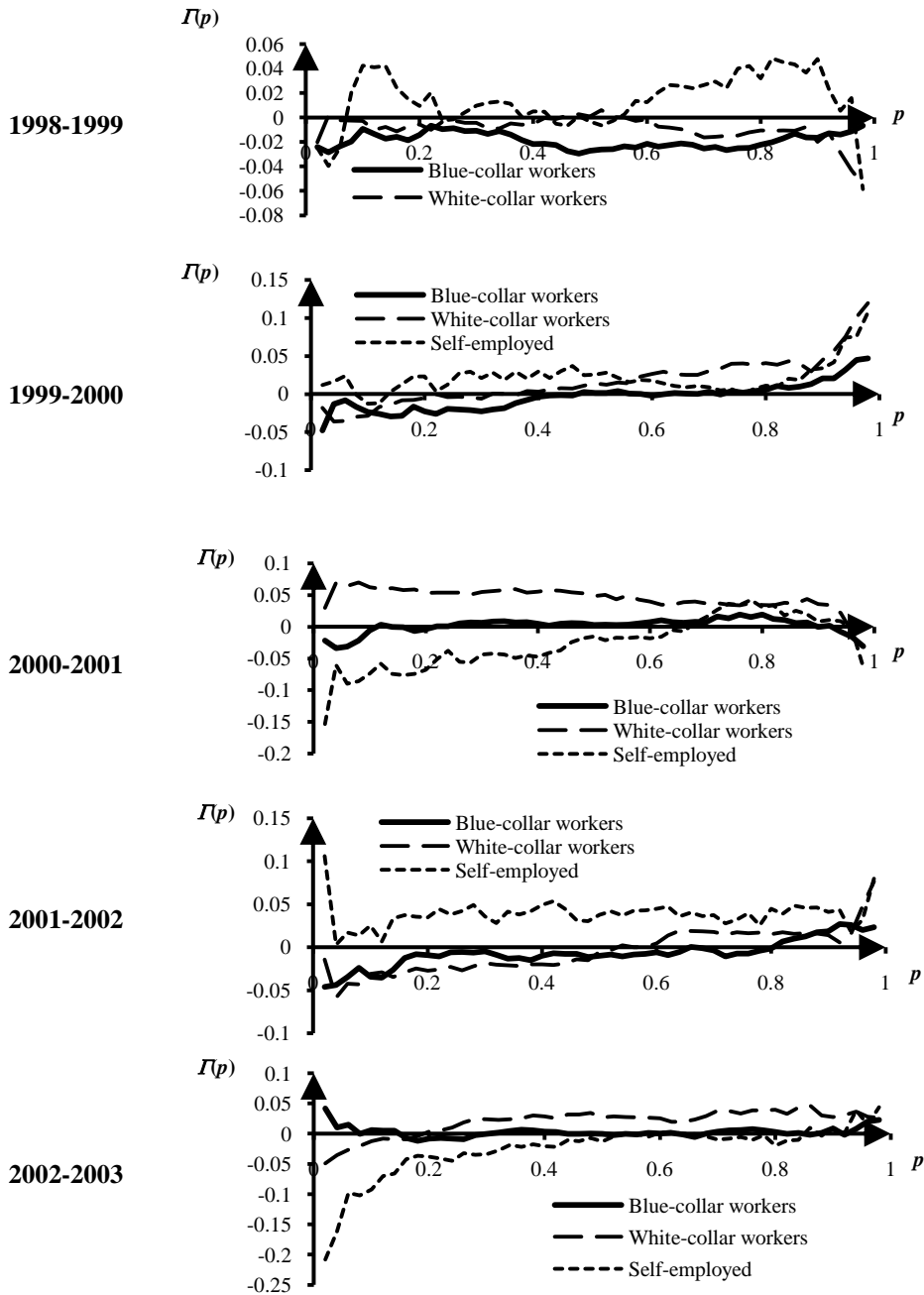


Fig. A1. Income growth curves for years 1998-2003

Source: own elaboration.

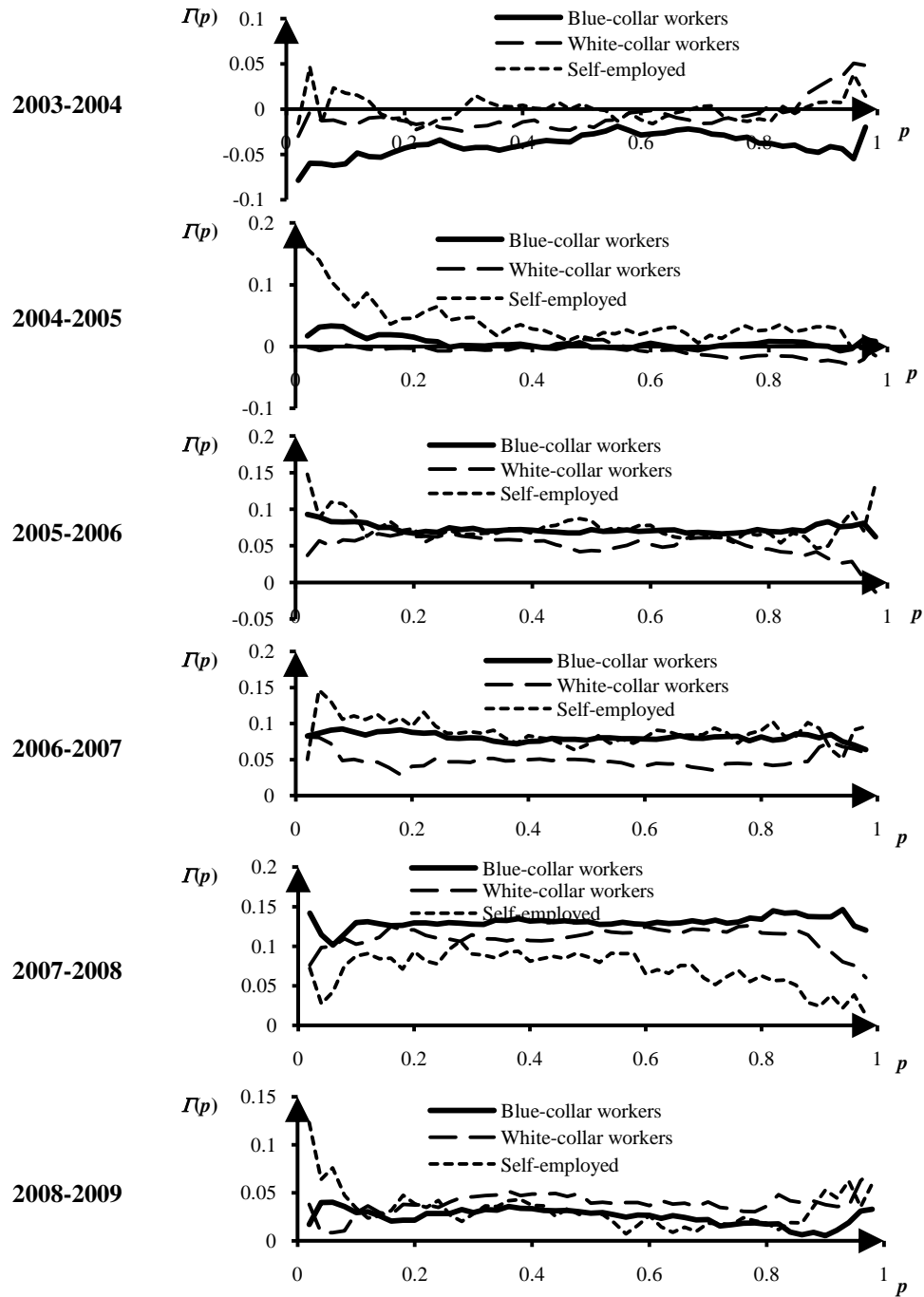


Fig. A2. Income growth curves for years 2003-2008

Source: own elaboration.