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Distribution of income in Polish agriculture

Abstract: During the transition period Poland achieved a rather quick rate of economic growth, exceeding 4.9% per annum. Inflation rate significantly decreased, even below the level observed in many EU countries. However, there were not only successes. Poland has reported very high, growing unemployment rate, beyond 20% of active labour force. Growth of the unemployment, in both rural and urban areas, is the main issue to be solved. Another important "hot" issue is income distribution. The period of economic transition in the post-communist countries, including Poland, brought about a considerable increase of income differentiation of the society. This differentiation applied to a greater extent to agriculture and rural population than to non-agricultural and urban population. In 1984 the Gini coefficient for all households was 0.240, but by 1998 it rose to 0.312 and for farmers these numbers were, respectively: 0.362 and 0.449.

Key words: transition, parity, income distribution, Polish farmers

Background

The period of economic transformation in post-communist countries, including Poland, brought about a considerable increase of income diversification of the society. It is interesting that this diversification applied to a greater extent to agriculture and rural population than to non-agricultural and urban population (Klank 2000). It brought about such phenomena as poverty and unemployment, as well, which were not reported in the official statistics in the pre-transformation period. Branko Milanovic from the World Bank in the preface to his book entitled "Income, Inequality and Poverty during the Transition from Planned to Market Economy" writes: This is indeed a period of turmoil – comparable with the period that followed both world wars. It is the period of dramatic declines in income (in the first years of transformation – L.K.), reappearance of diseases long forgotten, growing poverty and unemployment, and great uncertainty. But it is also a period when great fortunes are being made..." (Milanovic 1998). He put very important questions, like:

- What was the influence of economic growth on socio-economic groups?
- Who benefited from the growth and who lost?

Why answers to these questions are important? Although Milanovic's research refers to the initial stage of transformation (years 1989–1993) the questions are still valid. Situation has even worsened in some groups, for instance – in the rural society. There are also other reasons to answer these questions. Generally, income and wealth distribution issues have very long history. In Poland, as well, the questions of fair distribution of wealth have been intensively discussed for pretty long time. They have very important economic and political weight. Besides, agriculture and rural society in Poland are still significant both in economic and political terms. Rural areas cover 93% of Polish territory. Some 14.7 million people live there, equivalent to 38% of the total country's population. About 2/3 of rural areas is involved in agricultural production and 50% of rural families are farmers. At the same time, we face the fact that only 8% of population involved in agricultural production gains income solely from agriculture. For the remaining 9.2 million people, agricultural activity is only an additional source of income. Pension transfers dominate in the structure of incomes or the rural population, which causes certain consequences for agricultural policy of the state.

Farms in Poland are characterized by a considerable diversification from the point of view of production situation and incomes. About 13% of 2 million farm families produce solely for their own needs. Only 37% of farms sell their produce mostly at the market place¹. The average value of this produce amounted to 1200 zlotys (about 300 US dollars) annually, i.e. 100 zlotys monthly (25–30 US dollars) per farm. Then, 2.5% of farms do not produce at all. Therefore, more than a half (52%) of farms are a so-called subsistence farm. It is therefore difficult to expect that they see their future in development of their farms.

There is also another question, which has to be considered. All the countries of Central and Eastern Europe (CEE) have been changing all the spheres of their economic, social and political life. There is no single theory, which satisfactorily explains how to adjust the "centrally planed society" to the modern, information and market society. After almost 15 years of transformation and growing political tensions we can say that the existing development theories do not help much in solving general issues such as growth, equality and justice.

This paper tries to answer one of the above questions.

Methodology

The data sources and the income concept used

Only one basic source of data was used, the Household Budget Surveys for selected years. This source of data is based on the sampling method, which allows for the generalisation of the results to the whole population of households. Before 1982 the household budget surveys were carried out with the con-

112

¹ Agricultural Census 1996, Central Statistical Office, GUS, Warszawa 2000.

tinuous method, according to which the same sample of households was followed in the survey for a year or longer. Since 1993 the monthly rotation method has been used. The surveys are carried out by the respective statistical offices. Every year they collect the data from roughly 32 000 dwellings.

The household's disposable income was used as a measure of income. It comprises, among others,

- income from hired work,
- income from individual farm, of at least one hectare of area,
- income from self-employment outside the farm,
- income from free professions,
- income from property,
- social insurance benefits,
- other social benefits,
- other income.

In our study this category of income, calculated per capita, is used both for income parity measure and income distribution (differentiation).

Methodology of assessing income distribution

The most common procedure for presenting income distribution data refers to the cumulative decile tables or their graphical counterpart, the Lorenz curves. Since the cumulative tables contain all the information provided by Lorenz curves the tables alone are used in the presentation. There are a number of statistics, used to measure income concentration or income inequality. The most popular one is the Gini coefficient, which is used in this study. The Gini coefficients are calculated from the discrete (individual) data. It is well known that 0 and 1 bound the Gini coefficient, implying, respectively: complete equality and inequality.

Discussion and results

Income parity as a goal of agricultural policy

Agriculture has always been a very sensitive political issue in all communist countries, including Poland. The agricultural issue was even more important in Poland than in other communist countries, because the largest private sector among all communist countries was in Polish agriculture. Farmers had real political power. All the major political changes in Poland after World War II were connected, directly or indirectly, with food and agriculture. The problems, which arose in feeding the nation in the years of crisis, forced subsequent governments to modify the goals of their agricultural policy.

Until 1980, the principal goal of agricultural policy in Poland was to achieve the highest possible rate of farm output growth. After 1980, this goal was changed to achieving self-sufficiency in farm and food products. After 1989, the main goal of agricultural policy was changed again, this time to provide off-farm

employment for farmers and rural people. During this entire period farmers' incomes were the most important issue both for farmers and decision-makers. Both farmers and politicians believed that by solving the income issue, they could solve all other problems associated with the sector.

Principles of income policies

For many decades farmers and politicians, acting as their representatives, have been calling for farmers' incomes to be equal to those of other social groups. The demand to earn equal incomes is based on the concept of equal opportunities for all social and occupational groups and was heard already before the World War II. In Poland it also had a very strong religious and ideological background. The concept was referred to as parity.

This concept became the foundation of one of the most fundamental principles of income policy in agriculture. It was defined for the first time in the USA in 1933 legislation as a way to measure prices that would provide farmers with a 'fair' income. In fact, it was not a measure of income parity but, by virtue of definition, of parity prices.

Leaving aside the issue of achieving the goal of parity prices, let us indicate that it in fact meant that the goal became one of having incomes of farmers and non-farmers increase at the same rate. It was a major contribution to the process of defining income principles for agriculture in many advanced industrial countries, as well as in Poland.

Over time there was an evolution from the principle of parity prices to the principle of equal living conditions for farmers and non-farmers. Thus, the history of agricultural income policy in advanced industrial countries saw three goals of income policy, namely:

- 1) a goal of stable price ratios for farm products fixed at some historical period,
- 2) a goal of parity incomes, that is an equal level of incomes,
- 3) a goal of parity living conditions, that is of equal living standards for different social and occupational groups.

However, there is a possible fourth option, namely – no income policy.

Most developed, industrial countries, as well as Poland, tried to implement their income policies for agriculture using the changing objectives. Poland, for instance, adopted two principles of income policies for agriculture, especially towards private farmers (for the state farms and later on also for the farming co-operatives the principles of income policies were similar to those in industrial state enterprises). In 1956, the so-called new agricultural policy introduced the principle of equal rate of growth of incomes for farm and non-farm households. At that time the ratio of a farmer's income to that of a full-time employee in other sectors of the economy amounted to 75%. It is obvious that that principle would have maintained relative differences in incomes and lead to increases in absolute differences in incomes. Farmers would be at a disadvantage from the

beginning. But, in fact, their incomes increased much faster than non-farmers' incomes. Until 1981, when the principle of equal rate of growth of incomes was replaced by another concept, the relation between incomes of the two groups was much higher than at the beginning. Even in 1980, which were a very bad year for Polish agriculture due to bad crops, the relation of farm to non-farm income was equal to 84.2%, and in 1978-79 it amounted to 90 and 93%, respectively. Between 1981 and 1984, the relative incomes of farm population were near parity, that is, the relation between incomes of farmers and non-farmers was almost equal to one. One has to remember that in these calculations off-farm incomes were not taken into account.

In introducing the parity income formula for agriculture, Polish politicians believed that:

- It would be the best measure of the income situation of farm households.
- By achieving the parity of incomes, food shortage issues would be solved. As a result of the latter, the political tensions would be eliminated.

The early 1980s brought essential changes in income policy in Poland towards private farms. The principle of equal rate of income growth was replaced by the principle of parity of incomes, which meant equal incomes for farmers and non-farmers. Thus, this principle was very similar to the one followed by the EEC. The adoption of parity income policy in 1981 in Poland was not successful. It was introduced together with a policy of increasing prices at the time of severe decline in the production of agricultural products and chaos on the market. The decision to implement the principle was both economic and political. With this move politicians hoped to bring about an increase in the scope and volume of agricultural production. However, at that time, as well as in 1982, there was no longer any connection between prices and goods on the market. The purchase price of agricultural products increased by 67%, whereas the price of consumer goods for farmers increased only by 28%. This caused farmers' incomes to rise above parity. The relation of income for consumption in a farm household to that of a full-time employee in a non-farm household was at 90% in 1981. In the following year it increased to 106%, and in 1983 it amounted to 99%. Since 1983, the gap between the incomes of farmers and non-farmers has been increasing. In 1989, the relation mentioned was at around 84%. In August 1989, the government formally stopped following the principle of parity incomes. The introduction of market prices, as demanded by farmers, resulted in a rise in incomes for a short period.

In the last quarter of 1989 the nominal income per head of population in a farm household was 33% higher than in non-farm households. This situation did not last for long, and in the second quarter of 1991, farmers' incomes were at the bottom in comparison to other social and occupational groups in Poland. In 1994 and 1995, the ratio of farmers' to non-farmers' incomes was 87.6% and 91.3%, respectively. On the whole, the new economic policy did not provide any income policy for agriculture. The agricultural policy was based on the principles of market economy.

116 Parity and economic development

The previous discussion shows that income parity may be defined in a number of different ways; moreover we can measure it using various methods. J.R. Bellerby was one of the pioneers of the scholarly work in this area. (Bellerby 1956). Before World War II he measured relations between incomes in twenty countries using the concept of the ratio of the farmers' incentive income. According to his definition, the income ratio is the relation between the incentive income per full time employment equivalent in agriculture and the incentive income per person employed in other sectors of the economy. Incentive income meant the return for the worker's effort and his undertaking. In agriculture this was defined as the total factor income after the deduction of the net rent, interest costs and wages paid to agricultural workers.

Bellerby's research on the incentive income ratios in the agriculture of Great Britain during the periods of 1867–69, 1911–14, 1923–29 and 1936–38 showed a very big difference in this ratio in the periods considered. In fact, the income incentive ratio was up from 35.5% in 1892–96 to 81.1% in 1933–1935. In 1938, Bellerby reported his first international research using 28 countries. On the basis of his research, he claimed that there was no positive correlation between the level of economic development and relative incomes of farm households.

Bellerby's research relates to the first half of the twentieth century. We follow Bellerby's research by using FAO data and the respective formula, which is the ratio of the share of the agricultural GDP to the share of the GDP of other economic sectors divided by the ratio of agricultural population to non-agricultural population. On the basis of the analysis of the data we could conclude that the income parity was incidental and was the result of some specific social, economic and political conditions (Klank 1997, 55). Thus, instead of using term "parity" we suggest to use the term "relative incomes".

The correlation coefficients between the per capita GDP and the relative incomes have been calculated for 1961 and 1980 and were, respectively: 0,663 and 0,464. They turned out to be statistically significant with a very high probability level: p = 0.999. These results demonstrate that the relative incomes and the economic growth are not highly correlated.

The subsequent analysis examined the correlation between economic growth and the changes in the farmers' relative incomes. In other words, does economic growth produce income parity between the farm households and the non-farm households? Based on the same FAO statistical data for 1961 and 1980, correlation was calculated between two variables: a) the rate of economic growth, measured as increase in per capita GDP; and b) the increase in relative incomes, defined as point difference between the periods analysed. It should be remembered that we have taken into account only agricultural incomes, i.e. derived from agricultural activity (production). The coefficient of correlation between the two factors amounted to r = -0.103and turned out to be not statistically significant. In other words, there is very weak correlation between economic growth and the increase in the relative income of the farm households. Many scientists, including E.O. Heady, claimed that the economic growth even worsens the relative economic position of farm households (Heady and Whiting 1975).

This assertion may be correct, but it is the relative income that declines and not the absolute income level. Economic growth produces income increases for all social groups, but not at the same rate. Income of farmers derived from agricultural production may grow slower than incomes of the other social and occupational groups. Our analysis shows this as a general tendency all over the world. However, the opposite tendency can be observed in some countries. So, what was the situation in the case of Poland? In the transformation period, and especially in the years 1992–2000, Poland experienced very quick economic development. In that period the average GDP per capita growth rate was 4.9% per annum. It was even quicker in the second half of the 1990's than in the first half of the decade. The impact of such a rapid economic growth on incomes of farmers is presented in Table 1. Based on Table 1 we can conclude that in the years 1997 and 2000 relative incomes of farmers compared to all households were, respectively, 92.7% and 74.7% and compared to worker households, respectively 90.3% and 69.4%.

At the same time, relative incomes of part-time farmers were lower than that of farmers and were, respectively: 83.9% and 74.2% compared to all households and 81.8% and 73.6% if we compare them to worker households.

Generally, the so-called income disparity of Polish farmers, both full- and part-time was not dramatic. These ratios should be considered good, especially when we take into consideration relatively low labour productivity of Polish farmers. Additionally, they are comparable to the income situation of the 1970s and 1980s (Klank 1985).

lla sea bald	Year					
Housenoid	1997	1998	1999	2000		
Total of which:	473.8	522.9	560.6	610.5		
Employees	486.4	546.4	592.1	657.3		
Pensioners	n.a.	614.1	665.7	696.4		
Self-employed	618.4	655.1	715.9	794.7		
Disabled	494.6	452.7	483.7	494.9		
Farmers	439.3	406.8	411.5	456.0		
Part-time farmers	397.7	419.4	438.4	483.6		

Table 1. Monthly disposable personal income by socio-economic groups (in PLN/person)

Source: Household Budget Survey, Central Statistical Office, GUS, Warszawa (selected years).

If so, why farmers do complain about their economic situation. The answer to this question is rather complex. There are different reasons, not only of economic nature. The most important reasons are, as follows:

- Nowadays, Polish farmers operate in a completely different economic environment than during the communist times. They operate under uncertainty. Agricultural prices are not fixed; they have difficulty in selling agricultural products; there is also a strong competition from the outside (import). Income policy of the state toward this group is unclear.
- Farmers' real disposable incomes derived from agricultural production significantly decreased. In the period of 1995–2000 they dropped by 50%. In the same time real disposable incomes of all households rose by 21.4%.
- Farmers have experienced growing differentiation of incomes and wealth not only between rural and urban people, among different socio-economic groups but among farmers, as well. More and more rural people live in real poverty.
- The composition of farmers' income has significantly changed. Contrary to the earlier periods (1960–1980) farmer families depend more and more on off-farm incomes, mostly transferred ones (in the form of pensions and other social payments).
- Rural areas do not depend on agricultural incomes, anymore. As we can see (Table 2) only roughly 16% of disposable income in rural areas comes from agriculture.

	Number of inhabitants in a town (in '000)						
ltem	Below 20	20–100	100–200	200–500	More than 500	Total	Villages
Income	572.2	623.9	684.9	730.5	935.1	695.0	483.0
	% of income derived from:						
Employment	50.4	51.9	52.8	51.3	54.4	52.3	37.6
Farm	2.1	0.5	0.2	0.2	0.2	0.6	15.7
Self -employment	9.1	8.7	9.6	11.9	12.0	10.2	5.2
Social payments	32.4	33.1	31.7	30.3	26.4	30.7	36.6
Property	0.2	0.2	0.1	0.5	0.7	0.3	0.1

Source: Own calculations based on the Central Statistical Office household survey.

• In the year 2000 the incomes of rural population were by more than 30% lower than those of the urbanites. This situation is not accepted by the rural society, consisting mostly of farmer families. We have to remember than there is a very difficult labour market situation in Poland. At the time of the survey quoted more than 3 million persons were officially registered as unemployed and the official unemployment rate was at 17.3%. Since that time the situation on the labour market even worsened. In practice, there are no new jobs for farmers.

Leszek Klank

118

There is another more general question related to income parity. Differences in incomes within agriculture raise doubts and questions regarding the principle of income parity. Hence the following question: does achieving income parity in agriculture mean equal incomes and equal satisfaction for all farmers? The answer is **no**, because:

- Farmers are usually not aware of what parity is. What they, in fact, want is not equal incomes, but maximum incomes. If they compare their situations with those of persons involved in other sectors of the economy, they compare living conditions and not incomes. It appears that the principle of parity has more importance to politicians than to farmers.
- The differences between incomes within agriculture are usually greater than in other sectors of the economy. In many countries a small percentage of farms have very high levels of production and incomes. In other words, the concentration of incomes within farming in these countries is very high. As a result, many farmers with lower incomes are not satisfied with their income situation, even though on the average the agricultural sector receives income parity. Thus, achieving parity has little to do with achieving equal incomes.
- Because of the difficulties in obtaining proper data on incomes, the income parity concept can be subject to political manipulations. In the 1980s, Poland experienced such manipulations.
- Implementation of the income policy that is based on a parity formula can be very expensive in case of very low efficiency in agriculture. In other words, achieving parity incomes will require large money transfers from (other) taxpayers or consumers to farmers.

Income differentiation

As we have mentioned above, during the transition period the differences in incomes and wealth jumped up in Poland. Between 1984 and 2000 an official growth of income differentiation for all households, measured by the Gini coefficient for those years was from 0.24 to 0.33. A faster growth of income differentiation for farmer households than for other socio-economic groups should not be a surprise. They were earlier also more differentiated than non-farmers. It is also important, that there are some state guarantees for wages (minimum wage) but no such guarantees for incomes of the self-employed persons and farmers. However, the tax system is very favourable for farmers. They pay so-called agricultural (land) tax, which is not bound directly with their incomes, and is generally very low. On the other hand, though, according to that tax system farmers are obliged to pay taxes even when they report losses. This system is very favourable especially for big farms. It must be added yet that the official income statistics show much lower differences than the actual ones. There are many farms (between 5% and 15%), featuring negative incomes, not included in the Gini coefficient calculation. The so-called "grey economy" is not included in the statistics, either.

Table 3. Gini coefficients by socio-economic groups in the years 1984-2000

Socio-economic group	1984	1997	1998	1999	2000
Total of which:	0.240	0.315	0.312	0.314	0.328
Employees	0.233	0.318	0.321	0.320	0.343
Part-time farmers	0.258	0.302	0.306	0.305	0.291
Farmers	0.362	0.481	0.449	0.455	0.466
Self-employed	n.a	0.377	0.371	0.349	0.364
Pensioners	n.a	n.a	0.219	0.226	0.235
Disabled	0.215	0.244	0.264	0.272	0.284

Source: for the year 1984: I.Topińska, M.Wiśniewski, 1996, *Zróżnicowanie zasobów oszczędnościowych*, Życie Gospodarcze, 11; for the period of 1997–2000, own calculations.

Additional conclusions can be drawn from income distribution presented by decile groups (Table 4). The data shows the strongest concentration of incomes in farm and self-employed households. About 50% of the total farmers' income is earned by 20% of farmers. In order to make incomes evenly (perfectly) distributed more than 1/3 of farmers' income should be moved to lower deciles, it means to poorer families. Income distribution by decile groups shows that not all farmers have lost during the transition period.

	Households of:								
Deciles	All	Employees	Part-time farmers	Farmers	Self –employed	Pensioners	Disabled		
I	3.1	3.3	3.4	1.6	3.0	4.4	3.4		
11	4.8	4.8	5.1	3.3	4.4	6.3	5.3		
111	6.0	5.8	6.1	4.3	5.5	7.3	6.6		
IV	7.1	6.8	7.0	5.3	6.9	8.1	7.7		
V	8.1	7.8	8.0	6.4	7.1	8.9	8.7		
VI	9.2	8.9	9.0	7.7	8.6	9.7	9.6		
VII	10.5	10.2	10.3	9.6	9.8	10.6	10.8		
VIII	12.1	11.9	11.9	11.9	11.6	11.8	12.4		
IX	14.7	14.9	14.5	16.1	14.7	13.7	14.5		
Х	24.5	25.6	24.7	33.8	28.3	19.2	21.0		

Table 4. Persona	al disposable income	distribution by decile	es and types of he	ousehold in 1998
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Source: see Table 1.

Poverty

When analysing income differentiation one cannot ignore the issue of poverty. Poverty is like the other side of the coin named wealth. Although poverty has definitely a relative meaning, it really exists among Polish families and households. The incidence of poverty varies across the different socio-economic groups and depending on the definitions used. According to the official, legal definition of poverty the number of persons living in poverty is relatively stable. In the period of 1997–2000 only 12.1–14.4% of population lived in the officially

Leszek Klank

defined poverty. Of course, it is usual for the governments to tend to ignore this "embarrassing" issue. But even if we limit ourselves to the official definition we can see that we talk about 4.7–5.7 million people. According to this definition, in 2000 the highest incidence of poverty was among social-income recipients (both unemployed and disabled) and farmers. There was almost no poverty among the white-collar families.

Yet, if we take into account the definition based on the social minimum criterion the relevant figures are much higher compared to the official definition. But the ranking of poverty households remains. About 54% of persons live below the social minimum level; for unemployed this percentage is the highest and then for farmers and workers. There is very strong link between education and poverty (Table 5).

	Definition of poverty line:					
Education level	Social minimum	Biological minimum	Relative poverty line	Official poverty line		
Total	53.8	8.1	17.1	13.6		
University	14.8	0.3	1.2	0.8		
Secondary	41.7	3.2	8.2	6.3		
Vocational	64.9	9.4	20.9	16.2		
Elementary and none	67.7	15.6	28.9	23.9		

Table 5. Persons living below poverty line in 2000 (by definition and level of education of the family head)

Source: see Table 1.

If we take as a measure education of the household head and poverty incidence we can observe very strong (inverse) relationship between them. This relation leads to the crucial conclusion that one of the ways to alleviate poverty is education.

Conclusions

During the transition period Poland's economy has achieved rather fast rate of economic growth, exceeding 4.9% per annum. However, since 2001 Poland experiences economic stagnation. The period of economic transition in post-communist countries brought about a considerable increase of income differentiation of the society. This differentiation applied to a greater extent to farmers and rural population than to non-agricultural and urban population. The relative income situation of farmers compared to the non-farmer families, the so-called income parity, has worsened but not to a dramatic level. That was due to the growing contribution of the state budget to agriculture. Most state subsidies, i.e. more than 70%, are devoted to farmers' income increase through the pension system. The constraints on the state budget do not allow for the continuation of such a policy.

During the transition the income differentiation of all households measured by the Gini coefficient jumped from 0.240 in 1984 to 0.328 in 2000. However, the Gini coefficient values for the same period for the full-time farmers were, respectively: 0.362 and 0.466. As it well known, if the Gini coefficient, generally contained between 0 and 1, decreases, there is diminishing inequality and vice versa, when its value grows up towards 1, we deal with an increase of inequality (differentiation). Thus, incomes of part-time farmers were less differentiated than those of full-time farmers. Distribution of incomes showed that all socio-economic groups benefited from economic growth. However, these benefits were not equally distributed within the groups. One of the most striking results of such unequal distribution is poverty, which is very high, especially in rural areas. Depending on the definition of poverty we can talk about 4.5–20.5 million people living in poor economic conditions. The problem is that there is no clear state policy towards that issue. One way to improve the situation in this area is education adjusted to labour market demand.

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