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The emerging aversion to inequality

Evidence from subjective data[1]

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Abstract

This paper provides evidence of the changing attitudes to inequality during transition to the market in Poland. Using repeated cross-sections of the population, it identifies a structural break in the relationship between income inequality and satisfaction. Whereas in the first stage of the transition process, an increase in income inequality was interpreted by the population as a positive signal of wider opportunities, later in the transition period increased inequality became a factor in dissatisfaction with the country's economic situation. This was accompanied by increasing public sentiment that the process of income distribution is flawed and corrupt.

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1. Introduction

Reform fatigue and disenchantment seem to have appeared in the transition countries of Central and Eastern Europe. The rise in populist parties relying on popular discontent with reforms was observed in a number of countries at the end of the last century despite the significant achievements in establishing democratic and market institutions, continuous economic growth, and accession to NATO and the European Union (Denisova *et al.*, 2008; Desai and Olofsgärd, 2006; Krastev, 2007). This contrasts with the remarkable popular support for reform and high expectations that were found at the outset of transition. In Poland, for example, an initial strong consensus for reforms faded away in the middle of the 1990s, giving way to disappointment. Criticism of some of transition outcomes, such as corruption, growing inequality and a high price paid by part of the population, progressively became the dominant theme of public discourse. Popular discontent was associated with increasing distrust of political elites, accused of being corrupt and self-interested. We argue that in Poland, as in many other transition countries, the backlash of reforms is partly due to the rise in income inequality and the perception that the process of income distribution and mobility is flawed and corrupt (Brainerd, 1998; Kornai, 2006; Milanovic, 1999).

As one of the central features of former socialist regimes – income equality – was replaced by sharp income differentiation, it is no surprise that the subjective perception of inequality is one of the key elements of the attitudes towards reforms. In theory, income inequality may affect subjective welfare in several ways, either directly, for instance in the case of pure preferences for equal outcomes, or indirectly, through more sophisticated mechanisms involving the externalities of corruption and criminality (Alesina and Perotti, 1996; Alesina *et al.*, 2004; Fong, 2001). In practice, the relationship between income inequality and satisfaction has been shown to be predominantly negative, especially in Europe (Alesina *et al.*, 2004). Yet inequality can also improve subjective welfare in certain contexts, as suggested by Hirschman and Rothschild (1973). The authors argue that societies experiencing rapid development may initially show tolerance for higher inequality, because they interpret it in terms of greater opportunities. This is also the idea of Alesina *et al.* (2004): '…in the US, the poor see inequality as a ladder that, although steep, may be climbed…' This tolerance for inequality may, however, wither away over time: if expectations are not met, supporters of the development process may become its enemies. After such a 'turning point', some side-effects of development, and in particular, an increase in inequality, may swamp the subjective benefits of growth.

The dynamic scenario sketched by Hirschman and Rothschild, including the downturn in public satisfaction and adhesion to reforms, might actually be taking place in the former socialist bloc. While the beginning of transition was perceived as a big reshuffling of cards with high uncertainty, after more than 15 years, citizens of transition countries have acquired a more precise idea of the new economic

regime and of their own prospects in the new society. Depending on how fair the process of social change and the resulting income distribution appears to citizens, some transition countries may find themselves in the second part of the roadmap sketched by Hirschman and Rothschild.

The objective of this paper is to test Hirschman and Rothschild's conjecture, using a series of repeated cross-sections of exceptional frequency and length that cover the entire transition experience in Poland. We mainly focus on self-declared satisfaction with the state of the Polish economy (henceforth 'country satisfaction'), which is both a satisfaction domain and a political attitude. We explore the relationship between income inequality and country satisfaction over time between 1992 and 2005, when Poland experienced sustained economic growth. We identify a break in the relationship between country satisfaction and income inequality at the end of 1996. In the first period (1992–1996), we observe a positive association between these variables, whereas in the second period (1997–2005), this relationship becomes negative. In order to interpret this break, we also examine other satisfaction variables available in the survey. In the first period, inequality is associated with higher expectations, which is no longer true in the second period, suggesting that it has lost its informational value in the eyes of the population. In addition, people's self-declared satisfaction with their personal situation is negatively and significantly associated with income inequality after 1996, whereas there was no statistically significant relationship in the earlier period. Additional evidence on the evolution of public opinion suggests that the changing tolerance for inequality coincided with the growing perception that high incomes are unmerited and often reflect corruption.

This paper is related to different strands of economic literature. First, the subjective perception of the country's situation touches upon the political economy of development. Several papers have underlined the sociopolitical instability that results from income inequality (Alesina and Perotti, 1996; Perotti, 1996). Income distribution concerns have also been shown to discourage individuals' adhesion to the deepening of market reforms or development policies, leading to calls for fiscal policies that hamper economic growth (Alesina and Rodrik, 1994; Persson and Tabellini, 1994). Acemoglu and Robinson (2000, 2002) have argued that in 19th century Europe, the extension of voting rights that led to unprecedented redistributive programmes can be viewed as a strategy by the elite to avoid political discontent and revolution, which was in turn fed by the inequalities rising from economic development and industrialization. Analysing country satisfaction is a means to address these issues with the tools of the happiness literature using subjective variables.

This paper also contributes to the literature on the relationship between income distribution and happiness and on the subjective foundations of the demand for redistribution. Most studies in this field find that individuals' attitude towards income inequality depends on their beliefs and preferences regarding the factors of economic success and failure. Prospects of upward mobility make people more

tolerant of inequality (Alesina and la Ferrara, 2005; Alesina *et al.*, 2004), but the perceived fairness of the mobility process itself also plays an important role (Alesina and Angeletos, 2005; Fong, 2001). In sum, people dislike inequality and suffer from it, when they view income differences as unmerited (for recent surveys, see Alesina and Giuliano, 2009; Senik, 2009).

The subjective welfare effect of inequality during the process of transition has been studied extensively. For instance, Sanfey and Teksoz (2007) find that income inequality has a positive effect on life satisfaction in transition countries, whereas the impact is negative in other countries covered by the World Values Survey. Guriev and Zhuravskaya (2009) investigate a weaker relationship, *ceteris paribus*, between GDP and life satisfaction in transition countries as compared with non-transition countries. They identify inequality as one of the culprits of lower satisfaction in transition countries. Several papers treat the experience of transition as a 'natural experiment' in order to assess the negative welfare effects of inequality (Ravallion and Lokshin, 2000) and income comparisons (Ferrer-i-Carbonell, 2005; Senik, 2004, 2008). Alesina and Fuchs-Schündeln (2007) document the slow convergence of preferences for state intervention in East Germany after the shock of the German reunification. We follow this usage of transition as a country-wide experiment. Starting from a situation of relatively egalitarian distribution of income (notwithstanding other forms of inequality), transition to a market economy makes it possible to trace the relationship between unfolding inequality and subjective satisfaction, as we assume that most changes are perceived as exogenous shocks by citizens of the former socialist bloc.

The following section presents the data, Section 3 discusses the empirical strategy, and Section 4 presents the results. Last, Section 5 draws conclusions.

2. Data

The data are constructed from individual-level surveys carried out by CBOS in Poland.[2] We exploit 84 surveys of representative samples of the Polish adult population, with samples of 1,000–1,300 individuals per survey, covering the period 1992–2005 (six surveys per year). Even though some variables are available in earlier years, we choose 1992 as our starting date, the year that GDP growth resumed after 2 years of a significant decline. We focus on the period of sustained economic growth, during which the fall in satisfaction with the country's economic performance is most puzzling. In addition, our main variable of interest is missing for many dates before 1992.

A standard set of questions was asked in each survey: gender, age, education, residential location, labour market status, and occupation. In terms of income, the best documented and most complete measure available is net total monthly

[2] The sample design is explained at http://www.cbos.pl/EN/About_us/design.shtml.

household income per capita. This includes all of the revenues from the individual's main job, including bonuses, rewards, various additional remunerations, revenues from other jobs, including sporadic contracts, disability and old-age pensions and other revenues and transfers. People were asked to indicate their net monthly average income per capita over the last 3 months. We use this notion of income, deflated using the monthly consumer price index published by the Polish Central Statistical Office (GUS).

The data also contain specific attitudinal questions. We mainly hinge on a satisfaction question (country satisfaction), which reflects the subjective attitude of the respondents concerning the general economic situation of the country. Given the context, this question also captures the feeling of the respondent towards the reform policy.

Country satisfaction: *How do you evaluate the economic situation in Poland?* Respondents could tick one of five possible answers: *very good/good/neither good nor bad/bad/very bad*.

In addition, we also use two other subjective questions that concern the personal situation of the respondents:

Private satisfaction: *Do you and your family live: very well/well/neither well nor badly/badly/very badly*.[3]

Private expectations: *Do you think that in the coming year, you and your family will live*: *much better than now/a little bit better/the same as now/a little bit worse/much worse*.

All these variables were recoded so that higher numbers indicate greater satisfaction. We match the CBOS data to macroeconomic indicators taken from official sources (Central Statistical office, GUS): we use yearly GDP and the yearly GDP deflator; the monthly unemployment rate is measured at the regional level. To calculate real household income we use the monthly consumer price index. We compute the Gini coefficient of income inequality for each cross-section. This measure of inequality is of 'high quality' as defined by Deininger and Squire (1996): it is calculated on the basis of successive representative samples of the population and takes into account all sources of revenues.

The descriptive statistics for all variables are presented in Tables A1–A3. Over the 1992–2005 period, the economy grew at an average rate of 4.4 percent. More precisely, the average GDP growth rate reached 5.3 percent between 1992 and 1997, and then fell to 3.7 percent after 1997. In the meantime, there was a rise in unemployment and inequality. The rate of unemployment rose from 13 percent in

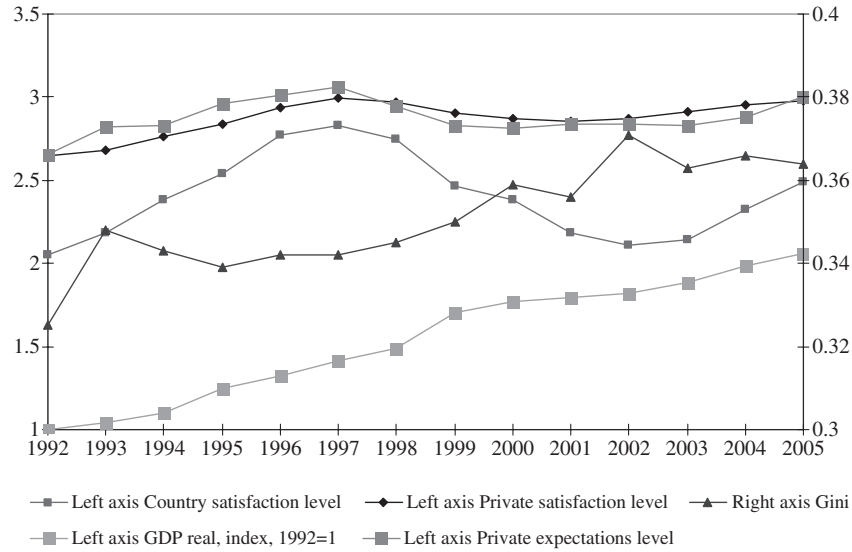
[3] This question in Polish is understood both in terms of material situation and overall life satisfaction.

1992 to 18 percent in 2005 (Table A3). Income inequality as measured by the Gini coefficient was 0.32 at the beginning of 1992 but reached 0.38 by the end of 2005 (Table A1). This is quite high by international standards. For instance, Grün and Klasen (2008) estimated adjusted Gini indices of gross income per capita, using the World Inequality Database (WIID, 2000), and showed that the world average within country Gini coefficient was of 0.33 in the 1980s and 0.34 in the 1990s.

This deformation in the distribution of income was accompanied by a general increase in real incomes at all levels of the income scale. In 2005, the median real income per head was one-third higher than that in 1992. However, the enrichment has been more important for those at the top of the distribution. The average real income per head in the second decile (D2) has increased by about 11 percent against 43 percent in the ninth decile (D9). Accordingly, the ratio D2/D9 has fallen from 14 percent to 11 percent during the period.

Figure 1 displays yearly averages of the main variables of interest: country satisfaction, private expectations, private satisfaction, real GDP and the Gini coefficient. Although real GDP has been rising since 1992, satisfaction with the country's economic situation improved only up to 1997, and then declined substantially until 2002, with a slight improvement after this date. The patterns of private satisfaction and expectations exhibit similar movements, albeit with a smaller amplitude. Eventually, the final level of all satisfaction variables remains higher in 2005 than it was in 1992.

Figure 1. Satisfaction levels, real GDP and Gini coefficient, 1992–2005 (yearly averages)



3. Empirical strategy

We consider the relationship between country satisfaction and income inequality, as in Alesina *et al.* (2004), who study the effect of income inequality in Europe and in the USA. We adopt the same specification in terms of statistical model and control variables. In contrast to Alesina *et al.* (2004), who perform a cross-country analysis of the relationship between income inequality and satisfaction in different environments, we are interested in the dynamic evolution of this relationship in one country.

More precisely, we test for the presence of a structural break in this relationship, without imposing any specific date for the discontinuity, treating the breakpoint as endogenous. As Wald tests constructed with breaks treated as parameters do not possess standard large-sample asymptotic distributions, we use the sup-Wald test based on the maximum of a sequence of Wald statistics, with critical values from Andrews (1993). The basic regression we estimate is:

$$S_{it} = a_T \times \text{Gini}_t + b_1 \mathbf{X}_{it} + b_2 \gamma_T + b_3 \theta_j + b_4 \times \text{inflation}_t + b_5 \times \text{unemployment}_{vt} + e_{it} \quad (1)$$

where S_{it} is the country satisfaction of individual i at date t, Gini_t is an inequality measure calculated for each representative cross-section[4]; $\mathbf{X}_{it}$ represents the socio-economic characteristics of individual i at date t consisting of age, age-squared, gender, education, occupation, labour market status, household income per capita and residential location; γ_T are year dummies capturing the general macroeconomic and other circumstances that affect all individuals in a given year; θ_j are region dummies for seven regions (north, west, centre-west, centre, east, south-east and south-west) and e_{it} is the error term. We also control for the monthly inflation rate and the monthly unemployment rate at the voïvodeship level,[5] in order to separate the influence of income inequality from other macroeconomic determinants of country satisfaction. These variables are commonly used as macroeconomic determinants of satisfaction (see, for example, Di Tella *et al.*, 2003).

As the satisfaction variables are ordinal, we estimate Equation 1 using the ordered logit model. We pool individual observations from different surveys over time. We adjust standard errors to allow for clusters by cross-section (or wave, that is, by t).[6] We also estimated the regression with clusters by voïvodeship and the results turned out to be robust to such alternative assumptions about the variance–covariance matrix.

[4] Below we also consider cross-sectional variations in Gini coefficient.
[5] Voivodeship (wojewodztwo, in Polish) is an administrative unit.
[6] Clustering is important because inflation and unemployment are aggregated at a higher level than the dependent variable and standard errors would otherwise be too high (Moulton, 1990).

We test the hypothesis that the coefficient on the Gini index (a_t) is the same over the entire period. Consequently, we use a partial structural change model, constraining the coefficients of the other explanatory variables to remain the same over all of the periods. Specifically:

$$H_0 : a_T = a^* \quad \text{for all } T$$

$$H_1 : a_T = a_1 \quad \text{for } T = 1992, \ldots, T^B$$

$$a_T = a_2 \quad \text{for } T = T^B + 1, \ldots, 2005$$

We consider different potential break points T^B occurring at the first observation of each year between 1993 and 2004. We choose to leave one year of observations at the beginning and at the end of each tested sample, which implies leaving about 15 percent of the sample either before or after the break (trimming at 15 percent). We compute the Wald statistic for each value of T^B in order to test whether the regression coefficient on the Gini estimated over the sub-period [1992, T^B] is equal to that estimated over the sub-period [T^B + 1, 2005]. We calculate the Wald statistic over all possible breakpoints and compare the maximal value with the relevant critical value (taken from Andrews, 1993). If the sup-Wald statistic exceeds the critical value, the test rejects the null hypothesis of equal coefficients. We then divide the sample into two parts at the estimated breakpoint and carry out a parameter constancy test for each sub-sample. If the hypothesis of no break in the sub-samples is not rejected, we estimate Equation 1 separately for each sub-sample.

In order to understand which groups drive the average result, we exploit cross-sectional variations. We also run a series of robustness tests in order to exclude alternative explanations of the downturn in country satisfaction and to check that our results are robust to the use of alternative indices of income inequality. In order to enrich the picture of the changing perception of income inequality, we also explore the relationship between income inequality and other indicators of satisfaction available in the surveys. Finally, we use several public opinion polls that illustrate the changing attitudes of the population towards income differentiation.

4. Results

We first pool the data and estimate country satisfaction controlling for all variables as in Equation 1. The results are shown in Table A4. The difference between columns 1 and 2 is that the latter includes two macroeconomic variables: the regional rate of unemployment and the monthly rate of inflation. We observe that men, richer and more educated people, students, and those in higher occupations (for definitions, see Table A2, panel B) are more satisfied with the country's situation. Country satisfaction is U shaped in age. Pensioners, farmers, unqualified workers

and those who live in rural areas are less satisfied than employees (the reference group defined as in Table A2, panel B). Comparison of the two columns shows that the coefficients on the individual characteristics are robust to the inclusion of macroeconomic indicators. Unemployment is negatively associated with country satisfaction, whereas the coefficient of inflation is statistically insignificant. The coefficient of income inequality remains insignificant. We then try to identify a discontinuity in the relationship between income inequality and country satisfaction.

4.1 A structural break in the relationship between country satisfaction and income inequality

As explained in Section 3, we test the hypothesis of no break in the pooled sample. The results are displayed in Table 1. In column 1 the numbers are the values of χ^2 corresponding to the Wald statistics for all possible breakpoints. In columns 2 and 3 we show the coefficients of the Gini index obtained for the periods before and after each potential break. Each row of the table corresponds to the year, which divides the sample into two parts. Country satisfaction is then estimated separately for each

Table 1. Test of a break in the relationship between income inequality and country satisfaction

	Wald test	Gini index before the break	Gini index after the break
	(1)	(2)	(3)
1993	7.09	5.685*** [1.668]	−1.394 [2.056]
1994	3.98	4.418** [2.034]	−1.586 [2.223]
1995	6.31	4.358*** [1.644]	−3.299 [2.592]
1996	18.44	5.828*** [1.732]	−6.116*** [2.177]
1997	8.10	3.583* [1.891]	−6.040** [2.821]
1998	7.00	3.202* [1.833]	−6.155** [3.035]
1999	5.54	2.804 [1.802]	−5.828* [3.203]
2000	14.12	3.312* [1.700]	−8.910*** [2.810]
2001	3.42	1.231 [1.928]	−7.861* [4.526]
2002	0.83	0.631 [1.869]	−6.053 [7.075]
2003	1.96	0.791 [1.845]	−10.747 [8.033]
2004	0.53	0.074 [1.855]	4.600 [5.943]

***Notes*:** The numbers in column 1 are values of χ^2 corresponding to Wald statistics for all possible breakpoints. We test the existence of a break, trimming at 15%. The critical value from Andrews (1993) for one parameter and trimming at 15% is 8.85 at the 5% level. In columns 2 and 3 we show the coefficients of the Gini index obtained for the periods before and after each break. Values are significant at the *10%, **5% and ***1% levels.

sub-sample. When the break point is situated in 1996, the two coefficients on the Gini index, before and after the break, are significant at 1 percent and have opposite signs. This does not happen for any other year-break.

The critical value from Andrews (1993) for one parameter and trimming at 15 percent is 8.85 at the 5 percent level. Hence, as the sup-Wald equals 18.44, we identify the break at the end of 1996. However, as in 2000 the value of the χ^2 is also greater than the critical value, we check for the possible existence of a second break in the period 1997–2005. This time with trimming at 25 percent, the critical value is 7.93. The test is unable to reject the hypothesis of no break in the second sub-period. In order to make sure that the second break, although statistically insignificant, does not affect our results, we test the persistence of the break in 1996 keeping only the observations before 2000. The sup-Wald test in 1996 is now 16.71 (with trimming at 20%, the critical value is 8.45).

Consequently, we divide the whole sample into two sub-periods: 1992–1996 and 1997–2005. Table 2 shows the estimation results for Equation 1 over the two sub-samples. In panel A, we observe that when the sample is divided into two periods, the coefficient on income inequality is statistically significantly positive before 1997 (column 2) and then significantly negative after that date (column 3). If one admits the interpretation of the coefficient on the Gini index as the causal effect of income inequality on satisfaction, as do Alesina *et al.* (2004), then Table 2 suggests that the perception of inequality changes around the year 1997. After that date individuals are less inclined to consider themselves satisfied with reforms and, more generally with the economic situation of their country, when inequality is high, even after controlling for individual income, a number of personal characteristics, inflation, unemployment, year and region. However, before that date, inequality interpreted as a measure of higher opportunities is positively correlated with the subjective evaluation of reforms. More specifically, before the break, a one percentage point increase in the Gini index leads to a 0.9 percentage point decrease in the probability of considering the country's economic situation as bad; after the break the same increase in the Gini index leads to a one percentage point increase in the probability of such an answer.

In panels B and C, we verify that the results are robust to the use of alternative measures of inequality. One could argue that people have more local views of the income distribution and that the Gini coefficient calculated at the country level is a less precise measure of the level of inequality than the one people perceive in their closer environment. Thus, in panel B we report results based on a measure of income inequality calculated for different residential locations: large cities (over 50,000 inhabitants), smaller cities and rural areas. In panel C we measure income inequality based on our data as the standard deviation of log household income for each cross-section. The results in panels B and C confirm the pattern observed in panel A: inequality measures are positively associated with the satisfaction variable in the first period, and turn out to be significantly negative in the second period.

Table 2. Country satisfaction and income inequality before and after the break (ordered logit)

	1992–1996	1997–2005
Panel A		
Gini	5.906*** [1.815]	−6.443*** [2.183]
Log household income	0.330*** [0.024]	0.330*** [0.021]
Inflation	0.022 [0.023]	0.082** [0.037]
Unemployment	−0.008*** [0.003]	−0.017*** [0.004]
Observations	30,520	43,061
χ^2	52,297	9,210
Pseudo R^2	0.06	0.06
Panel B		
Gini by residential location	2.052*** (0.571]	−2.382*** [0.881]
χ^2	48,193	6,756
Pseudo R^2	0.055	0.057
Panel C		
Standard deviation of household income	0.001*** [0.000]	−0.001*** [0.000]
χ^2	12,338	8,309
Pseudo R^2	0.056	0.057

***Notes*:** The dependent variable, country satisfaction, scores the answers to the following question: 'How do you assess current economic situation in Poland?' Answers from 1 = very bad to 5 = very good (Country satisfaction). Controls in panel A include female, age, age-squared, education, residential location (except in panel B), labour market status, occupation, region dummies and year dummies. In panels B and C, log household income, inflation and unemployment are also included. Gini coefficients and standard deviation of household income are calculated for each successive representative cross-section. All standard errors (in brackets) are clustered by cross-section. Values are significant at the *10%, **5% and ***1% levels.

We must emphasize that we are not trying to test whether the setback in attitudes is due to an external exogenous shock. Rather, the implicit model that we have in mind is a cumulative process of disappointment, which at a certain point goes beyond a critical threshold (exhaustion of patience). Quoting Hirschman and Rothschild (1973, p. 552). 'The turning point in attitudes is not caused by a sudden shock. It comes about ''purely as a result of the passage of time – no particular outward event sets off this dramatic turnaround''. [In] ''the easy early stage […] everybody seems to be enjoying the very process that will later be vehemently denounced and damned as one consisting essentially in ''the rich becoming richer'''. However, if we wanted to indicate some specific events that could have contributed to the turning point in the relationship between income inequality and country satisfaction, we could refer to the fact that 1997 coincides with the announcement by the newly appointed government of a wave of second-generation

welfare state reforms (concerning health, pensions and education), which was met with little enthusiasm from the population. It is likely that this has contributed to the 'reform fatigue' of the population, by reinforcing the perception of the costs imposed by reforms.

4.2 Who is most affected by inequality?

Different segments of the population may differ in their perception of income inequality. In this section, we investigate which particular groups drive the average result (established above). First, as income inequality is initially interpreted in terms of increased opportunities, the effect should be more pronounced for those individuals who had a longer experience of the socialist regime and who have experienced the transition process from the start. Hence, we expect 'older' people to have higher expectations at the beginning of the transition and to be more disappointed afterwards. Table 3 reports the results separately for the two cohorts, those who were born before 1970 and therefore were at least 23 years old in 1992, and those who were born in 1970 or after. It shows that it is older cohorts who are initially more likely to see income differentiation in terms of opportunities. Indeed, the coefficient on the Gini index is statistically significantly positive (column 1) in the regression on the sub-sample of 'older' people, whereas it is not significant in the regression on the sub-sample of younger people (column 3). In the second period, however, the coefficient on the Gini index is negative and statistically significant for both groups. The initial positive attitude of older cohorts towards income inequality has vanished, giving way to a general aversion for inequality.

Table 3. Country satisfaction and income inequality: cohort effects (ordered logit)

	Born before 1970		Born after 1969	
	1992–1996	1997–2005	1992–1996	1997–2005
	(1)	(2)	(3)	(4)
Gini	6.351*** [1.802]	−6.386*** [2.265]	1.237 [2.834]	−6.791*** [2.410]
Log household income	0.335*** [0.028]	0.365*** [0.022]	0.295*** [0.065]	0.232*** [0.035]
Regional unemployment	−0.009*** [0.003]	−0.018*** [0.004]	−0.005 [0.009]	−0.011* [0.006]
Inflation rate	0.021 [0.023]	0.088** [0.040]	0.034 [0.032]	0.049 [0.039]
Observations	27,851	34,818	2,669	8,243
χ^2	644,537	11,502	5,378,140	1,761
Pseudo R^2	0.05	0.06	0.06	0.05
Log likelihood	−31,910	−40,627	−2,955	−9,488

***Notes*:** Controls include female, age, age-squared, education, residential location, labour market status, occupation, region dummies and year dummies. All standard errors (in brackets) are clustered by cross-section. Values are significant at the *10%, **5% and ***1% levels.

Second, we expect to see a difference in the perception of inequality depending on the ideological self-identification of individuals. Alesina *et al.* (2004) observed that left-wing Europeans were more affected by income inequality, compared with right-wingers. The notions of left and right are not completely clear in countries that have experienced communism for 45 years, but we rely on the self-definition of individuals who answered the following question: 'Please describe your political opinions using the scale from 1 (left) to 7 (right)'. We classified as left-wingers the respondents who chose '1' and as right-wingers those who chose '7' (left and right each represent about 5 percent before 1997 and 10 percent after 1997). Table 4 shows that in Poland, the initial positive association between income inequality and satisfaction is statistically significant for right-wingers (who probably see income differentiation as a source of incentives and efficiency) but not for left-wingers (who are less likely to share this view). After 1996, a statistically significant negative association between income inequality and country satisfaction is observed in both groups.

Overall, these results suggest that the initial perception of income differentiation was more positive in groups which had a longer experience of socialism or defined themselves as right-wingers, who were more likely to interpret the process of income differentiation as the corollary of increased opportunities and efficiency.

Table 4. Country satisfaction and income inequality: left and right (ordered logit)

	Left		Right	
	1992–1996	1997–2005	1992–1996	1997–2005
	(1)	(2)	(3)	(4)
Gini	0.871 [4.117]	−6.063** [2.944]	12.341** [4.820]	−8.523** [4.336]
Log household income	0.598*** [0.114]	0.210*** [0.072]	0.241** [0.111]	0.374*** [0.073]
Inflation	0.106*** [0.041]	0.039 [0.062]	0.028 [0.043]	0.113** [0.054]
Unemployment	−0.011 [0.015]	−0.006 [0.011]	0.002 [0.011]	−0.006 [0.010]
Observations	1,081	3,035	1,564	3,168
χ^2	18,803	1,106	17,005	1,681
Pseudo R^2	0.10	0.07	0.02	0.08
Log likelihood	−1,293.81	−3,580	−1,946	−3,797

***Notes*:** Controls include female, age, age-squared, education, residential location, labour market status, occupation, region dummies and year dummies. All standard errors (in brackets) are clustered by cross-section. Values are significant at the *10%, **5% and ***1% levels.

4.3 Possible alternative explanations

Due to the limitation of the data, we are unable to establish the direction of causality in the relationship between income inequality and country satisfaction.

However, our objective is to assess the association between income inequality and satisfaction and to establish the existence of a break in this relationship over time. Hence, we need to rule out alternative potential explanations of the change in country satisfaction. The first natural suspect is a time trend. As income inequality is rising along the whole considered period, the coefficient on the Gini index could be hiding the pure effect of time. This could happen if, the level of inequality notwithstanding, with the passage of time, people who initially had high expectations became disappointed. The inclusion of year dummies partly takes care of this issue. Alternatively, we have included a time trend in the estimation of Eqn 1. The results concerning the changing impact of income inequality were not altered [the coefficient on the Gini index was 5.569 (SD 2.100) in the first period and −13.725 (SD 4.342) in the second period].

We also considered the possibility that the results are driven by seasonal variations of country satisfaction. Including monthly dummies in the basic regression does not affect the results. Third, the changing tolerance for inequality could be due to the reduced importance of the welfare state. The public attitude towards inequality certainly depends on the extent of redistribution and social protection. Keane and Prasad (2002), following Garner and Terrell (1998), argued that in Poland, at the beginning of transition, substantial social transfers compensated for increasing wage inequality. The mechanisms of social transfers were thus critical in ensuring political support for reform. Their period of observation stops in 1997, but official statistics show that the share of social expenditure in GDP has remained stable at around 23 percent since 1997. Hence, the changing tolerance for inequality does not seem to be associated with the withering away of the welfare state.

Finally, we asked whether a similar break is observable in the relationship between country satisfaction and other macroeconomic variables. We thus carried the same test for the presence of a structural break in the relationships between (1) unemployment rate and country satisfaction and (2) inflation rate and country satisfaction. We find that the coefficient on unemployment remains negative in all sub-periods defined by consecutive breaks, whereas the coefficient on inflation remains statistically insignificant. Therefore, our main result does not seem to be driven by a change in public opinion regarding other major macroeconomic indicators. To sum up, our results prove to be immune to several potential alternative explanations.

4.4 Other indicators of satisfaction

In order to complete the picture and provide more evidence on personal satisfaction during the transition process, we now turn to the relationship between two other subjective variables and income inequality over time. As shown in Figure 1, private satisfaction and private expectations follow a similar pattern as country satisfaction but of smaller amplitude. Although more flat than country satisfaction,

these curves present the same downward inflexion at some point around the mid-1990s. In addition, we observe a slight upturn around 2001 at the time when inequality receded. The level of private satisfaction and expectations is always higher than the level of country satisfaction. All curves share the common feature that the level of satisfaction and expectations is higher in 2005 than it was initially in 1992.

We first check whether the estimate of private satisfaction yields results that are consistent with those in the literature with respect to the usual individual level correlates of well-being (for example, see Di Tella *et al*., 2003). As expected, we find a U-shaped relationship between age and satisfaction, and a positive correlation with income, education and higher occupations. Men are happier than women, a frequent observation in Central and Eastern Europe and in Latin America (Easterlin, 2008; Graham and Pettinato, 2002; Guriev and Zhuravskaya, 2009). People who live in rural areas are more satisfied and optimistic about their future standard of living than are inhabitants of urban agglomerations, who, in turn, are more satisfied than those who live in large cities. By contrast, individuals who live in rural areas view the situation of the country in a more pessimistic way.

Concerning the impact of inequality, following Hirschman's scenario, we expect that rising inequality will end up deterring not only individuals' appreciation of the country's situation, but also their satisfaction with their own situation, as well as their expectations concerning their private situation.

Columns 3 and 4 of Table 5 show individuals' expectations regarding their living conditions. Higher indices of income inequality are associated with higher expectations up to 1997, but this statistical correlation disappears after that date. This suggests that inequality was initially interpreted as an opening of new opportunities, but eventually lost this meaning in the eyes of the population. Columns 1 and 2 show that private satisfaction is initially weakly correlated with inequality. In the second period, however, the coefficient on the Gini index becomes statistically significant and negative.

This changing pattern of private satisfaction, in association with the rise in income inequality, may constitute an element of the famous Easterlin puzzle, that is, the flatness of the average happiness score in developed countries, in spite of sustained GDP growth after the Second World War (Easterlin, 2001). This empirical finding has stimulated an important subjective happiness literature (Clark *et al*., 2008), although it is still disputed (Stevenson and Wolfers, 2008). Two main potential explanations have been proposed: adaptation effects and comparison effects. Other attempts to explain the Easterlin paradox consist in looking for omitted variables in the estimation of the relationship between income and subjective well-being (Di Tella and MacCulloch, 2008). The findings of this paper suggest that income distribution may constitute one of these missing variables that weaken the welfare effect of growth.

Table 5. A reversal in private expectations and satisfaction

	Private satisfaction		Private expectations	
	1992–1996	1997–2005	1992–1996	1997–2005
	(1)	(2)	(3)	(4)
Gini	0.750 [1.042]	−2.814** [1.378]	8.408*** [2.326]	0.009 [1.352]
Inflation	0.014 [0.010]	0.010 [0.028]	0.017 [0.034]	0.015 [0.043]
Unemployment	0.001 [0.002]	−0.002 [0.003]	−0.003 [0.003]	−0.003 [0.004]
Log household income	1.274*** [0.034]	1.291*** [0.019]	0.309*** [0.033]	0.361*** [0.021]
Observations	32,357	45,335	67,550	27,115
χ^2	47,168	26,666	2,707	3,855
Pseudo R^2	0.10	0.12	0.03	0.02
Log likelihood	−34,829	−47,974	−77,419	−32,698

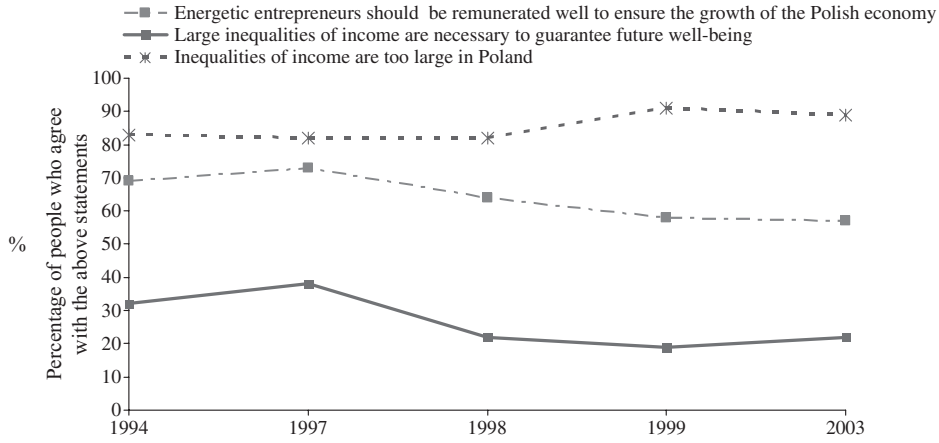
***Notes*:** The dependent variables are the answers to the following questions: 'Do you think that in a year your life and the life of your family will be: Answers from 1 = much worse to 5 = much better than now (Private expectations); How do you and your family live? Answers from 1 = very bad to 5 = very good (Private satisfaction). Controls include female, age, age-squared, education, residential location, labour market status, occupation, regional dummies, time trend and year dummies. Gini coefficients are calculated for each successive representative cross-section. All standard errors (in brackets) are clustered by cross-section. Values are significant at the *10%, **5% and ***1% levels.

4.5 Direct evidence from opinion polls

Finally, in order to provide some direct evidence that the attitude towards income inequality is changing over time, we use several public opinion polls carried out by the Public Opinion Research Center (CBOS, 2003). Figure 2 illustrates the weakening tolerance for income inequality, especially after 1997. Egalitarian attitudes gain in popularity, as attested by the rising percentage of people who consider that 'the government should reduce differences between high and low wages' and that 'inequalities of income are too large in Poland'. By contrast, the percentage of people who consider that 'energetic entrepreneurs should be remunerated well in order to ensure the growth of the Polish economy', that 'future well-being in Poland requires remunerating well those who work hard', or that 'economic inequalities are necessary for economic progress', have significantly decreased. The same pattern is visible in the data from the New Europe Barometer surveys.[7] These data show that, in Poland, the proportion of individuals who declare that 'incomes should be made equal so that there is no great difference in income' rather than 'individual achievement should determine how much people are paid; the more

[7] New Europe Barometer Surveys, Centre for the Study of Public Policy, University of Aberdeen. http://www.abdn.ac.uk/cspp/nebo.shtml.

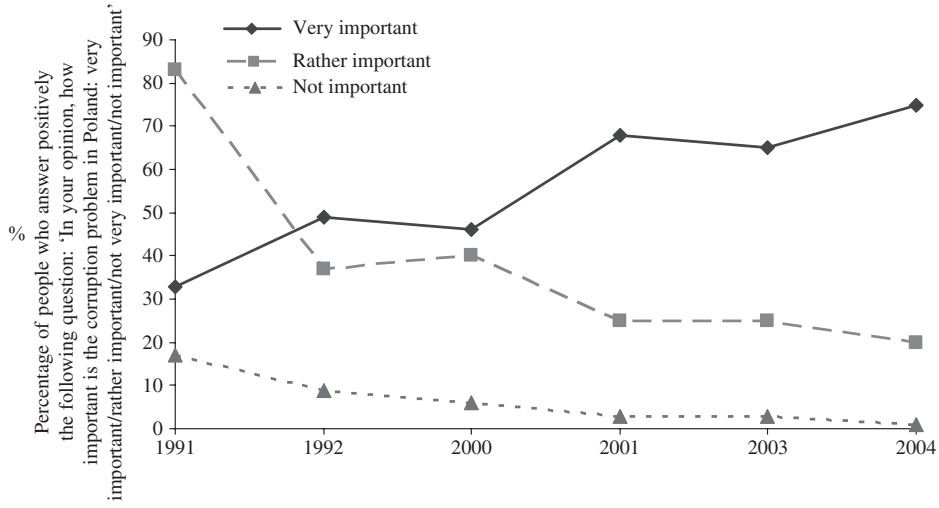
Figure 2. Opinions concerning income inequality, Poland, 1994–2003



***Source*:** CBOS (2003).

successful should be paid more' rose from 24 percent in 1992 to 32 percent in 1998 and 54 percent in 2004. Figure 3 uses another survey (CBOS, 2004) to illustrate the share of the population who considers corruption as an important problem. This sentiment increased sharply, from 32 percent in 1991 to 75 percent in 2004. Overall,

Figure 3. 'In your opinion, how important is the corruption problem in Poland?'



***Source*:** CBOS (2004).

it appears that the perception of the Polish population concerning the fairness and efficiency of income distribution has deteriorated during the period under observation, with a visible turning point around 1997.

These results suggest that the parallel processes of income growth and inequality were initially well accepted by Poles, who might have seen them as a promise of future shared gains. However, by the late 1990s, high expectations seem to have given way to more negative attitudes, fed by the rising intolerance for income inequality, the continued growth in GDP notwithstanding.

5. Conclusion

This paper provides evidence of a change in the relationship between income inequality and individuals' views of the economic situation of their country, which can partly be interpreted as a measure of support for reforms. Our results suggest that income inequality was initially perceived as a positive signal of increased opportunities. However, after several years, unfulfilled expectations and diminishing patience brought about a change in attitudes, and growing inequality started to undermine satisfaction. Individuals seem to have become disappointed with the country's transformation and skeptical about the legitimacy of the enrichment of reform winners. Various public opinion surveys confirm the changing popular sentiment about the degree of corruption in the country and the desirability of high pay-offs in certain professions. Hence, the turning point in the tolerance for income inequality seems to come with the increasingly wide perception that the process that generates income distribution is itself unfair.

The findings of this paper constitute a link between the literature on subjective well-being and the political economy literature focusing on inequality and growth. It provides evidence in support of a hypothesis put forth by Acemoglu and Robinson (2000, 2002) and Perotti (1996) that growth accompanied by inequality generates dissatisfaction and, as such, carries the menace of social instability.

The results obtained in this paper offer a number of lessons for developing and transition countries: if it is important for governments to rapidly exploit the initial 'window of opportunity' for reforms, it is also crucial that they pay attention to income distribution in order to enjoy durable popular support for reforms. This lesson can also be extended to developed countries, as it stresses the importance of ensuring the fairness and transparency of the market and of the process of income distribution.

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Appendix

Table A1. Subjective variables, household income and the Gini coefficient: mean values of variables for each cross-section

Dates (year_month)	Country satisfaction	Private expectations	Private satisfaction	Household income	Gini coefficient
1992_01	2.002	2.679	2.753		
1992_05	1.944	2.531	2.613	5.454	0.323
1992_07	2.036	2.849	2.640	5.528	0.331
1992_09	2.060	2.742	2.635	5.569	0.312
1992_10	2.147	2.707	2.652	5.515	0.339
1992_12	2.108	2.453	2.610	5.467	0.320
1993_01	2.124	2.637	2.659	5.516	0.353
1993_03	2.126	2.641	2.677	5.528	0.355
1993_05	2.085	2.741	2.713	5.527	0.324
1993_07	2.124	2.700	2.628	5.490	0.325
1993_09	2.272	3.046	2.663	5.486	0.379
1993_11	2.347	3.169	2.720	5.532	0.347
1994_01	2.343	2.924	2.788	5.488	0.351
1994_03	2.235	2.704	2.703	5.407	0.345
1994_06	2.437	2.886	2.738	5.471	0.357
1994_07	2.462	2.861	2.769	5.514	0.347
1994_09	2.379	2.733	2.818	5.510	0.337
1994_11	2.426	2.859	2.749	5.542	0.323
1995_01	2.521	2.928	2.832	5.546	0.339
1995_03	2.430	2.952	2.809	5.519	0.336
1995_05	2.526	2.904	2.851	5.573	0.306
1995_07	2.599	2.963	2.847	5.569	0.353
1995_09	2.574	2.931	2.841	5.566	0.339
1995_11	2.606	3.117	2.868	5.683	0.358
1996_01	2.943	3.137	2.975	5.650	0.364
1996_03	2.786	3.041	2.911	5.574	0.348
1996_05	2.702	2.988	2.938	5.614	0.329
1996_07	2.699	2.953	2.923	5.668	0.336
1996_09	2.724	2.941	2.959	5.675	0.329
1996_11	2.771	3.006	2.925	5.691	0.342
1997_01	2.745	3.072	2.906	5.726	0.371
1997_03	2.687	3.028	2.987	5.728	0.344

Table A1. (cont) Subjective variables, household income and the Gini coefficient: mean values of variables for each cross-section

Dates (year_month)	Country satisfaction	Private expectations	Private satisfaction	Household income	Gini coefficient
1997_05	2.840	3.048	3.023	5.807	0.332
1997_07	2.895	3.029	3.074	5.749	0.324
1997_09	2.939	3.141	3.005	5.794	0.352
1997_11	2.866	3.052	2.985	5.801	0.328
1998_01	2.771	2.929	3.000	5.720	0.337
1998_03	2.769	2.965	2.942	5.706	0.354
1998_05	2.774	2.988	2.967	5.797	0.337
1998_07	2.721	2.957	2.991	5.822	0.339
1998_09	2.746	2.878	2.943	5.834	0.352
1998_11	2.699	2.923	2.997	5.823	0.353
1999_01	2.706	2.889	2.945	5.805	0.347
1999_03	2.457	2.830	2.879	5.735	0.363
1999_05	2.471	2.828	2.912	5.818	0.342
1999_07	2.396	2.749	2.875	5.823	0.345
1999_09	2.330	2.814	2.882	5.879	0.353
1999_11	2.431	2.840	2.941	5.856	0.350
2000_01	2.490	2.848	2.874	5.800	0.372
2000_02	2.427	2.781	2.889	5.755	0.365
2000_05	2.320	2.792	2.904	5.827	0.365
2000_07	2.339	2.751	2.826	5.775	0.337
2000_09	2.375	2.854	2.882	5.814	0.359
2000_11	2.348	2.834	2.830	5.779	0.354
2001_01	2.383	2.844	2.896	5.787	0.328
2001_03	2.201	2.770	2.809	5.791	0.368
2001_05	2.198	2.781	2.842	5.783	0.351
2001_07	2.098	2.841	2.864	5.840	0.377
2001_09	2.147	2.879	2.846	5.811	0.340
2001_11	2.077	2.899	2.870	5.811	0.378
2002_01	2.071	2.834	2.881	5.831	0.361
2002_03	2.056	2.791	2.849	5.779	0.375
2002_05	2.071	2.788	2.835	5.824	0.379
2002_07	2.035	2.839	2.864	5.885	0.389
2002_09	2.160	2.876	2.910	5.820	0.366
2002_11	2.247	2.885	2.906	5.852	0.357

Table A1. (cont) Subjective variables, household income and the Gini coefficient: mean values of variables for each cross-section

Dates (year_month)	Country satisfaction	Private expectations	Private satisfaction	Household income	Gini coefficient
2003_01	2.249	2.867	2.914	5.832	0.373
2003_03	2.111	2.836	2.880	5.822	0.355
2003_05	2.060	2.873	2.900	5.864	0.363
2003_07	2.134	2.804	2.882	5.806	0.356
2003_09	2.188	2.887	2.997	5.819	0.360
2003_11	2.120	2.683	2.917	5.778	0.369
2004_01	2.257	2.864	2.920	5.822	0.372
2004_03	2.121	2.772	2.934	5.802	0.381
2004_05	2.370	2.924	2.982	5.882	0.367
2004_07	2.323	2.891	2.942	5.786	0.351
2004_09	2.451	2.939	3.007	5.811	0.369
2004_11	2.445	2.902	2.961	5.773	0.355
2005_01	2.541	2.981	2.980	5.737	0.363
2005_03	2.415	2.966	2.926	5.747	0.351
2005_05	2.525	3.073	2.965	5.809	0.362
2005_07	2.371	2.903	2.989	5.782	0.369
2005_09	2.471	2.974	2.971	5.776	0.365
2005_11	2.588	3.123	3.037	5.778	0.377

***Notes*:** Country satisfaction: How do you assess the current economic situation in Poland? Answers from 1 = very bad to 5 = very good; Private expectations: Do you think that in a year your life and the life of your family will be: Answers from 1 = much worse to 5 = much better than now; Private satisfaction: How do you and your family live? Answers from 1 = very bad to 5 = very good. Household income is the logarithm of net total monthly household income per capita, deflated by the monthly CPI. Gini coefficients are calculated for each successive representative cross-section.

Table A2. The socio-demographic structure of the sample, yearly averages
Panel A

Year	Female	Age	Secondary education	Rural areas	Urban areas	Large cities
1992	0.55	46.77	0.34	0.42	0.30	0.28
1993	0.55	47.93	0.35	0.42	0.30	0.28
1994	0.48	47.89	0.37	0.40	0.32	0.28
1995	0.55	48.24	0.37	0.40	0.31	0.29
1996	0.55	47.61	0.39	0.37	0.35	0.28
1997	0.57	47.53	0.41	0.37	0.32	0.31
1998	0.56	47.74	0.41	0.37	0.33	0.30
1999	0.56	48.17	0.43	0.37	0.33	0.30
2000	0.55	48.13	0.45	0.37	0.32	0.32
2001	0.56	47.86	0.44	0.36	0.31	0.32
2002	0.55	48.46	0.46	0.35	0.30	0.35
2003	0.55	47.82	0.46	0.37	0.30	0.33
2004	0.52	46.89	0.46	0.41	0.30	0.29
2005	0.53	46.73	0.44	0.37	0.32	0.30

***Notes*:** Rural areas are those which, according to administrative rules, do not have the status of cities or towns. Among non-rural areas, urban areas are cities with no more than 50,000 inhabitants, and large cities are defined as having over 50,000 inhabitants. Secondary education is a dummy equal to one if the person has at least a secondary education.

Panel B

Year	Unemployed	Pensioners	Farm	Not working	Unqualified workers	Qualified workers	Higher occupations	Self-employed	Employees
1992	0.08	0.34	0.11	0.07	0.06	0.14	0.06	0.03	0.15
1993	0.05	0.44	0.09	0.03	0.04	0.10	0.06	0.04	0.13
1994	0.04	0.45	0.09	0.02	0.04	0.10	0.06	0.04	0.13
1995	0.06	0.43	0.08	0.04	0.04	0.10	0.06	0.04	0.12
1996	0.08	0.37	0.07	0.06	0.04	0.10	0.07	0.04	0.15
1997	0.08	0.35	0.06	0.06	0.04	0.10	0.08	0.04	0.16
1998	0.07	0.37	0.06	0.05	0.04	0.09	0.07	0.04	0.16
1999	0.08	0.37	0.06	0.05	0.04	0.09	0.07	0.04	0.16
2000	0.09	0.37	0.06	0.05	0.03	0.08	0.07	0.04	0.16
2001	0.12	0.37	0.05	0.05	0.03	0.08	0.06	0.04	0.16
2002	0.13	0.37	0.05	0.04	0.03	0.07	0.07	0.04	0.16
2003	0.12	0.35	0.05	0.05	0.03	0.07	0.07	0.04	0.16
2004	0.12	0.34	0.06	0.05	0.03	0.07	0.07	0.04	0.16
2005	0.11	0.33	0.05	0.05	0.04	0.08	0.05	0.03	0.17

***Notes*:** Higher occupations include directors, presidents and managerial staff in public administration, liberal professions with higher education, engineers, school directors, physicians and lawyers. Employees include those working in administration, technicians, nurses and medium-level employees: directors of shops, mailmen, train conductors, etc.

Table A3. Macroeconomic variables: yearly averages

Year	Nominal GDP	Real GDP growth	Unemployment rate	Gini coefficient (our data)	Gini coefficient UNICEF data
1992	114,243	2.6	13.1	0.325	0.274
1993	155,780	3.8	14.9	0.348	0.317
1994	210,377	5.2	16.5	0.343	0.323
1995	306,318	7.0	15.2	0.339	0.321
1996	385,448	6.2	14.4	0.342	0.328
1997	469,372	7.1	11.6	0.342	0.334
1998	549,467	5.0	10.0	0.345	0.326
1999	665,688	4.5	11.9	0.350	0.334
2000	744,378	4.3	13.9	0.359	0.345
2001	779,564	1.2	16.1	0.356	0.341
2002	808,578	1.4	17.7	0.371	0.353
2003	843,156	3.9	18.0	0.363	0.356
2004	924,538	5.3	19.6	0.366	–
2005	982,565	3.6	18.2	0.353	–

***Notes*:** Gini coefficients calculated using yearly average household income in our data. The estimates of the Gini coefficient from the UNICEF Database (IRC TransMONEE 2005) are based on interpolated distributions from grouped data from household budget surveys reported to the MONEE project.
***Source*:** Polish Central Statistical Office (GUS).

Table A4. Country satisfaction, ordered logit

	(1)	(2)
Female	−0.061*** [0.021]	−0.062*** [0.021]
Age	−0.031*** [0.003]	−0.032*** [0.003]
Age-squared	0.026*** [0.003]	0.026*** [0.003]
Log household income	0.334*** [0.016]	0.329*** [0.016]
Education	0.117*** [0.024]	0.115*** [0.024]
Unemployed	−0.032 [0.028]	−0.030 [0.027]
Pensioners	−0.110*** [0.023]	−0.107*** [0.023]
Farm	−0.173*** [0.034]	−0.170*** [0.034]
Unqualified workers	−0.086** [0.034]	−0.086*** [0.033]
Qualified workers	−0.019 [0.031]	−0.021 [0.031]
Not working	0.133*** [0.039]	0.129*** [0.038]
Higher occupations	0.189*** [0.038]	0.189*** [0.038]
Self-employed	0.040 [0.047]	0.039 [0.047]
Students	0.211*** [0.041]	0.209*** [0.041]
Rural areas	−0.152*** [0.022]	−0.154*** [0.023]
Large cities	−0.022 [0.025]	−0.037 [0.025]
West	−0.076** [0.031]	−0.087*** [0.031]
Centre-west	−0.017 [0.030]	−0.064** [0.031]
Centre	−0.132*** [0.029]	−0.202*** [0.030]
East	−0.204*** [0.039]	−0.247*** [0.039]
South-east	−0.083*** [0.030]	−0.150*** [0.032]
South-west	0.149*** [0.031]	0.058* [0.034]
cut1:Constant	−0.405 [0.614]	2.616 [2.450]
cut2:Constant	2.066*** [0.612]	5.088** [2.449]
cut3:Constant	4.077*** [0.614]	7.101*** [2.449]
cut4:Constant	8.618*** [0.625]	11.643*** [2.467]
Gini	0.074 [1.865]	0.087 [1.834]
Unemployment		−0.012*** [0.002]
Inflation		0.032 [0.023]
Observations	73,581	73,581
χ^2	4,633.67	4,531.66
Pseudo R^2	0.05	0.05
Log likelihood	−85,275.60	−85,242.27

***Notes*:** Country satisfaction answers the following question: How do you assess the current economic situation in Poland? Answers range from 1 = very bad to 5 = very good; Gini coefficients are calculated for each successive representative cross-section. Yearly dummies included. Omitted variables: men, less than secondary education, urban areas (with less than 100,000 inhabitants), employees and north region. Age-square was divided by 100. All standard errors (in brackets) are clustered by cross-section. Values are significant at the *10%, **5% and ***1% levels.