ACTA UNIVERSITATIS LODZIENSIS
FOLIA OECONOMICA 212, 2007

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# INCOME INEQUALITY IN SOCIOECONOMIC GROUPS IN THE PERIOD OF ECONOMIC TRANSFORMATION

## 1. INTRODUCTION

Household income is the main factor determining personal standard of living. In the period of economic transformation from a centrally-panned to a market economy we observed many important changes concerning income distributions in Poland. The changes were concentrated within socio-economic groups as well as in the relations between the groups.

We can distinguish six socio-economic groups of households taking into consideration the way of gaining their income:

1. Households of employees,
2. Households of employees-farmers,
3. Households of farmers,
4. Households of self-employed,
5. Households of pensioners and retirees,
6. Households maintained from non-earned sources.

The source of information on income distributions by socio-economic groups was individual data coming from the Household Budgets Survey conducted by the Central Statistical Office in the years 1999–2003. This survey is based on a random sample of households. Sample elements are selected by means of two-stage stratified sampling with rotation. Primary sampling units are selected with different probabilities. Overall sample size, that is the number of household examined annually, exceeds 30 thousand. Table 1 presents the changes in the structure of samples in the period 1999–2002.

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**Table 1.** Structure of Household Budgets sample in the years 1999–2002

| Year | Total | Households | | | | | |
|---|---|---|---|---|---|---|---|
| | | Employees | Employees-farmers | Farmers | Self-employed | Retirees and pensioners | Non-earned sources |
| 1999 | 31429 | 13366 | 2878 | 1604 | 1997 | 10981 | 930 |
| 2000 | 36163 | 14509 | 2934 | 1710 | 2359 | 13004 | 1647 |
| 2001 | 31847 | 12611 | 2518 | 1318 | 2058 | 11711 | 1631 |
| 2002 | 32342 | 12449 | 2382 | 1273 | 2034 | 12160 | 2044 |

S o u r c e: Own calculations for all tables.

In the paper we focus the analysis on theoretical income distributions which approximate the empirical ones. Using a theoretical distribution instead of the empirical one can be useful for many reasons. From the point of view of income distributions the most important is that a good theoretical model can flatten irregularities resulting from the way of gathering information (nonresponses, misclassifications etc.).

## 2. CHANGES IN THE AVERAGE LEVEL OF INCOME IN POLAND IN THE PERIOD 1999–2002

Arithmetic mean is the measure most often used in comparisons of income and wage distributions in time and in space. The analysis of average level of income in different socio-economic groups can be the first step in the researches concerning income distributions in Poland in the period of economic transformation.

The results of the calculations are presented in the tables 2 and 3. The table 2 shows changes in the average household income by socio-economic groups in the period 1999–2002 while the table 3 includes the similar measures calculated for the real household income (the comparative period is 1999). It can be easily noticed that the average household income increased by 18.5% during the years 1999–2002 (see: Table 2). The highest growth was observed for the households of farmers and maintained from non-earned sources (38.8% and 37,73% respectively). Except for the households of farmers and pensioners the highest rates of growth was noticed in the year 2000. Income of farmers increased by 10% in the years 2000 and 2001 and by 15% in 2002. If is worth mentioning that the incomes of pensioners and retirees increased by 9% in 2001 while in the other years the rates of growth were very small (about 3%).

Comparing the results of the calculations presented in the table 3 with the results included in the previous table one can notice some important differences. Only for the households of farmers and maintained from non-earned sources the real income increased significantly in the period under consideration. What is important also the year average growth rate was positive only for these two groups of households. The average real income of the remaining household groups decreased year by year during the considered period.

**Table 2.** Average household income in socio-economic groups

| Households | 1999 = 100 | | | Preceding year = 100 | | | Year average growth rate |
|---|---|---|---|---|---|---|---|
| | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | |
| Total | 108.94 | 115.00 | 118.52 | 108.94 | 105.56 | 103.06 | 4.3 |
| Employees | 110.96 | 116.33 | 117.85 | 110.96 | 104.84 | 101.31 | 4.2 |
| Employees farmers | 110.31 | 116.28 | 116.60 | 110.31 | 105.41 | 100.27 | 3.9 |
| Farmers | 110.68 | 120.77 | 138.80 | 110.68 | 109.11 | 114.93 | 8.5 |
| Self-employed | 110.99 | 112.88 | 117.77 | 110.99 | 101.71 | 104.33 | 4.2 |
| Retirees and pensioners | 103.48 | 112.98 | 117.19 | 103.48 | 109.17 | 103.73 | 4.1 |
| Non-earned sources | 120.70 | 129.09 | 137.73 | 120.70 | 106.95 | 106.69 | 8.3 |

**Table 3.** Average household income in socio-economic groups in constant prices

| Households | 1999 = 100 | | | Preceding year = 100 | | | Year average growth rate |
|---|---|---|---|---|---|---|---|
| | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | |
| Total | 98.68 | 98.73 | 99.96 | 98.68 | 100.06 | 101.24 | –0.02 |
| Employees | 100.15 | 99.61 | 99.03 | 100.15 | 99.47 | 99.42 | –0.02 |
| Employees farmers | 99.74 | 100.22 | 99.17 | 99.74 | 100.48 | 98.95 | –0.02 |
| Farmers | 99.90 | 104.21 | 118.18 | 99.90 | 104.32 | 113.41 | +4.3 |
| Self-employed | 101.17 | 98.00 | 100.43 | 101.17 | 96.86 | 102.48 | +0.1 |
| Retirees and pensioners | 93.74 | 96.80 | 98.28 | 93.74 | 103.43 | 101.53 | –0.45 |
| Non-earned sources | 108.94 | 110.84 | 115.42 | 108.94 | 101.74 | 104.13 | +5.0 |

## 3. CHANGES IN INCOME INEQUALITY WITHIN AND BETWEEN SOCIO-ECONOMIC GROUPS

The standard of living of a particular household depends not only on the average family income in a group but also on the level of income inequality. To complete the analysis it is necessary to take into consideration the following problems:

– changes in the level of concentration of income in socio-economic groups (inequality within distributions)

– comparison of economic situation of different socio-economic groups (inequality between distributions).

On the basis of the empirical data coming from the Household Budgets Survey the parameters of selected theoretical distributions were estimated. As theoretical distributions the lognormal and the Dagum models were applied. In the paper we analysed two kinds of income distribution: the first one was the distribution of family income and the second one the distributions of per-capita income.

The lognormal distribution has been widely used in wage and income distribution analysis for many years. The advantage of this distribution is its simplicity; a disadvantage, however, is its poor fitting to the data, especially in the tails. We say that a random variable $Y$ is log-normally distributed when the logarithm of this variable is normally distributed. Hence the density function of $Y$ is the following:

$$f(y) = \frac{1}{y\sigma\sqrt{2\pi}} \exp\left\{-\frac{1}{2\sigma^2}(\ln y - \mu)^2\right\}, \quad y > 0 \tag{1}$$

where:

$\mu$ – expected value of the logarithms of a random variable $Y$,

$\sigma$ – standard deviation of the logarithms of a random variable $Y$.

The formula (1) describes two-parameter lognormal distribution. The statistical characteristics of this distribution can be expressed by means of the parameters $\mu$ and $\sigma$. Besides the well known two-parameter model three and four parameter lognormal distributions are used in wage and income analysis. The third parameter $\tau$ determines the lowest level of positive income ($y > \tau$). The four-parameter distribution is characterised by four parameters: $\mu$, $\sigma$, $\tau$ and $\theta$, where $\theta$ determines the highest level of income ($\tau < y < \theta$).

Unlike the lognormal the Dagum model was based on empirical observations of income distributions in many countries. Dagum and Lemini (1977) noted that the function describing income elasticity of a cumulative distribution function of income is convex, decreasing and bounded. It can be described by the following differential equation:

$$\varepsilon(y, F(y)) = \frac{d \ln F(y)}{d \ln y} = \beta_1\left[1 - [f(y)^{\beta_2}]\right], \tag{2}$$

for $y \geq 0$, $\beta_1, \beta_2 > 0$.

The cumulative distribution function of the Dagum model was the solution of the equation given by formula (2). It can be written as follows:

$$F(y)=\begin{cases}(1+\lambda y^{-\delta})^{-\beta}, & y>0\\ 0, & y\le 0\end{cases} \tag{3}$$

for: $\beta, \lambda, \delta > 0$,
where: $\beta = 1/\beta_1$, $\delta = \beta_1\beta_2$, $\lambda = \exp c$,
$c$ – constant of integration resulting from the solution of equation (2).

The density function corresponding to the cumulative distribution function given by (3) has the form:

$$f(y)=\begin{cases}\beta\lambda\delta y^{-\delta-1}(1+\lambda y^{-\delta})^{-\beta-1}, & y>0\\ 0, & y\le 0\end{cases} \tag{4}$$

The parameter $\lambda$ is a scale parameter of the Dagum model while $\beta$ and $\delta$ are shape (inequality) parameters.

The three-parameter distribution given by (3) and (4) is called the Dagum type-I model. For data with null and negative or strictly positive incomes the four – parameter models proposed by Dagum should be useful. The distribution function of such the models can be expressed by the formula:

$$F(y) = a + (1-\alpha)(1+\lambda y^{-\delta})^{-\beta}, \text{ for } \beta,\lambda,\delta > 0 \tag{5}$$

The type of a distribution depends on the value of the fourth parameter $\alpha$: when $\alpha = 0$ we obtain type I model for $0 < \alpha < 1$ type II model and for $\alpha < 0$ type III model. Parameter $\alpha$ taking values in the interval $\langle 0,1)$ can be interpreted as an unemployment rate.

The lognormal model was chosen to the analysis of income distributions in Poland for its simplicity and clear economic interpretation of parameters. The Dagum model was chosen because of its properties giving better fitting to the data. Existence of null and negative values of observed family income was the reason for the application of the four-parameter models.

The parameters of the theoretical distributions were estimated by means of the maximum likelihood method. In order to find the maximum of log likelihood function an individual numerical procedure was applied.

The results of the estimation are presented in tables 4–9. The goodness-of-fit of the theoretical distributions with the empirical ones was measured by means of coefficients of distributions similarity ($W_p$) and standard deviations of squared errors ($Sd$). The best results were obtained for the four-parameter

Dagum model – most coefficients of distributions similarity exceed 0.99 for both total and per capita family income (see Tables 4, 6 and 8). The fourth parameter $\alpha$ usually took values below zero so we obtained the type III distributions. Only for the households of farmers and employees – farmers the parameter $\alpha$ takes values in the interval (0, 1) what is characteristic for the type II Dagum distribution. It is connected with significant amount of negative incomes observed in these household groups.

It is worth mentioning that the goodness-of-fit for the three-parameter Dagum distribution is also very high. For per capita incomes the differences between the compared distributions are negligible. The consistency of the lognormal model with the empirical distributions of per capita income is not satisfactory (Tables 6 and 8). Coefficients of distributions similarity usually do not exceed 0.95. The goodness-of-fit is extremely poor for the groups with high level of income inequality and heavy right tail (farmers).

The parameters of the theoretical model proposed by Dagum, with presents high consistency with empirical data, were then used to the estimation of concentration coefficients and economic distance rations. Table 10 presents concentration coefficients proposed by Gini (1912), Zenga (1990) and Bonferroni (1930). The Gini ratio, based on the Lorenz curve, is the most popular concentration measure. It is said to be the best synthetic measure of income inequality while the coefficient derived by Bonferroni is more sensitive to changes in lower income groups. The Zenga measure corresponds to the concept of point concentration.

One can notice that almost all the concentration measures placed in the table 10 increased in the period under consideration. The highest level of income inequality was observed for the households of farmers ($G_{2003}$=0.48, $Z_{2003}$=0.60, $B_{2003}$=0.55). The level of income inequality is relatively low for households of retirees ($G_{2003}$=0.24) an pensioners ($G=2003_{=0,29}$). Figure 1 shows the Zenga curves, which can be regarded as point concentration measures calculated for per capita family income in the years 1999 and 2003. The presented concentration curves confirm that income inequality increased at each point of the distribution (The area under the Zenga curve can be interpreted as concentration area).

To complete the analysis, economic distance rations $D_1$ for socio-economic groups were calculated. Economic distance $d_1$ (see Dagum, 1980) is defined as the weighted sum of income differences $(y - x)$ given that $E(Y) > E(X)$. The weighting factor is a joint probability density function $f(y)f(x)$. Economic distance ratio $D_1$ is derived by normalizing $d_1$ in the unit interval. It is worth mentioning that $D_1$ measures not only differences in the average level of income but also is sensitive to any changes in the shape of the compared distributions. For example, the economic situation of the households of self-employed is by 28.67% better than the situation of the households of employees and by 70.25% better in comparison with the households of employees – farmers (see Table 11).

**Table 4.** Distributions consistency measures calculated for total household income

| Year | Lognormal distribution | | Dagum distribution | | | |
|---|---|---|---|---|---|---|
| | | | three-parameter | | four-parameter | |
| | $W_p$ | $S_d$ | $W_p$ | $S_d$ | $W_p$ | $S_d$ |
| 1999 | 0.9769 | 0.0051 | 0.9713 | 0.0077 | 0.9974 | 0.0005 |
| 2000 | 0.9747 | 0.0052 | 0.9762 | 0.0061 | 0.9932 | 0.0016 |
| 2001 | 0.9705 | 0.0061 | 0.9696 | 0.0077 | 0.9912 | 0.0020 |
| 2002 | 0.9722 | 0.0057 | 0.9724 | 0.0075 | 0.9979 | 0.0004 |
| 2003 | 0.9778 | 0.0043 | 0.9705 | 0.0070 | 0.9882 | 0.0032 |

**Table 5.** Parameters of the four-parameter Dagum model estimated for total household income

| Year | Dagum distribution parameters | | | |
|---|---|---|---|---|
| | $\alpha$ | $\lambda$ | $\beta$ | $\delta$ |
| 1999 | –0.0334 | 11.7903 | 0.5803 | 3.5180 |
| 2000 | –0.0268 | 11.8744 | 0.6152 | 3.3344 |
| 2001 | –0.0308 | 23.0367 | 0.5413 | 3.6375 |
| 2002 | –0.0290 | 16.7222 | 0.5852 | 3.4688 |
| 2003 | –0.0210 | 11.9443 | 0.6874 | 3.1440 |

**Table 6.** Distributions consistency measures calculated for per capita income

| Year | Lognormal distribution | | Dagum distribution | | | |
|---|---|---|---|---|---|---|
| | | | three-parameter | | four-parameter | |
| | $W_p$ | $S_d$ | $W_p$ | $S_d$ | $W_p$ | $S_d$ |
| 1999 | 0.9532 | 0.0135 | 0.9879 | 0.0033 | 0.9851 | 0.0045 |
| 2000 | 0.9492 | 0.0132 | 0.9859 | 0.0037 | 0.9823 | 0.0049 |
| 2001 | 0.9639 | 0.0094 | 0.9888 | 0.0024 | 0.9929 | 0.0014 |
| 2002 | 0.9617 | 0.0104 | 0.9893 | 0.0027 | 0.9946 | 0.0012 |
| 2003 | 0.9600 | 0.0085 | 0.9904 | 0.0019 | 0.9806 | 0.0046 |

**Table 7.** Parameters of four – parameter Dagum model estimated for per capita income

| Year | Dagum model parameters | | | |
|---|---|---|---|---|
| | $\alpha$ | $\lambda$ | $\beta$ | $\delta$ |
| 1999 | –0.0624 | 0.3024 | 0.5881 | 3.4444 |
| 2000 | –0.0440 | 0.3813 | 0.6000 | 3.4181 |
| 2001 | –0.0616 | 0.6484 | 0.5058 | 3.5576 |
| 2002 | –0.0689 | 0.7256 | 0.04781 | 3.4854 |
| 2003 | –0.0908 | 0.8625 | 0.4724 | 3.3548 |

**Table 8.** Distributions consistency measures for per capita income by socio-economic groups

| Households | Year | Longnormal model | | Dagum model | | | |
|---|---|---|---|---|---|---|---|
| | | | | three-parameter | | four-parameter | |
| | | $W_p$ | $S_d$ | $W_p$ | $S_d$ | $W_p$ | $S_d$ |
| Employees | 1999 | 0.9322 | 0.0165 | 0.9894 | 0.0025 | 0.9863 | 0.0039 |
| | 2000 | 0.9405 | 0.149 | 0.9887 | 0.0027 | 0.9630 | 0.0109 |
| | 2001 | 0.9509 | 0.0106 | 0.9868 | 0.0028 | 0.9695 | 0.0081 |
| | 2002 | 0.9525 | 0.0107 | 0.9760 | 0.0059 | 0.9830 | 0.0046 |
| | 2003 | 0.9456 | 0.0120 | 0.9784 | 0.0044 | 0.9658 | 0.0090 |
| Employees- farmers | 1999 | 0.9049 | 0.0291 | 0.9397 | 0.0164 | 0.9866 | 0.0027 |
| | 2000 | 0.9177 | 0.0230 | 0.9873 | 0.0029 | 0.9882 | 0.0027 |
| | 2001 | 0.9187 | 0.0203 | 0.9748 | 0.0051 | 0.9793 | 0.0045 |
| | 2002 | 0.9298 | 0.0208 | 0.9810 | 0.0041 | 0.9810 | 0.0042 |
| | 2003 | 0.9316 | 0.0159 | 0.9872 | 0.0029 | 0.9886 | 0.0026 |
| Farmers | 1999 | 0.8460 | 0.0441 | 0.9789 | 0.0046 | 0.9800 | 0.0046 |
| | 2000 | 0.8532 | 0.0414 | 0.9810 | 0.0035 | 0.9842 | 0.0031 |
| | 2001 | 0.8480 | 0.0338 | 0.9504 | 0.0106 | 0.9594 | 0.0083 |
| | 2002 | 0.8491 | 0.0419 | 0.9821 | 0.0033 | 0.9832 | 0.0032 |
| | 2003 | 0.8450 | 0.0359 | 0.9664 | 0.0063 | 0.9703 | 0.0060 |
| Self-employed | 1999 | 0.9273 | 0.0146 | 0.9758 | 0.0048 | 0.9732 | 0.0055 |
| | 2000 | 0.9420 | 0.0111 | 0.9739 | 0.0051 | 0.9724 | 0.0056 |
| | 2001 | 0.9489 | 0.0093 | 0.9564 | 0.0099 | 0.9731 | 0.0052 |
| | 2002 | 0.9446 | 0.0087 | 0.9570 | 0.0079 | 0.9570 | 0.0088 |
| | 2003 | 0.9147 | 0.0162 | 0.9476 | 0.0101 | 0.9656 | 0.0078 |
| Retirees | 1999 | 0.9230 | 0.0224 | 0.9640 | 0.0095 | 0.9748 | 0.0068 |
| | 2000 | 0.9306 | 0.0185 | 0.9715 | 0.0066 | 0.9795 | 0.0050 |
| | 2001 | 0.9292 | 0.0171 | 0.9809 | 0.0042 | 0.9886 | 0.0026 |
| | 2002 | 0.9276 | 0.0164 | 0.9844 | 0.0033 | 0.9845 | 0.0036 |
| | 2003 | 0.9300 | 0.0168 | 0.9866 | 0.0026 | 0.9867 | 0.0028 |
| Pensioners | 1999 | 0.9284 | 0.0214 | 0.9864 | 0.0030 | 0.9893 | 0.0023 |
| | 2000 | 0.9215 | 0.0256 | 0.9891 | 0.0028 | 0.9910 | 0.0022 |
| | 2001 | 0.9439 | 0.0172 | 0.9672 | 0.0080 | 0.9871 | 0.0026 |
| | 2002 | 0.9236 | 0.0245 | 0.9874 | 0.0025 | 0.9842 | 0.0037 |
| | 2003 | 0.9560 | 0.0139 | 0.9839 | 0.0033 | 0.9883 | 0.0024 |
| Non-earned sources | 1999 | 0.7635 | 0.0743 | 0.9550 | 0.0112 | 0.9748 | 0.0051 |
| | 2000 | 0.7468 | 0.0816 | 0.9859 | 0.0030 | 0.9878 | 0.0029 |
| | 2001 | 0.7798 | 0.0658 | 0.9427 | 0.0151 | 0.9502 | 0.0139 |
| | 2002 | 0.8297 | 0.0514 | 0.9589 | 0.0091 | 0.9627 | 0.0082 |
| | 2003 | 0.8423 | 0.0462 | 0.9655 | 0.0084 | 0.9706 | 0.0072 |

**Table 9.** Parameters of the four-parameter Dagum model estimated for per capita income by socio-economic groups

| Households | Year | Dagum model parameters | | | |
|---|---|---|---|---|---|
| | | $\alpha$ | $\lambda$ | $\beta$ | $\delta$ |
| Employees | 1999 | –0.6708 | 0.6732 | 0.2097 | 3.3739 |
| | 2000 | –0.6352 | 0.9463 | 0.2093 | 3.2971 |
| | 2001 | –0.2152 | 0.8585 | 0.3740 | 3.3127 |
| | 2002 | –0.3842 | 1.2701 | 0.2540 | 3.4108 |
| | 2003 | –0.3679 | 1.5904 | 0.2673 | 3.2050 |
| Employees- farmers | 1999 | –0.9999 | 0.1606 | 0.2415 | 3.1982 |
| | 2000 | 0.0161 | 0.1030 | 0.9005 | 3.6050 |
| | 2001 | –0.9497 | 0.3495 | 0.1823 | 3.5571 |
| | 2002 | –0.0264 | 0.1187 | 0.8156 | 3.4353 |
| | 2003 | 0.0056 | 0.1000 | 1.2663 | 3.2754 |
| Farmers | 1999 | –0.0929 | 0.1580 | 0.9235 | 2.0650 |
| | 2000 | 0.1789 | 0.1077 | 2.0003 | 2.3664 |
| | 2001 | –0.9999 | 0.4009 | 0.2899 | 1.9757 |
| | 2002 | –0.1447 | 0.4188 | 0.4310 | 2.4709 |
| | 2003 | –0.4284 | 0.1503 | 0.8078 | 1.8248 |
| Self-employed | 1999 | –0.0210 | 0.3478 | 1.0094 | 2.7249 |
| | 2000 | 0.0107 | 0.2853 | 1.4236 | 2.5475 |
| | 2001 | –0.0663 | 0.8802 | 0.6420 | 2.9738 |
| | 2002 | –0.1413 | 2.1786 | 0.3729 | 3.1705 |
| | 2003 | –0.1990 | 1.5155 | 0.4302 | 2.5176 |
| Retirees | 1999 | 0.0119 | 0.1875 | 1.0866 | 4.5700 |
| | 2000 | 0.0085 | 0.2705 | 0.9782 | 4.3857 |
| | 2001 | 0.0060 | 0.5805 | 0.8148 | 4.35865 |
| | 2002 | 0.0063 | 0.5563 | 0.9142 | 4.31349 |
| | 2003 | 0.0005 | 0.5865 | 0.9493 | 4.2752 |
| Pensioners | 1999 | 0.0342 | 0.1245 | 0.7628 | 4.0586 |
| | 2000 | –0.0067 | 0.2422 | 0.4973 | 4.3793 |
| | 2001 | –0.2208 | 0.7127 | 0.2493 | 4.5681 |
| | 2002 | –0.0343 | 0.4910 | 0.3878 | 4.5585 |
| | 2003 | –0.0210 | 0.4521 | 0.5382 | 4.0533 |
| Non-earned sources | 1999 | –0.9998 | 0.1000 | 0.2993 | 2.4635 |
| | 2000 | –0.7161 | 0.1842 | 0.2199 | 2.7204 |
| | 2001 | –0.5526 | 0.5881 | 0.1494 | 3.5352 |
| | 2002 | –0.8597 | 0.2955 | 0.2232 | 2.6032 |
| | 2003 | –0.4614 | 0.4222 | 0.2726 | 2.7018 |

**Table 10.** Gini, Zenga and Bonferroni concentration measures for per capita income by socio-economic groups

| Households | Year | Dagum model parameters | | |
|---|---|---|---|---|
| | | G | $Z_1$ | B |
| Total | 1999 | 0.3150 | 0.2948 | 0.4291 |
| | 2000 | 0.3216 | 0.3060 | 0.4374 |
| | 2001 | 0.3214 | 0.3057 | 0.4386 |
| | 2002 | 0.3323 | 0.3244 | 0.4515 |
| | 2003 | 0.3390 | 0.3357 | 0.4551 |
| Employees | 1999 | 0.3277 | 0.3178 | 0.4324 |
| | 2000 | 0.3384 | 0.3367 | 0.4433 |
| | 2001 | 0.3371 | 0.3332 | 0.4457 |
| | 2002 | 0.3456 | 0.3483 | 0.4545 |
| | 2003 | 0.3641 | 0.3824 | 0.4713 |
| Emploees-farmers | 1999 | 0.3071 | 0.2817 | 0.4215 |
| | 2000 | 0.2902 | 0.2543 | 0.4012 |
| | 2001 | 0.2953 | 0.2628 | 0.4003 |
| | 2002 | 0.2983 | 0.2672 | 0.4074 |
| | 2003 | 0.2926 | 0.2588 | 0.3949 |
| Farmers | 1999 | 0.4715 | 0.5823 | 0.5790 |
| | 2000 | 0.4381 | 0.5149 | 0.5629 |
| | 2001 | 0.4843 | 0.6114 | 0.5850 |
| | 2002 | 0.4563 | 0.5483 | 0.5807 |
| | 2003 | 0.4810 | 0.6025 | 0.5849 |
| Self-employed | 1999 | 0.3602 | 0.3745 | 0.4692 |
| | 2000 | 0.3704 | 0.3928 | 0.4808 |
| | 2001 | 0.3547 | 0.3643 | 0.4649 |
| | 2002 | 0.3784 | 0.4058 | 0.9952 |
| | 2003 | 0.4396 | 0.5223 | 0.5485 |
| Retirees | 1999 | 0.2209 | 0.1528 | 0.3173 |
| | 2000 | 0.2336 | 0.1700 | 0.3336 |
| | 2001 | 0.2342 | 0.1712 | 0.03373 |
| | 2002 | 0.2501 | 0.1933 | 0.3548 |
| | 2003 | 0.2377 | 0.1756 | 0.3357 |
| Pensioners | 1999 | 0.2787 | 0.2371 | 0.3934 |
| | 2000 | 0.2842 | 0.2468 | 0.4014 |
| | 2001 | 0.2957 | 0.2645 | 0.4141 |
| | 2002 | 0.2929 | 0.2608 | 0.4108 |
| | 2003 | 0.2902 | 0.2554 | 0.4072 |
| Non-earned sources | 1999 | 0.4135 | 0.4703 | 0.5400 |
| | 2000 | 0.4228 | 0.4875 | 0.5497 |
| | 2001 | 0.4109 | 0.4573 | 0.5301 |
| | 2002 | 0.4100 | 0.4636 | 0.5282 |
| | 2003 | 0.4188 | 0.4794 | 0.5420 |

**Table 11.** Economic distance rations between socio-economic groups in 2003

| Households | Employees | Retirees | Farmers | Pensioners | Non-earned sources | Employees farmers |
|---|---|---|---|---|---|---|
| Self-employed | 0.2863 | 0.2959 | 0.5316 | 0.5841 | 0.6038 | 0.7025 |
| Employees | | 0.0350 | 0.3394 | 0.3584 | 0.5115 | 0.5330 |
| Retirees | | | 0.3912 | 0.4624 | 0.5822 | 0.6353 |
| Farmers | | | | 0.0692 | 0.1576 | 0.2121 |
| Pensioners | | | | | 0.2604 | 0.2363 |
| Non-earned sources | | | | | | 0.0712 |

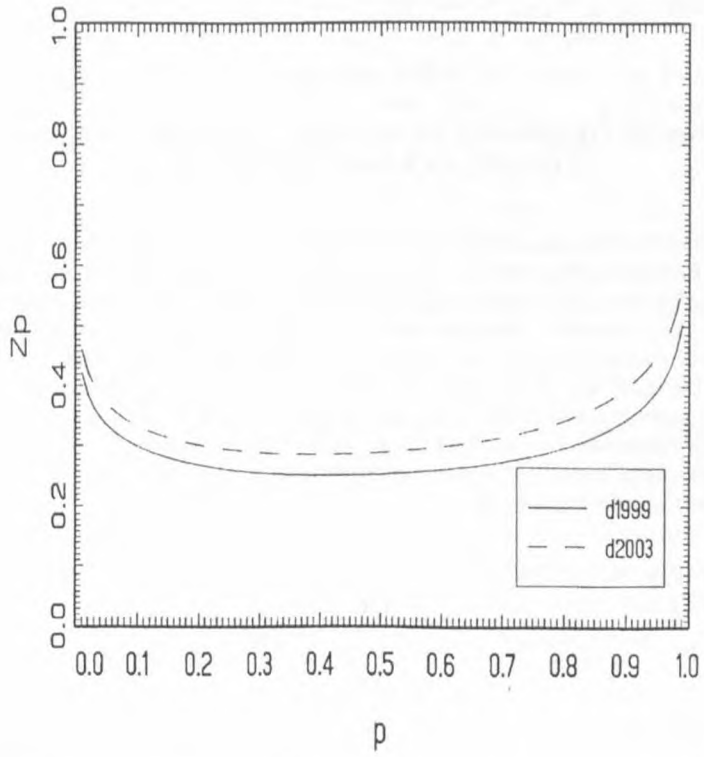


**Fig. 1.** Zenga cocentration curves for per capita income in the years 1999 and 2003

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## NIERÓWNOŚCI DOCHODOWE W GRUPACH SPOŁECZNO- ZAWODOWYCH W POLSCE W OKRESIE TRANSFORMACJI

Okres transformacji gospodarczej, który rozpoczął się w Polsce w 1989 r., wiąże się z narastaniem nierówności dochodowych w różnych przekrojach. Powoduje to m.in. zwiększanie się dystansu ekonomicznego pomiędzy niektórymi grupami społeczno-ekonomicznymi oraz wzrost koncentracji płac i dochodów wewnątrz tych grup. W efekcie tych zmian poziom nierównomierności rozkładu dochodów Polsce jest obecnie bardzo wysoki w porównaniu z innymi krajami Wspólnoty Europejskiej. W artykule przedstawione zostały miary koncentracji dochodów w grupach społeczno-zawodowych w ujęciu dynamicznym oraz współczynniki dystansu ekonomicznego pomiędzy grupami. Miary te były szacowane na podstawie parametrów rozkładów teoretycznych dopasowanych do empirycznych rozkładów dochodów pochodzących z Badania Budżetów Gospodarstw Domowych.