Changes in Determinants of Poverty and Inequality during Transition:

Household Survey Evidence from Ukraine

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Abstract

The paper analyzes the scale and the determinants of household poverty in Ukraine during transition. We derive estimates of poverty incidence and severity and estimate the determinants of poverty in 1996 and 2004 using two comparable surveys. Poverty in both periods follows some of the determinants commonly identified in the poverty literature, including greater poverty among households with children and with less education. We also identify features of poverty in transition, including the relatively low importance of unemployment and the existence of poverty even among households with employment. Poverty determinants change over time in line with emerging labor markets.

JEL codes: P20, I32, J20
Key words: poverty, transition, Ukraine

1. Introduction

The paper analyzes household poverty in a transition economy in times of economic shock and recovery. In particular, we study the incidence and determinants of household poverty and inequality over time using multiple measures of household welfare. Our analysis examines two comparable household surveys from Ukraine from 1996 and 2004, which represent years of extreme economic depression and of sustainable recovery, respectively.

Our paper hence offers insights into how and how much the long-term transition process affects household welfare. The 'how' concerns the roles of household composition (including age and gender), human capital, assets, location and transition-specific, and potentially endogenous, labor market issues like wage arrears. The 'how much' is addressed by studying household consumption and household income, analyzing various poverty lines and emphasizing the role of inequality.

Our findings are twofold. On the one hand, we confirm that poverty in Ukraine in both periods follows some of the determinants commonly identified in the poverty literature, including greater poverty among households with children and with less education. On the other hand, we also identify some specific features of household poverty that are mostly associated with the transition process such as the relatively low importance of unemployment and the existence of poverty even among households with employment, especially during the time of economic collapse. We also document substantial changes in the determinants of poverty over time, which can be explained by the development of a competitive labor market and related institutions in Ukraine.

The long-term nature of our study and the identification of key transmission channels of transition-related labor market effects on poverty at the household level are unique features of the paper and hence represent its key contributions to the literature. Further strengths of the paper include its consistent use of multiple measures of household poverty, of multiple estimation techniques in its poverty analysis and of multiple poverty lines for reasons of robustness and comparability with alternative studies. We also address explicitly distributional consequences of transition across the income distribution and across geographical dimensions. We believe that our paper is hence of interest to readers of the transition literature in particular but also of the literature on household welfare under uncertainty in general.

Finally, we would like to clarify what our paper does not aim to achieve. We do not conduct panel data analysis due to data limitations, thus preventing an analysis of poverty dynamics.

Furthermore, we do not assess the effects of social policies on household welfare, which is why we have also limited the discussion of the policy implications of our findings. We hope to turn to these points in our later work.

The structure of the paper is as follows. The next section reviews the literature on poverty and its determinants in the transition context. Section 3 derives some specific research hypotheses. Section 4 and 5 present the case of Ukraine and the datasets and methods used, respectively. Section 6 discusses the summary statistics and regression results while section 7 concludes.

2. Literature review

2.1 Transition and households

Since the fall of the Berlin wall, the countries of Central and Eastern Europe have been experiencing profound changes in their economies and societies, known as transition. The move from a planned to a market economy usually involved macroeconomic stabilization, liberalization of prices and trade, privatization and the development of markets and institutions that were absent or suppressed under central planning. The path of transition widely differed across the countries depending on their initial conditions and the sequencing of political and economic reforms, leading to diverse outcomes. But a common feature shared by the transition economies was a significant decline of GDP, sometimes by more than half during several years (EBRD 2005).

The transition shock did not come without consequences for individuals and households. The strongest impact was via adjustments in the labor market which had to respond to shrinking demand for labor resulting from output decline. While the speed of adjustment was different across countries, it typically implied a fall in real wages and a gradually shrinking employment rate and raising unemployment. Most of the adjustment in the beginning of the period came via falling real wages, not employment, especially in the CIS countries (Rutkowski 2006). Non-standard mechanisms of labor market adjustment became widespread. These included wage arrears, unpaid leaves, reduction in hours of work and payments in-kind on the background of low formal unemployment. As enterprise restructuring took a grasp in the region, these phenomena were reduced and unemployment grew substantially (Klugman and Kolev 2001; Gerry, Kim and Li 2004; Boyarchuk, Maliar and Maliar 2005).

Another avenue through which the macroeconomic decline affected households was the reduction in welfare benefits caused by budgetary problems in some of the states (Barbone and Polackova 1996; Klugman and Kolev 2001).

In many countries, transition has been marked by considerable rise in income inequality, to a large extent driven by a rise in the inequality of the wage distribution (Keane and Prasad 2002). The wage setting mechanism changed dramatically: instead of being fixed by the state, wages started to reflect individual productivity and effort with gradually increasing returns to human capital (Gorodnichenko and Peter 2005; Munich, Svejnar and Terrell 2005). Another channel contributing to income inequality was the development of the private sector, including the privatization of formerly state-owned enterprises, with an increasing role of income from capital rather than labor.

A quick fall in income coupled with growing inequality suddenly brought many households, which under the last years of socialism enjoyed a fairly equal welfare level, on the edge of physical survival. Household poverty – almost in all of its numerous dimensions – had become one of the most important problems facing the region. Households responded by adjusting hours of work, resorting to supplementary income activities, work in the informal sector or using subsistence agriculture as a survival strategy (World Bank 2000a).

As economic growth resumed in mid-1990s in some countries and by 2000 embraced the entire region, the situation started to change. Growing real wages and improvements in the system of social transfers in many countries led to a significant improvement in the welfare of households in the region, as best evidenced by a considerable fall in the number of poor (World Bank 2005a).

2.2 Determinants of poverty

Poverty is a multidimensional concept describing people's lack of capabilities to lead sustainable livelihoods, that is, without suffering material, social and political deprivation (Sen 1985). In the empirical economic literature poverty is commonly measured by a household's income or consumption. Generally, household consumption is considered to be the preferred measure, since households aim to smooth their consumption over time so that consumption better reflects the general welfare. Besides, it is less affected by intertemporal, seasonal variation than is income (McKay and Lawson 2003). Household consumption is also considered to be measured more accurately. Income measures are expected to underestimate true welfare because people tend to underreport income or have difficulties in quantifying their earnings if those stem from self-employment and capital income (Atkinson, Rainwater and Smeedin 1995). The measurement of income is even more complicated in transition countries with a significant informal sector (Milanovic 1999).

Poverty and physical deprivation of households and individuals is mainly caused by a lack of access to and availability of tangible and intangible assets such as human, natural, physical, financial and social assets (World Bank 2000b, p. 34). In part poverty is determined by the ability of households to protect themselves against adverse idiosyncratic and covariate shocks, such as the death of household members, extreme climatic, agricultural or price changes or macroeconomic crises (Morduch 1994; Kochar 1995; Moser 1998). As a consequence of shocks, households may lose assets or deliberately deplete them to smooth their consumption which translates into negative effects on household welfare (Dercon 2005; Hoddinott 2006).

Empirical research on the determinants of household welfare and poverty accounts for household composition effects, such as household size and shares of different age/gender groups. It is generally expected that different household members exhibit different earnings potentials or might be eligible for different social transfers and benefits like child allowances and pension payments (Glewwe 1991; Lanjouw and Ravallion 1995). Findings in the development literature generally indicate a negative association between numbers of elderly and children per household and household welfare (McKay and Lawson 2003). Female-headed households might have a higher probability of being poor, if social inequality and discrimination prevail; hence, the effect of female-headedness on welfare status depends on the societal circumstances (Harper, Marcus and Moore 2003). Findings on the effect of household size on welfare are controversial as Lanjouw and Ravallion (1995) demonstrate: although studies in developing countries indicate that larger and younger households are poorer than smaller and older households (McKay and Lawson 2003), these results have to be treated with caution because of potential economies of scale in household consumption.

Another important determinant of poverty is human capital, i.e. the level of education in the household. Households with highly educated members are expected to be better off, since they have a competitive advantage in obtaining and using information and exploiting new income opportunities faster (Mu 2006). Furthermore, higher educated individuals are expected to adapt better to changing economic conditions, to use assets more efficiently and to arrange better credit arrangements (Schultz 1975).

There are at least two channels through which tangible assets can affect household welfare status: households with more assets are less likely to be credit constrained, since these can be used as collateral for borrowing (Deaton 1997, ch. 6). In addition, productive assets like land and machinery provide households with means to generate income or to produce food. A permanent lack of assets might force a household in a poverty trap. Further variables employed in the literature on the determinants of poverty are controls for regions and the rural/urban divide and ethnic information on the household (Glewwe 1991).

2.3 Poverty in transition

Studies of poverty in the transition countries are numerous. Most assess the scale and severity of poverty, and often discuss its determinants or correlates. The single most important result in this literature is that poverty increased in all the countries of the region after the start of transition and then rapidly declined with the resumption of robust economic growth (Milanovic 1998; World Bank 2005a). This is consistent with the viewpoint that poverty in the whole region was largely a transient phenomenon caused by crisis-related factors (Gorniak 2001; Lokshin and Ravallion 2004). However, while the transition paths of the post-socialist economies share important similarities, they do not constitute a homogenous group and a need for differentiated approach to poverty analysis has become apparent (World Bank 2005a).

Studies of the determinants of poverty in the transition countries typically focus on household composition, primarily age and sex, human capital, labor market status and assets. Summaries of the factors that were positively associated with poverty are provided, for example, by Gorniak (2001), Klugman, Micklewright et al. (2002), and the World Bank (2000a; 2005a). In the literature it is typically found that the incidence of poverty is larger among large households (e.g., Milanovic 1996), single parent households (Lokshin and Popkin 1999) as well as households with a higher than average number of dependants in relation to income earners. Interestingly and in contrast to stylized facts of poverty in many other economies, there has been little evidence of higher poverty risk for the elderly in many post-socialist countries (Milanovic 1996; Klugman, Micklewright et al. 2002). Rather, the incidence of poverty is higher in households with more children.

In addition, most studies from the region conclude that families whose head or main income provider has a low level of education are more likely to fall into poverty (World Bank 2000b; Gustafsson and Nivorozhkina 2004; World Bank 2005a). Unemployment is another common determinant of poverty, though to varying extents in different countries and over time. The importance of this factor has been relatively less pronounced in the CIS countries, possibly because formal work status did not necessarily mean higher income due to widespread arrears, unpaid leaves, etc. which have been characteristics of the transition labor markets (World Bank 2000b; Klugman, Micklewright et al. 2002).

Rural households usually have higher incidence of poverty compared with urban areas across the entire region (Macours and Swinnen 2006). One of the few exceptions is an early study of poverty in Ukraine conducted by the World Bank in 1995 where a negative link between rural location and poverty is documented (World Bank 1996).

Some studies investigate the effect of ethnicity on poverty and show somewhat mixed results. For example, the World Bank reports on Latvia and Kyrgyzstan (World Bank 2003; World Bank 2004) provide contrasting pictures for poverty risks for the Russian minority in these two countries.

Evidence concerning the gender composition of households and the gender of the household head in particular is somewhat mixed, presumably reflecting different patterns in the evolution of the participation rates among males and females, changes in the wage gap and different degrees of female labor market discrimination. For example, Brainerd (2000) finds a substantial decline in female relative wages in Russia and Ukraine but a consistent increase in female relative wages in other countries of Eastern Europe. Also, the relationship between gender and poverty may be more complex as illustrated by Milanovic (1996): gender per se seems to matter little, but the incidence of poverty is higher among older women and in particular for female-headed households.

Several authors (e.g., Okrasa 1999) study the importance of asset endowment as a determinant of poverty. These typically include access to land, access to financial resources, liquid assets or durables as well as social assets, such as networks of contacts. The possession of or access to such assets is typically found to be negatively associated with poverty as they facilitate adoption of various coping strategies.

While the cross-country dimension of poverty has been explored in detail and much is known about its short-term dynamics, there are few studies of the determinants of poverty in the CIS countries providing a long-term perspective, tracing the whole transition process. Such analysis is important from a policy perspective as it allows to shed more light on the consequences of the transition process and to predict future developments in poverty. From an academic perspective, such analysis sheds light on the hitherto imperfectly studied long-term impact of shocks and structural change on poverty.

The lack of evidence is largely explained by unavailability of data and comparable survey instruments for the long-term analysis of poverty in transition. An exception in the CIS region is a study by Gustafsson and Nivorozhkina (2004) who provide an assessment of poverty in Russia under transition compared with the poverty conditions at the later years of the planned economy. No such studies exist for Ukraine.

3. Aim of the study and hypotheses

This paper focuses on the determinants of poverty in Ukraine during transition. Given the nature of the transition process, marked by macroeconomic shock bringing a huge downward shift in welfare with subsequent recovery, it is of particular interest to analyze how different factors affect poverty in the early and late transition. We will take advantage of two datasets that allow such comparison for Ukraine.

As much of the previous literature, we examine the role of the household composition, such as household size, share of working age people, children and elderly. This establishes an implicit link between poverty and income sources at different stages of the life-cycle, for example, income from labor market activities and welfare benefits provided by the state. Given some evidence of widening male-female wage gap in the transition countries (Ferreira 1999), we expect female-headed households and those with higher share of females to lose during transition relative to the households headed by males. Based on the discussion of the role of human capital – in particular, of increasing returns to education (Gorodnichenko and Peter 2005) and the emergence of long-term unemployment and discouraged workers (Lehmann, Pignatti and Wadsworth 2006) – we expect human capital to become a stronger determinant of poverty in the late transition period compared with the 1990s.

In addition, building on the well-known stylized facts about real wages and unemployment dynamics in the transition countries, we expect explicit unemployment to play a greater role in the later stages of transition. In the early phases, the association between explicit unemployment and poverty may be relatively weak as employment does not necessarily imply higher income due to widespread wage arrears, unpaid leave and in-kind wages. We also hypothesize that the macroeconomic shock resulting in the fall of real wages in the 1990s increased household dependence on income coming from non-wage sources, such as subsistence agriculture and other forms of non-market activities, which often require possession of or access to specific assets, land being an example. With economic recovery and steady growth of wages in the 2000s, the contribution of these additional sources of income to household welfare may shrink, though much depends on whether the benefits of robust economic growth pertain to poor households as to lift them out of poverty. The latter issue emphasizes the need to study the effect of various factors at different points of household welfare distribution.

A closely related issue is the relationship between different welfare measures, like income versus consumption, in different periods of transition. Firstly, it is important as consumption may be a better measure of welfare, especially in countries with high share of shadow economic activity. Secondly, it is related to the issue of consumption smoothing, also studied in the transition context (Skoufias 2003; Mu 2006). While not being the main focus of our paper, the differences between welfare measures based on income and consumption are also addressed in the present study.

Finally, we study changes in the effect of household location on the propensity of being poor. This is closely related to the issues of rural-urban divide (stemming, for example, from availability of subsistence agriculture) and unequal growth across regions. In particular, one may expect that the benefits of economic growth observed in the 2000s are concentrated in big cities and more industrialized regions compared with small towns and regions with significant share of agriculture.

The analysis of changes in the determinants of poverty in Ukraine closely scrutinizes the nature of poverty in transition. Of particular interest is whether poverty in the post-socialist countries, mostly regarded as a transitory phenomenon, transforms into a structural one due to the emergence of a competitive labor market and the increasing importance of education. We leave this issue for future research.

4. The case of Ukraine

After independence in 1991, Ukraine experienced a substantial economic crisis. Compared to other transition countries, the privatization process was very slow and enterprise restructuring started late (Estrin and Rosevear 2003). Compared with Central European transition countries, the economic crisis was longer and deeper. In 1996 GDP per capita was 3,640 USD at PPP while by 2004 GDP per capita reached 6,394 USD at PPP (TransMONEE 2006). Yet real GDP in 2004 represented only about 58 percent of its 1989 value. The decline of real wages followed a similar pattern. Until 1999 real wages dropped to half of their 1989 value and experienced a vigorous recovery, almost reaching the 1989 values by 2004. The macroeconomic indicators allow us to divide the adjustment process into two phases: the early period of contraction characterized by shocks and general economic crisis until the turning point in 1999-2000 and a period of sustained economic recovery since.

In the phase of economic contraction the employment ratio decreased while unemployment rates increased (Table 1). After 1999, however, the development of labor force participation followed a different path: the employment ratio stayed generally constant at around 67 percent and unemployment declined. Hence, in 1996 households were exposed to a negative income shock caused by the enormous squeeze in real wages, while unemployment was modest and labor force participation still relatively high. This gave raise to the phenomenon of "working poor" in the early period of transition (World Bank 1996). This picture changed during the recovery phase: in 2004 households with working household members benefited from the huge increase in real wages, but the share of working people was much lower. By 2004 the risks of unemployment and non-participation in the labor market had risen sharply.

Evidence on poverty in Ukraine comes from two World Bank studies (1996, 2005) which use different survey instruments and therefore are not quite comparable. The first of the mentioned studies provides a static picture based on 1995 data while the latter covers the period from 1999 to 2003 but says little about the initial period of the transition to a market economy.

One especially interesting feature of Ukraine is the regional divide, which is especially apparent in the differences between the Eastern, more Russian speaking, an Western, more Ukrainian speaking, regions (Mroz and Pavliuk 1996).

5. Data and methodology

5.1 Data description

This study uses data from two surveys collected in Ukraine by the Kiev International Institute of Sociology (KIIS) in 1996 (in short Ukraine-96) and 2004 (Ukrainian Longitudinal Monitoring Survey, ULMS). Both are nationally representative household surveys. Similar sampling strategies and substantial similarities of the survey instruments provide an excellent opportunity for intertemporal comparison of household welfare. Information about both surveys is provided in Table 2.

Table 3 shows descriptive statistics of two welfare proxies – household income and consumption – and of all variables used in this paper. To aid intertemporal comparisons, we express all monetary measures in July 2004 Ukrainian hryvnias using monthly CPI deflators.

Table 3 includes variables reflecting household composition characteristics, productive assets, geographical controls, and transition specific shocks measured at the household level. Both surveys define a household as consisting of all those persons living together and sharing common at least some common income and expenditures. Besides household composition variables listing the size of the household (*loghhsiz*) and the shares of groups in the household (*femshare, kidshare, oldshare*), the datasets include the years of schooling (*educ*) of the most educated household member as well as the age and age squared of the head of household (*agehead, agehead2*). The female-headed households are identified with the help of a dummy variable (*femhead*). The variable *ukrainian* indicates that a household normally speaks Ukrainian. The productive asset variables are access to land (*access*) and possession of a car or truck (*carown*). The other variables in Table 3 are geographical controls. We distinguish between rural areas, towns with population up to one hundred thousand inhabitants and big cities as well as several macro-regions (as conventionally defined by the KIIS). The last four variables in Table 3 proxy for the transition related shocks at the level of household: wage arrears (*arrears*), in-kind payments of wages (*inkind*), unpaid leave (*leave*) and unemployment status (*unemp*).

5.2 Methodology

An analysis of poverty implies determining the criteria for classifying households or individuals as poor (for example by household income or consumption) and defining a poverty line, splitting the population into the poor and non-poor groups.

The long tradition of poverty analysis suggests that there is no universal approach that is appropriate for all countries. For example, in the developed economies where a physical survival of people is hardly an issue an analysis of poverty typically implies a focus on relative poverty lines, and is closely related to the study of inequality. In contrast, in the developing countries, satisfying basic needs, such as nutrition, often remains an issue. This warrants a focus on absolute rather than relative poverty. Moreover, as much of the population in these countries are involved in non-market activities such as subsistence agriculture, income as a criterion becomes problematic; hence, most studies evaluate household expenditure or consumption.

In what follows, our analysis of poverty is based on two criteria for classifying certain households as poor and others as non-poor – household income and consumption. To identify poor households, we introduce two distinct poverty lines. The first is derived from survey consumption and price data according to the cost of basic needs method. The method is based on determining the calorie requirements for people of different age and sex, estimating the cost of a calorie for people close to poverty, constructing spatial price indices and making allowance for non-food consumption. For an overview of the approach see, e.g., Kakwani (2003). To assess extreme poverty we additionally introduce an adjusted version of this line which is set at the basic nutrition threshold only, regardless of whether a household has non-food expenditures or not. Second, we use an international poverty line of 4.3 dollars per day per capita, defined in the international 2000 dollars. This is a benchmark poverty line often met in the poverty literature for transition countries (World Bank 2005b). This poverty line is recalculated into hryvnias using PPP and CPI values provided in the September 2006 edition of the IMF World Economic Outlook database.[1]

We analyze determinants of household welfare ω in a multivariate framework using the following reduced-form linear model:

$$\omega_i = \alpha + L_i \beta + A_i \gamma + (transition\ shocks)_i\, \mu + V_i\, \delta + \varepsilon_i \tag{1}$$

where the basic specification contains exogenous welfare determinants describing household characteristics L_i and geographic controls V_i. We additionally control for productive assets A_i in the basic regression. In equation (1) ε_i is an error term that is assumed to be uncorrelated with the explanatory variables. As a next step we introduce additional controls – binary variables measuring transition-specific shocks on the household level such as the payment of wages in-kind (*inkind*), wage arrears (*arrears*), forced unpaid or low-paid leave (*leave*), and unemployment (*unemp*). These variables take the value of unity if there was at least one member of the household who faced such a shock recently.[2]

The impact of same factors on household welfare may vary depending on the location of the household in the overall distribution of welfare. To explore these possibilities, we resort to the quantile regression framework in estimating equation (1) for C_i, household consumption. Thus, to study how the distributional position of a household affects the interplay between explanatory variables and C_i we estimate a parametric model similar to equation (1) with

[1] The details of the calculations of poverty lines are available from the authors upon request.

[2] We are aware of the potential endogeneity of our transition shock variables. In a preliminary check we instrumented those variables with industry and location-specific variables and did not find any significant bias in our OLS estimates for the year 2004 (results are not shown). Results for 1996 turned out to be less convincing and apparently require additional work, which we plan for later versions of this paper.

$Q_\theta(\mathrm{C_i}|\ X_\mathrm{i})$ instead of $E(\mathrm{C_i}|\ X_\mathrm{i})$ and $\theta \in \{0.1, 0.25, 0.5, 0.75, 0.9\}$, where $Q_\theta(\mathrm{C_i})$ denotes the θ^{th} quantile of total household consumption conditional on the explanatory variables X_i. As opposed to the linear OLS model where parameters are estimated at the conditional sample mean of the dependent variable we thus can analyze determinants of welfare at different percentiles of its distribution.

Our second approach to assessing the determinants of poverty is by estimating the households' probability of being either income, food or consumption poor. In classifying the households as either poor or non-poor we make use of the adult equivalence concept. In particular, when calculating "adult equivalent size" we assume economies of scale of 0.9 and a discounting coefficient for children of 0.75 (Deaton and Zaidi 1999). A household i = 1…N is considered to be poor ($\mathrm{p_i} = 1$) if its total consumption, food consumption or income π_i are below the poverty line π:

$$\begin{aligned} \mathrm{p_i} &= 1 \qquad \text{if } \pi_\mathrm{i} < \pi \\ \mathrm{p_i} &= 0 \qquad \text{otherwise} \end{aligned} \tag{2}$$

Analysis is based on the assumption that the probability of being poor can be estimated with the probit model that contains the same determinants as in (1):

$$Prob\ (\mathrm{p_i} = 1) = F\ (L_\mathrm{i}\,\beta + A_\mathrm{i}\,\gamma + (transition\ shocks)_\mathrm{i}\,\mu + V_\mathrm{i}\,\delta + \varepsilon_\mathrm{i}) \tag{3}$$

As in the case with continuous measures of household welfare, the basic model only contains admittedly exogenous variables, and the extended model also makes use of the transition shock variables.

6. Results

6.1 Summary statistics

Table 4 shows the summary statistics that characterize poverty and inequality in Ukraine in 1996 and 2004 according to our data. Not surprisingly, the specification of the poverty line (compare specifications I-III in Table 4) has a significant impact on the estimates of poverty incidence and severity. However, there is clear evidence of a decrease in poverty as measured either in consumption or income terms and a narrowing of the poverty gap (measuring the average distance between the poor households' consumption and the poverty line). In addition the data show a decrease of inequality over the period, as evidenced by the Gini coefficient.

We next take a look at the differences in characteristics of households comprising the poor and non-poor groups based on the consumption measure of welfare and the consumption poverty line (Table 5). It turns out that poor and non-poor households were not statistically different from each other in terms of household size in 1996. In 2004, however, poor households are significantly larger. The latter association is a typical finding in the poverty literature, though it is debated if it should be interpreted in a causal way (Lanjouw and Ravallion 1995).

The composition of poor versus non-poor households has changed with respect to the share of the elderly in the household: in 1996, poor households had a higher fraction of elderly members (though the difference in means was not statistically significant) with the situation reversing in 2004, when there is a significantly higher share of elderly people in non-poor households. This may reflect the significant increase of welfare state benefits for pensioners in the year 2001 (World Bank 2005b).

Most of the labor market shocks (with the exception of arrears) were randomly distributed among poor and non-poor households in the early transition period, highlighting the universal character of the transition shock. Interestingly, arrears in 1996 were significantly more typical of non-poor, rather than poor, households. In 2004, the only characteristic that was different between the two groups of households was unemployment, with poor households being significantly more affected. This is in line with the observation that the adjustment mechanisms in the labor market were different in the two phases of the transition process and lends some support to our hypothesis that unemployment became an important poverty determinant until 2004.

As the industrial structure differs a great deal between different types of settlements in Ukraine, the geographical distribution of the transition shock may be very uneven. In particular, the economies of so-called single enterprise towns could be ruined very suddenly by a strong negative shock in a single industry. Table 6 shows a strong geographic component in the variation of the incidence of in-kind payments and unemployment in both years. The latter increased in all settlement types between 1996 and 2004 with the strongest raise in the rural areas, possibly because of a delayed enterprise restructuring in the agrarian sector. The incidence of in-kind payments as well as other labor market shocks considered in this paper has decreased between 1996 and 2004, but was still substantial in rural areas in 2004. Overall, this evidence points to the hypothesis of the relative welfare improvement in big cities during transition and supports our decision to account for geographical characteristics in the regression analysis.

6.2 Multivariate regression results

We consider different welfare measures and poverty lines to develop a better understanding of well-being in Ukraine. Table 7 shows regression results for determinants of household welfare in 1996 and 2004 measured by household consumption and income in terms of July 2004 Ukrainian hryvnias. The regressions are well-fitted, especially for consumption, and are highly significant. There is no indication for multicollinearity impeding the precision of our results as indicated by a variance inflation factor test (results not shown).

Negative and statistically significant coefficients on the share of females in the working age in 2004 and no statistically significant relationship in 1996 hints on a growing gender gap over the course of transition. This finding is reinforced by the estimated relationship between the gender of household head and household welfare. In particular, female-headed households appear to have enjoyed higher consumption levels in 1996 than their male-headed counterparts, and in 2004 we see no signs of such advantage. Moreover, the analysis unequivocally shows a strengthening inverse link between the share of children and household welfare in 2004 as compared with 1996. Overall, the results for gender and children provide evidence of growing social stratification between 1996 and 2004. We believe that the lack of evidence of such stratification in 1996 is due to a universal nature of the initial transition shock that affected nearly all households in the country as well as to the socialist egalitarian system, which had widely leveled out endowments.

Regression results provide evidence that the importance of education has increased during transition as shown by the rise in the coefficient's magnitude and t-statistic in 2004 as compared with 1996. The gain associated with an additional year of schooling raised from 3.6 to 7.1 percent of the mean income. Access to land was an important contributor to household welfare in both 1996 and 2004, and apparently more significant in 1996. As markets regained stability and more options for cash generation became available, subsistence agriculture – which required access to land – has diminished in importance.

We also find strong effects of the geographical location of households on their welfare. This is true of both settlement type and macro-regions. Households in urban settlements could generally enjoy higher income levels than rural households; however, the result is the opposite for consumption. This presumably reflects problems with supplying towns and cities with food after a considerable decline in agricultural production in the early transition period along with rising food prices (cp. Swinnen 2002), or, more likely, higher growth in the urban areas once the economy passed the stage of contraction. Households residing in large cities clearly became the winners during transition – having significantly higher consumption and income levels in 2004 than rural households and households located in small towns. The latter improved their consumption levels between 1996 and 2004, but even in 2004 were not significantly better off than rural households.

An interesting welfare pattern arises on the macro-regional level. While households in the (predominantly Ukrainian-speaking) Western part had a clear welfare advantage during the dawn of transition, it was completely lost by 2004 while the East improved a lot in terms of income. The capital of Kiev has had a significant welfare advantage throughout the whole period.

Next we analyze the probabilities of falling into poverty (Table 9). As a robustness check we run the regressions for several poverty lines. We observe patterns that are very similar to those reported above. A higher share of elderly in the household reduces the probability of being poor in both periods. A particularly high marginal effect (negative in sign) for income poverty in 2004 says that elderly may positively contribute to the welfare position of households, which was also reported by the World Bank (2005b). This may be explained by the sharp increase in pensions since 2001, which now comprise a stable stream of income. Moreover, the likelihood of extreme poverty (food poor) is much lower for households with greater share of elderly household members indicating that their basic needs are secured.

Evidence of geographical clustering of poverty that was found in the analysis of income and consumption is reinforced in the probit analysis. In 1996 the probability of being consumption poor is significantly higher for households in urban areas compared with rural households (column 1). By 2004 the difference decreases considerably for urban households as a whole, and becomes insignificant for households based in large cities (column 4). This points to the fact that small urban-type settlements are still in a unfavorable position, many of them having suffered from long-term destruction of (sometimes single-enterprise) production facilities. Combined with the observation of lower income poverty in urban settlements, this is consistent with findings from other transition countries that rural households are more likely to be income poor, while urban households are more likely to be consumption poor (Knight and Shi 2006).

A further step in our analysis is done by including transition specific labor market shocks in the regression equations. While wage arrears naturally reduced household income in 1996, the receipt of in-kind payment appears to have been positively associated with consumption (see Table 8). The latter result is counterintuitive, but possibly points to the fact that households which received in-kind payments were generating at least some labor income. As in-kind payments constituted only a part of income, cash was probably received, too. We have already seen in the descriptive statistics that unemployment did not play a significant role in the determination of welfare at the beginning of transition, presumably because of the delayed restructuring of enterprises. But by 2004, when the restructuring process accelerated and led to widespread layoffs, unemployment became an important determinant of welfare (columns 3 and 4). Again, the Ukrainian labor market moved from non-standard adjustment mechanisms via arrears, in-kind payments and forced leave towards adjustment via unemployment. The probit models that include shock variables confirm these results (Table 10). For example, they show that the probability of being extremely poor in 1996 was 8.9 percent higher for households with at least one member taking forced leave. As a robustness check we repeat the probit analysis with the alternative poverty line set at 4.3 USD and find considerable stability in our results (Table 12 and Table 13).

The descriptive statistics of the depth of poverty (Table 4) suggested strong changes in consumption and income inequality over time. We therefore also estimate quantile regressions to test if the coefficients change across the distribution (Table 11). McFadden's R^2 is between 0.18 and 0.28 in 1996 and 0.26 and 0.40 for 2004 showing the good fit of our estimation.

The first remarkable result concerns the gender composition of household, including gender of household head. In both 1996 and 2004, a higher share of working age females is associated with significantly lower consumption at higher quantiles of the consumption distribution only. Thus, for less well-off and poor households the gender composition was of little importance in both periods. This evidence may be combined with the results for gender of household head. In particular, we see that other things being equal, female-headed households had a higher consumption in 1996, except for those located at the very bottom of the distribution. In 2004, in contrast, the gender of the household head was not associated with household consumption in any part of the distribution. Overall, these two results hint on a growing, or at least not decreasing, gender gap in consumption between 1996 and 2004.

As regards the share of elderly members of the household, it is associated with lower household consumption in 1996, though the result is not significant at the very bottom of the consumption distribution. In 2004, a higher share of elderly members drives household consumption down only at higher quantiles, perhaps indicating a faster growth of pensions relative to wages between 1996 and 2004 (as mentioned above, this may well be due to the welfare reform of 2001).

Similarly to the OLS and probit results, having more children is negatively associated with household consumption in 2004, moreover, the relationship is fairly similar across different quantiles. In 1996, children appear to have had little effect on consumption at the bottom of the distribution, and positive at the top, the latter result seems to be driven by outliers.

Households preferring Ukrainian language at the time of the interview were not different from households choosing Russian at all quantiles of the consumption distribution (except for the marginally significant coefficient at the top of the distribution in 1996) providing no evidence of discrimination of non-Ukrainians.

As regards household head age, there is evidence of a non-monotonic relationship between it and consumption in the lower quantiles in 1996. In particular, at the bottom of the consumption distribution, it was positively associated with consumption until a turning point of about 53 years, when the relationship changed sign. For the next two quantiles the pattern stays the same with the turning points being 31 and 26 years respectively. The result may reflect a combined effect of the earnings-generating ability (possibly lower among older people as much of their human capital and their experience of the previous economic system was devalued) and different availability of social networks and contacts for people of different ages. If networks are built over the life-cycle, the observed association in 1996 may be explained by a greater use of them at the time of hardship.

One of the most remarkable of the quantile regression analysis concerns education. Though we observe a positive association of education with household welfare in both 1996 and 2004, this relationship varies across quantiles. In 1996 the effect of education is somewhat stronger at lower quantiles, while in 2004 it is much stronger at the top of the distribution. This is consistent with increasing role of human capital over the course of transition.

Another important result is related to the access to land – an asset that can potentially help households to avoid poverty. The quantile regression analysis provides evidence of a more important role of access to land in the lower quantiles of consumption distribution in 1996 compared with 2004 indicating a more important role of subsistence agriculture in the early transition period.

Finally, quantile regressions confirm strong regional patterns in consumption that have been documented in OLS and probit analysis. In particular, location in a big city is positively associated with consumption at higher quantiles of the distribution in 2004, but not in 1996. In 1996, instead, urban location was driving consumption down at higher quantiles, especially for households in towns. We also observe a positive and significant effect for Kiev in both 1996 and 2004, though in 1996 it was only significant at higher quantiles. Overall, these results testify to changing urban-rural divide, with better-off urban households benefiting disproportionally from the rapid economic growth of the 2000s. Another remarkable result is that households in Western regions of Ukraine completely lost their advantage in terms of consumption between 1996 and 2004, the result being robust in all parts of the consumption distribution.

7. Conclusions

Our paper analyzed the incidence and determinants of household well-being at times of economic decline and recovery, paying particular attention to specific transmission mechanisms of economic transition to various types of household poverty and inequality. We used comparable household survey evidence from Ukraine from 1996 and 2004, two years representative of the contracting and expanding phases of the transition process, respectively. This analysis yields important insights into five issues.

First, there is robust evidence of a strong decline of both poverty and inequality over the eight-year period of analysis in Ukraine. However, our work also shows the sensitivity of the poverty estimates to the choice of welfare indicator and poverty line. The literature on Ukraine and on transition generally has to be more aware of the limitations of narrow welfare indicators. We caution policy makers to rely too heavily on too few welfare indicators to assess the welfare and distributional impact of their work.

Second, transition in Ukraine has seen an increase in socio-economic stratification over time (and across space, as we will conclude below). We expected to find a widening gender gap in welfare and this held in general. However, we observed less gender inequality than we had feared. Female-headed households, for example, were not worse off in 2004 than male-headed households. Other household characteristics also mattered. The poverty risk associated with children was a clear empirical finding and raises an important area for future policy action. The age of the household head, a proxy for social and network capital, plays an important role as well, with older household heads increasingly being exposed to a higher risk of poverty.

This suggests that the new labor markets place a diminishing premium on having experienced the Soviet economy, which may raise the risk of unemployment for older workers in the later phase of transition. We also expected higher education to have a positive effect on welfare. This we did find, with the added twists that returns to education rose over time and that education paid higher returns for the better-off households. This last finding may signal market imbalances which reduce the distributional benefits of growth.

Third, we accounted explicitly for the transmission mechanisms of the transition process by including specific shock variables such as wage arrears and forced leave. As expected, we found these variables to be more important in the earlier period, when the observed magnitude of these variables was also much higher. In the recovery phase of transition, unemployment became a risk factor for poverty, just as it is in OECD economies. We plan to account better for the potential endogeneity problems related to the shock variables in future work but we expect that our main finding will remain unchanged.

Fourth, we expected that household welfare in the earlier period of transition would depend on the existence of asset endowments like land. In fact, the analysis reveals that land access mattered for household welfare in 1996, especially for poorer people. This result motivates us to study coping strategies of households in transition economies in more detail in future work.

Finally, our emphasis on spatial differentiation (in addition to the temporal issues discussed above) revealed that the location of a household mattered significantly for its welfare. City dwellers were the winners of the transition process, especially if they already were in the upper end of the welfare distribution. Furthermore, households in the East of the country gained while households in the West lost economically over time. Perhaps this finding also helps to explain part of the motivation of Ukrainians to participate in the Orange Revolution, which polarized the country along similar geographical lines. The effects of location should be of interest to politicians as these effects may signal a lack of national market integration and insufficient labor mobility across the country.

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Appendix

Table 1: Output and employment indicators for Ukraine

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Real GDP (index, 1989 = 100)	100	96.6	86.4	78.0	66.9	51.6	45.3	40.8	39.5	38.8	38.7	41.0	44.8	47.1	51.5	57.8
Real wages (index, 1989 = 100)	100	109.3	114.2	123.7	63.2	56.5	62.3	59.3	57.7	55.7	48.4	48.9	59.0	70.8	82.7	96.7
Employment ratio (number of employed as % of population aged 15-59) a	83.2	81.9	80.5	78.5	76.2	73.1	76.8	77.2	76.7	74.9	65.3	66.3	66.2	67.0	66.9	67.0
Annual unemployment rate (average % of the labor force) b	.	.	.	.	.	.	5.6	7.6	8.9	11.3	11.9	11.7	11.1	10.1	9.1	8.6

Source: UNICEF Innocenti Research Center (2005)

a. Data for 1989-1994 taken from CIS Stat (2001); data since 1995 based on labor force survey.

b. Based on labor force survey; data for 1995-1997 as of October; 1998 as of November; 1999-2004 year average.

Table 2: Overview over household surveys in Ukraine

	Ukraine-96	ULMS 2004
Period of data collection	June-August 1996	June-October 2004
Sampling method	Multistage random sampling with probability proportional to size PPS: 24 oblasts plus AR Crimea, settlements and rajons (primary sampling units)	Multistage random sampling with probability proportional to size PPS: 24 oblasts plus AR Crimea, settlements and rajons (primary sampling units)
Sample population	households and all working-age adults aged 15 years and older, excluding persons in the army, in prison or under medical treatment	households and all working-age adults aged 15-72 years, excluding persons in the army, in prison or under medical treatment
Observations	2,322 households 5,403 individuals	3,449 households 7,200 individuals
Individual information	education, employment, unemployment, incomes	education, employment, unemployment, incomes
Household information	demographic structure of the household, assets, income, expenditure, subsistence agriculture	demographic structure of the household, assets, income, expenditure, subsistence agriculture

Source: Technical Report KIIS, 1996 and 2004

Table 3: Variable overview

Variable	Variable description	1996 N	1996 mean	1996 sd	1996 min	1996 max	2004 N	2004 mean	2004 sd	2004 min	2004 max
consum	Total household consumption; in July 2004 value	2164	517.5	358.7	11.50	3303.6	3282	792.5	482.4	34.09	5582.9
income	Total household income: reported household income	2164	352.8	378	0	4091.9	3282	646.2	521.9	0	5350
hhsize	Household size (for regressions: log of household size)	2164	3.014	1.555	1	11	3282	2.893	1.332	1	13
femshare	Share of working age females in household	2164	0.231	0.232	0	1	3282	0.299	0.262	0	1
oldshare	Share of elderly household members (F: 55+; M: 60+)	2164	0.396	0.420	0	1	3282	0.328	0.399	0	1
kidshare	Share of children in household (younger than 15)	2164	0.132	0.182	0	0.667	3282	0.091	0.160	0	0.75
ukrainian	Ukrainian is preferred language	2164	0.495	0.500	0	1	3282	0.486	0.500	0	1
agehead	Age of household head in years	2164	49.58	15.81	18	90	3282	46.89	13.92	18	85
edumax	Highest education attained in household	2164	11.61	3.613	0	16	3282	12.20	2.370	4	18
femhead	Female headed household	2164	0.233	0.423	0	1	3282	0.215	0.411	0	1
carown	Car ownership	2164	0.179	0.383	0	1	3282	0.207	0.405	0	1
access	Land access (land use & dacha ownership)	2164	0.755	0.430	0	1	3282	0.764	0.424	0	1
town	Town (OV: Village)	2164	0.177	0.382	0	1	3282	0.277	0.448	0	1
city	City (> 100,000 inhabitants)	2164	0.450	0.498	0	1	3282	0.385	0.487	0	1
Kiev	City of Kiev (OV: Center)	2164	0.043	0.204	0	1	3282	0.040	0.197	0	1
West	Western oblasts	2164	0.227	0.419	0	1	3282	0.207	0.405	0	1
East	Eastern oblasts	2164	0.211	0.409	0	1	3282	0.238	0.426	0	1
South	Southern oblasts incl. AR Crimea	2164	0.256	0.436	0	1	3282	0.238	0.426	0	1
arrears	At least one person in the household has wage arrears at present time	1806	0.413	0.492	0	1	3282	0.055	0.228	0	1
inkind	At least one person in the household received income in-kind during the last 12 months	1805	0.085	0.279	0	1	3282	0.038	0.191	0	1
leave	At least one person in the household had forced leave during last week	1800	0.050	0.217	0	1	3282	0.006	0.080	0	1
unemp	At least one person in the household is unemployed (ILO definition)	1811	0.089	0.285	0	1	3258	0.143	0.350	0	1

Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 4: Poverty and inequality measures

	1996		2004	
	Consumption	Income	Consumption	Income
(I) 4.3 US$ poverty line				
Poverty headcount ratio FGT, a=0	0.309	0.654	0.095	0.264
(II) Food poverty line				
Poverty headcount ratio FGT, a=0	0.102	0.421	0.038	0.163
(III) Consumption poverty line				
(a) Poverty headcount ratio FGT, a=0	0.216	0.544	0.148	0.332
(b) Average normalised poverty gap FGT, a=1	0.057	0.277	0.034	0.122
(c) Average squared normalised poverty gap FGT, a=2	0.023	0.012	0.012	0.067
Gini coefficient	0.365	0.499	0.316	0.392

Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 5: Descriptive statistics by poverty status

	1996						2004					
	consumption poor			not consumption poor			consumption poor			not consumption poor		
variable	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd
consum	467	259.1	150.3	1697	588.6	366.6	486	413.7	195.8	2796	858.3	487.0
income	467	234.6	245.5	1697	385.3	401.0	486	445.7	318.8	2796	681.1	542.1
hhsize	467	3.096	1.621	1697	2.991	1.536	486	3.438	1.437	2796	2.799	1.290
femshare	467	0.210	0.222	1697	0.237	0.235	486	0.292	0.234	2796	0.300	0.266
oldshare	467	0.427	0.407	1697	0.387	0.422	486	0.269	0.343	2796	0.338	0.407
kidshare	467	0 .127	0.179	1697	0.134	0.183	486	0.122	0.179	2796	0.086	0.157
ukrainian	467	0.368	0.483	1697	0.530	0.499	486	0.508	0.500	2796	0.481	0.500
agehead	467	50.60	16.11	1697	49.30	15.71	486	44.61	13.43	2796	47.29	13.97
edumax	467	10.90	3.848	1697	11.80	3.522	486	11.81	2.309	2796	12.26	2.375
femhead	467	0.242	0.429	1697	0.231	0.422	486	0.146	0.354	2796	0.227	0.419
carown	467	0.096	0.295	1697	0.202	0.401	486	0.126	0.332	2796	0.221	0.415
access	467	0.625	0.485	1697	0.791	0.407	486	0.731	0.444	2796	0.770	0.421
town	467	0.210	0.408	1697	0.168	0.374	486	0.294	0.456	2796	0.274	0.446
city	467	0.527	0.500	1697	0.428	0.495	486	0.370	0.483	2796	0.387	0.487
Kiev	467	0.043	0.203	1697	0.044	0.204	486	0.019	0.135	2796	0.044	0.205
West	467	0.118	0.323	1697	0.258	0.437	486	0.268	0.443	2796	0.196	0.397
East	467	0.347	0.477	1697	0.174	0.379	486	0.249	0.433	2796	0.236	0.425
South	467	0.233	0.424	1697	0.262	0.440	486	0.210	0.408	2796	0.243	0.429
arrears	390	0.339	0.474	1407	0.426	0.495	486	0.047	0.213	2796	0.056	0.230
inkind	390	0.059	0.236	1406	0.096	0.295	486	0.035	0.184	2796	0.038	0.192
leave	391	0.072	0.258	1400	0.045	0.207	486	0.008	0.090	2796	0.006	0.078
unemp	392	0.115	0.319	1410	0.083	0.276	484	0.207	0.405	2774	0.132	0.339

Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 6: Incidence of transition specific labor market shocks by settlement type

	1996									2004								
	village			town			city			village			town			city		
	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd
unemp	673	0.068	0.253	323	0.108	0.311	806	0.101	0.301	1108	0.158	0.365	901	0.162	0.369	1249	0.117	0.321
arrears	672	0.444	0.497	323	0.390	0.489	802	0.383	0.486	1111	0.059	0.235	909	0.059	0.237	1262	0.048	0.215
inkind	671	0.137	0.344	322	0.078	0.268	803	0.051	0.220	1111	0.077	0.266	909	0.034	0.182	1262	0.006	0.079
leave	672	0.055	0.228	323	0.043	0.204	796	0.050	0.219	1111	0.005	0.073	909	0.006	0.074	1262	0.008	0.089

Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 7: OLS Regressions: Household consumption and income

	1996		2004	
	(1)	(2)	(3)	(4)
	Household consumption	Household income	Household consumption	Household income
Log of household size	377.145	161.817	436.082	324.297
	(19.08)***	(6.17)***	(22.09)***	(14.05)***
Share of working age females in household	-64.290	10.218	-95.435	-112.396
	(1.45)	(0.17)	(2.00)**	(2.01)**
Share of elderly household members	-74.298	-35.438	-98.234	-50.424
	(2.18)**	(0.78)	(2.55)**	(1.12)
Share of children in household	-21.261	-102.669	-189.463	-407.151
	(0.44)	(1.59)	(3.33)***	(6.13)***
Ukrainian is preferred language	-5.001	-36.395	-4.114	-52.845
	(0.31)	(1.72)*	(0.21)	(2.30)**
Age of household head	0.773	0.057	-0.021	-0.623
	(1.42)	(0.08)	(0.03)	(0.81)
Squared age of household head	-0.018	-0.013	-0.021	-0.020
	(3.55)***	(1.85)*	(2.65)***	(2.10)**
Highest education attained in household	8.627	12.600	26.626	34.341
	(4.64)***	(5.11)***	(8.43)***	(9.30)***
Female headed household	49.046	-0.024	17.143	2.620
	(2.52)**	(0.00)	(0.75)	(0.10)
Car ownership	126.066	107.549	226.312	196.996
	(8.53)***	(5.48)***	(13.08)***	(9.74)***
Land access	70.721	56.458	51.867	18.565
	(4.60)***	(2.77)***	(2.74)***	(0.84)
Town (OV: Village)	-52.036	66.012	-6.219	59.307
	(3.18)***	(3.04)***	(0.34)	(2.78)***
City	-27.396	129.675	53.596	212.441
	(1.75)*	(6.25)***	(2.63)***	(8.93)***
Kiev (OV: Center)	148.172	330.500	274.856	250.054
	(4.91)***	(8.25)***	(7.12)***	(5.55)***
West	62.706	57.322	-24.136	31.735
	(3.94)***	(2.71)***	(1.21)	(1.37)
East	-16.184	-5.219	-12.506	95.429
	(0.83)	(0.20)	(0.55)	(3.59)***
South	21.627	18.016	-6.612	44.003
	(1.24)	(0.78)	(0.30)	(1.72)*
Constant	43.124	-25.847	79.901	-90.065
	(0.92)	(0.41)	(1.32)	(1.27)
Observations	2164	2164	3282	3282
R-squared	0.51	0.22	0.38	0.27
Wald test, agehead=agehead2=0	6.53	1.77	3.72	3.08
Prob > F	0.001	0.171	0.024	0.046

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 8: OLS Regressions: Household consumption and income, accounting for transition shocks

	1996		2004	
	(1)	(2)	(3)	(4)
	Household consumption	Household income	Household consumption	Household income
Log of household size	388.942	204.413	451.027	352.684
	(18.47)***	(7.09)***	(22.71)***	(15.38)***
Share of working age females in household	-67.271	9.429	-103.788	-131.514
	(1.50)	(0.15)	(2.17)**	(2.38)**
Share of elderly household members	-84.560	-57.909	-129.343	-112.113
	(2.43)**	(1.21)	(3.34)***	(2.50)**
Share of children in household	-21.143	-167.181	-210.087	-460.730
	(0.39)	(2.26)**	(3.66)***	(6.96)***
Ukrainian is preferred language	-6.316	-39.305	-0.886	-47.043
	(0.38)	(1.75)*	(0.05)	(2.07)**
Age of household head	0.967	0.315	0.206	-0.307
	(1.72)*	(0.41)	(0.31)	(0.41)
Squared age of household head	-0.017	-0.016	-0.021	-0.021
	(3.32)***	(2.24)**	(2.66)***	(2.29)**
Highest education attained in household	7.048	11.752	27.210	34.926
	(3.74)***	(4.55)***	(8.63)***	(9.59)***
Female headed household	70.976	26.022	22.881	11.684
	(3.54)***	(0.95)	(1.00)	(0.44)
Car ownership	131.086	80.533	220.419	186.049
	(8.42)***	(3.78)***	(12.77)***	(9.33)***
Land access	59.123	39.612	58.950	27.836
	(3.68)***	(1.80)*	(3.11)***	(1.27)
Wage arrears	16.622	-50.107	27.173	-13.550
	(1.22)	(2.69)***	(0.89)	(0.38)
In-kind income	38.403	14.454	-46.301	-178.883
	(1.81)*	(0.50)	(1.26)	(4.21)***
Forced leave	-94.305	-15.081	-103.188	-102.668
	(3.54)***	(0.41)	(1.24)	(1.06)
Unemployment	-13.831	-28.297	-134.097	-242.967
	(0.66)	(0.99)	(6.81)***	(10.68)***
Town (OV: Village)	-44.501	50.644	-7.571	53.591
	(2.63)***	(2.19)**	(0.41)	(2.54)**
City	-13.487	113.366	50.638	197.844
	(0.83)	(5.08)***	(2.47)**	(8.37)***
Kiev (OV: Center)	128.796	301.193	269.365	225.200
	(4.05)***	(6.92)***	(6.95)***	(5.03)***
West	65.603	59.725	-31.511	16.019
	(3.97)***	(2.64)***	(1.58)	(0.70)
East	-10.551	-2.653	-15.914	92.492
	(0.52)	(0.10)	(0.70)	(3.54)***
South	23.312	13.882	-9.018	37.040
	(1.30)	(0.57)	(0.41)	(1.47)
Constant	34.389	6.963	80.790	-56.269
	(0.72)	(0.11)	(1.33)	(0.80)
Observations	1796	1796	3258	3258
R-squared	0.54	0.23	0.39	0.30
Wald test, agehead=agehead2=0	6.00	2.52	3.58	3.07
Prob > F	0.003	0.081	0.028	0.047

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 9: Probit Regressions of being consumption poor, food poor or income poor
-- Marginal effects --

	1996			2004		
	(1) Consumption poor	(2) Food poor	(3) Income poor	(4) Consumption poor	(5) Food poor	(6) Income poor
Log of household size	0.120 (3.84)***	0.047 (2.38)**	0.223 (5.38)***	0.149 (8.37)***	0.042 (5.15)***	0.293 (11.40)***
Share of working age females in household	-0.152 (2.11)**	-0.082 (1.84)*	-0.200 (2.16)**	-0.122 (2.82)***	-0.005 (0.25)	-0.169 (2.76)***
Share of elderly household members	-0.135 (2.48)**	-0.117 (3.39)***	-0.201 (2.84)***	-0.110 (3.23)***	-0.039 (2.30)**	-0.369 (7.31)***
Share of children in household	-0.044 (0.57)	-0.023 (0.46)	-0.065 (0.65)	-0.051 (1.07)	-0.006 (0.29)	0.018 (0.25)
Ukrainian is preferred language	-0.025 (0.99)	-0.004 (0.26)	0.090 (2.72)***	-0.007 (0.40)	0.007 (0.89)	0.072 (2.94)***
Rescaled age of household head	-0.017 (0.20)	-0.029 (0.54)	-0.044 (0.39)	-0.020 (0.37)	0.013 (0.52)	0.015 (0.19)
Rescaled squared age of household head	0.372 (4.78)***	0.217 (4.53)***	0.264 (2.47)**	0.172 (2.56)**	0.056 (1.82)*	0.315 (3.13)***
Highest education attained in household	-0.018 (5.92)***	-0.012 (6.28)***	-0.033 (8.30)***	-0.017 (5.88)***	-0.006 (4.19)***	-0.040 (9.51)***
Female headed household	0.030 (0.96)	0.027 (1.27)	0.038 (0.94)	0.001 (0.04)	-0.001 (0.13)	0.115 (3.69)***
Car ownership	-0.107 (4.67)***	-0.042 (2.77)***	-0.120 (3.95)***	-0.079 (5.56)***	-0.020 (3.00)***	-0.125 (5.97)***
Land access	-0.151 (5.80)***	-0.098 (5.41)***	-0.067 (2.14)**	-0.047 (2.70)***	-0.004 (0.45)	-0.035 (1.39)
Town (OV: Village)	0.069 (2.51)**	0.017 (0.97)	-0.099 (2.92)***	0.030 (1.83)*	0.011 (1.42)	-0.087 (4.00)***
City	0.046 (1.81)*	0.017 (0.99)	-0.199 (6.26)***	0.020 (1.07)	0.008 (0.88)	-0.174 (6.97)***
Kiev (OV: Center)	-0.044 (1.02)	-0.007 (0.25)	-0.285 (4.17)***	-0.087 (2.97)***	-0.004 (0.25)	-0.141 (3.07)***
West	-0.114 (4.75)***	-0.072 (4.79)***	-0.063 (1.90)*	0.031 (1.73)*	0.001 (0.07)	-0.024 (1.02)
East	0.090 (2.82)***	0.037 (1.79)*	0.165 (4.20)***	0.009 (0.46)	0.019 (1.83)*	-0.127 (4.63)***
South	-0.031 (1.15)	-0.020 (1.18)	0.030 (0.85)	-0.020 (1.05)	-0.001 (0.16)	-0.068 (2.57)**
Observations	2164	2164	2164	3282	3282	3282
Pseudo R-squared	0.12	0.13	0.11	0.08	0.08	0.17
Wald test, agehead=agehead2=0	23.437	20.746	6.131	6.566	3.920	10.629

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 10: Probit Regressions of being consumption poor, food poor or income poor, accounting for transition shocks
-- *Marginal effects* --

	1996			2004		
	(1)	(2)	(3)	(4)	(5)	(6)
	Consumption poor	Food poor	Income poor	Consumption poor	Food poor	Income poor
Log of household size	0.101 (2.83)***	0.027 (1.21)	0.178 (3.82)***	0.145 (8.13)***	0.042 (5.04)***	0.271 (10.31)***
Share of working age females in household	-0.100 (1.31)	-0.061 (1.28)	-0.216 (2.17)**	-0.125 (2.87)***	-0.004 (0.19)	-0.151 (2.41)**
Share of elderly household members	-0.135 (2.30)**	-0.101 (2.73)***	-0.186 (2.42)**	-0.102 (2.99)***	-0.036 (2.11)**	-0.305 (5.92)***
Share of children in household	-0.038 (0.41)	0.006 (0.11)	0.030 (0.25)	-0.039 (0.81)	-0.007 (0.32)	0.100 (1.39)
Ukrainian is preferred language	-0.003 (0.12)	0.011 (0.62)	0.108 (2.98)***	-0.010 (0.55)	0.005 (0.67)	0.070 (2.80)***
Rescaled age of household head	0.002 (0.02)	-0.059 (1.00)	-0.071 (0.57)	-0.028 (0.51)	0.011 (0.44)	-0.006 (0.07)
Rescaled squared age of household head	0.382 (4.54)***	0.228 (4.44)***	0.265 (2.30)**	0.174 (2.60)***	0.054 (1.76)*	0.343 (3.35)***
Highest education attained in household	-0.016 (4.91)***	-0.010 (5.10)***	-0.032 (7.59)***	-0.017 (6.00)***	-0.006 (4.22)***	-0.041 (9.72)***
Female headed household	0.016 (0.46)	0.012 (0.54)	0.014 (0.32)	-0.000 (0.01)	-0.001 (0.09)	0.108 (3.45)***
Car ownership	-0.118 (4.64)***	-0.049 (2.96)***	-0.122 (3.57)***	-0.078 (5.50)***	-0.019 (2.93)***	-0.120 (5.63)***
Land access	-0.151 (5.23)***	-0.084 (4.30)***	-0.058 (1.65)*	-0.050 (2.86)***	-0.003 (0.44)	-0.049 (1.89)*
Wage arrears	-0.041 (1.80)*	-0.014 (0.95)	0.021 (0.71)	-0.024 (0.92)	-0.008 (0.70)	0.040 (1.00)
In-kind income	-0.020 (0.54)	-0.007 (0.28)	0.035 (0.75)	-0.019 (0.63)	-0.001 (0.04)	0.168 (3.36)***
Forced leave	0.071 (1.51)	0.089 (2.67)***	0.149 (2.56)**	0.066 (0.86)	0.014 (0.38)	0.038 (0.34)
Unemployment	0.055 (1.52)	-0.006 (0.30)	-0.007 (0.14)	0.050 (2.86)***	0.011 (1.36)	0.261 (9.98)***
Town (OV: Village)	0.048 (1.63)	0.006 (0.31)	-0.109 (2.92)***	0.030 (1.84)*	0.011 (1.44)	-0.083 (3.76)***
City	0.034 (1.20)	0.013 (0.70)	-0.194 (5.49)***	0.017 (0.95)	0.008 (0.89)	-0.166 (6.51)***
Kiev (OV: Center)	-0.043 (0.90)	0.010 (0.31)	-0.281 (3.67)***	-0.089 (3.01)***	-0.010 (0.62)	-0.113 (2.33)**
West	-0.113 (4.31)***	-0.072 (4.47)***	-0.078 (2.12)**	0.033 (1.84)*	0.001 (0.18)	-0.008 (0.32)
East	0.107 (3.00)***	0.046 (1.99)**	0.179 (4.13)***	0.010 (0.49)	0.019 (1.78)*	-0.126 (4.55)***
South	-0.031 (1.05)	-0.015 (0.82)	0.027 (0.67)	-0.018 (0.96)	-0.002 (0.20)	-0.057 (2.12)**
Observations	1796	1796	1796	3258	3258	3258
Pseudo R-squared	0.12	0.13	0.12	0.08	0.08	0.20
Wald test, agehead=agehead2=0	21.670	19.675	5.309	6.763	3.526	11.683

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 11: Quantile regression, dependent variable: household consumption

	1996					2004				
	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Log of household size	173.451	246.964	310.897	389.257	461.372	237.905	306.839	364.987	486.571	594.980
	(9.03)***	(16.40)***	(19.06)***	(19.07)***	(14.54)***	(16.73)***	(23.64)***	(21.38)***	(20.39)***	(15.78)***
Share of working age females in household	13.880	-61.058	-75.604	-111.784	-76.563	-16.354	-6.891	-47.295	-143.341	-48.540
	(0.33)	(1.81)*	(2.06)**	(2.64)***	(1.36)	(0.50)	(0.21)	(1.14)	(2.60)***	(0.59)
Share of elderly household members	-13.558	-58.086	-82.769	-146.958	-127.366	0.096	3.658	-60.865	-163.644	-71.199
	(0.39)	(2.24)**	(2.93)***	(4.47)***	(2.94)***	(0.00)	(0.14)	(1.82)*	(3.77)***	(1.07)
Share of children in household	-1.424	-41.417	9.335	153.558	380.696	-154.277	-126.174	-143.921	-161.979	-172.697
	(0.03)	(1.12)	(0.23)	(3.20)***	(5.57)***	(3.66)***	(3.25)***	(2.92)***	(2.47)**	(1.70)*
Ukrainian is preferred language	9.436	13.899	4.661	-25.873	-41.233	6.002	16.348	12.156	-6.216	21.330
	(0.60)	(1.16)	(0.35)	(1.66)*	(1.83)*	(0.43)	(1.22)	(0.72)	(0.27)	(0.65)
Age of household head	1.165	1.114	0.877	0.665	-0.373	0.298	0.055	0.434	-0.297	-1.807
	(2.28)**	(2.81)***	(1.95)*	(1.29)	(0.53)	(0.63)	(0.12)	(0.77)	(0.38)	(1.51)
Squared age of household head	-0.011	-0.018	-0.017	-0.011	-0.013	-0.013	-0.021	-0.034	-0.018	-0.045
	(2.25)**	(4.79)***	(3.97)***	(2.10)**	(1.82)*	(2.14)**	(3.74)***	(4.94)***	(1.97)**	(3.06)***
Highest education attained in household	7.614	6.621	5.723	5.291	5.729	11.832	14.947	19.859	22.372	19.047
	(4.14)***	(5.00)***	(3.73)***	(2.84)***	(2.23)**	(5.78)***	(7.41)***	(7.28)***	(5.74)***	(2.86)***
Female headed household	-1.600	34.684	54.742	61.184	50.525	25.510	13.080	5.172	20.307	0.800
	(0.08)	(2.37)**	(3.39)***	(3.08)***	(1.75)*	(1.57)	(0.85)	(0.26)	(0.74)	(0.02)
Car ownership	74.950	94.202	125.347	131.309	154.119	133.122	153.554	190.470	248.053	323.109
	(5.19)***	(8.54)***	(10.24)***	(9.06)***	(7.77)***	(10.70)***	(13.25)***	(12.72)***	(12.24)***	(10.66)***
Land access	87.877	64.431	51.107	43.080	52.122	31.882	42.491	72.263	60.229	52.428
	(6.08)***	(5.57)***	(4.02)***	(2.86)***	(2.52)**	(2.40)**	(3.36)***	(4.42)***	(2.69)***	(1.54)
Town (OV: Village)	-14.360	-9.894	-12.561	-37.349	-51.596	-47.015	-15.738	9.290	17.043	-25.602
	(0.89)	(0.81)	(0.93)	(2.34)**	(2.34)**	(3.61)***	(1.29)	(0.59)	(0.80)	(0.79)
City	7.513	4.444	-0.300	-20.793	-22.844	-18.534	10.787	54.823	67.229	64.975
	(0.50)	(0.38)	(0.02)	(1.37)	(1.09)	(1.26)	(0.79)	(3.12)***	(2.83)***	(1.84)*
Kiev (OV: Center)	19.217	40.337	79.310	210.212	264.780	109.125	170.173	259.597	322.212	395.749
	(0.69)	(1.81)*	(3.19)***	(7.07)***	(6.33)***	(4.00)***	(6.59)***	(7.78)***	(7.13)***	(5.82)***
West	36.011	36.511	45.224	49.248	56.808	-5.118	-37.973	-25.680	-19.294	-28.790
	(2.35)**	(3.09)***	(3.43)***	(3.21)***	(2.75)***	(0.36)	(2.87)***	(1.49)	(0.82)	(0.81)
East	-22.855	-23.475	-25.039	-8.624	-5.145	-14.187	-12.579	-11.960	-12.783	62.069
	(1.25)	(1.64)	(1.56)	(0.44)	(0.18)	(0.89)	(0.81)	(0.61)	(0.49)	(1.59)
South	26.415	25.993	17.940	21.877	15.855	8.214	6.378	-11.326	8.454	24.575
	(1.56)	(2.01)**	(1.25)	(1.27)	(0.64)	(0.53)	(0.43)	(0.60)	(0.33)	(0.66)
Constant	-105.382	5.359	90.621	214.081	333.286	34.913	63.696	142.282	278.336	530.642
	(2.43)**	(0.16)	(2.34)**	(4.65)***	(5.16)***	(0.79)	(1.54)	(2.72)***	(3.88)***	(4.62)***
Observations	2164	2164	2164	2164	2164	3282	3282	3282	3282	3282
Wald test, agehead=agehead2=0	4.32	12.97	8.49	2.62	1.92	2.30	7.37	12.25	2.38	7.46
Prob > F	0.013	0.000	0.000	0.073	0.147	0.100	0.001	0.000	0.093	0.001

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 12: Robustness check: Probit Regressions of being consumption poor or income poor
Poverty line at 4.3 USD (PPP 2000)
-- *Marginal effects* --

	1996		2004	
	(1)	(2)	(3)	(4)
	Consumption poor	Income poor	Consumption poor	Income poor
Log of household size	0.108	0.148	0.058	0.182
	(2.88)***	(3.87)***	(4.10)***	(7.99)***
Share of working age females in household	-0.109	-0.127	-0.002	-0.157
	(1.30)	(1.48)	(0.06)	(2.87)***
Share of elderly household members	-0.000	0.026	-0.006	-0.338
	(0.01)	(0.39)	(0.23)	(7.31)***
Share of children in household	-0.034	0.050	0.051	0.017
	(0.36)	(0.54)	(1.31)	(0.27)
Ukrainian is preferred language	-0.032	0.064	0.002	0.058
	(1.07)	(2.10)**	(0.14)	(2.64)***
Rescaled age of household head	-0.032	0.059	-0.021	-0.034
	(0.32)	(0.57)	(0.47)	(0.46)
Rescaled squared age of household head	0.408	0.185	0.089	0.262
	(4.40)***	(1.85)*	(1.64)	(2.94)***
Highest education attained in household	-0.025	-0.030	-0.012	-0.034
	(7.24)***	(7.93)***	(5.53)***	(8.99)***
Female headed household	0.058	0.065	-0.004	0.154
	(1.58)	(1.75)*	(0.27)	(5.31)***
Car ownership	-0.116	-0.130	-0.068	-0.107
	(4.17)***	(4.53)***	(5.59)***	(5.67)***
Land access	-0.192	-0.020	-0.029	-0.007
	(6.40)***	(0.70)	(2.06)**	(0.31)
Town (OV: Village)	0.079	-0.069	0.030	-0.106
	(2.53)**	(2.09)**	(2.20)**	(5.69)***
City	0.028	-0.142	0.026	-0.155
	(0.94)	(4.72)***	(1.74)*	(6.96)***
Kiev (OV: Center)	-0.094	-0.158	-0.051	-0.063
	(1.80)*	(2.58)***	(2.12)**	(1.49)
West	-0.141	-0.042	0.021	-0.028
	(4.94)***	(1.34)	(1.43)	(1.36)
East	0.095	0.116	0.022	-0.098
	(2.59)***	(3.23)***	(1.29)	(3.97)***
South	-0.051	0.033	-0.011	-0.055
	(1.61)	(1.00)	(0.70)	(2.34)**
Observations	2164	2164	3282	3282
Pseudo R-squared	0.12	0.11	0.06	0.15
Wald test, agehead=agehead2=0	19.729	4.323	2.739	8.697

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 13: Robustness check: Probit Regressions of being consumption poor or income poor, accounting for transition shocks
Poverty line at 4.3 USD (PPP 2000)
-- Marginal effects --

	1996		2004	
	(1)	(2)	(3)	(4)
	Consumption poor	Income poor	Consumption poor	Income poor
Log of household size	0.082 (1.91)*	0.094 (2.21)**	0.057 (3.95)***	0.156 (6.75)***
Share of working age females in household	-0.049 (0.54)	-0.119 (1.31)	-0.006 (0.16)	-0.152 (2.74)***
Share of elderly household members	-0.016 (0.24)	0.046 (0.64)	-0.003 (0.11)	-0.281 (6.01)***
Share of children in household	-0.046 (0.41)	0.182 (1.66)*	0.056 (1.41)	0.080 (1.27)
Ukrainian is preferred language	-0.003 (0.10)	0.071 (2.12)**	-0.000 (0.02)	0.058 (2.61)***
Rescaled age of household head	-0.010 (0.09)	0.035 (0.31)	-0.026 (0.59)	-0.065 (0.88)
Rescaled squared age of household head	0.463 (4.54)***	0.197 (1.83)*	0.092 (1.70)*	0.278 (3.08)***
Highest education attained in household	-0.024 (6.35)***	-0.030 (7.39)***	-0.012 (5.60)***	-0.035 (9.28)***
Female headed household	0.040 (1.00)	0.042 (1.03)	-0.004 (0.27)	0.148 (5.10)***
Car ownership	-0.129 (4.09)***	-0.129 (4.01)***	-0.067 (5.54)***	-0.103 (5.35)***
Land access	-0.185 (5.51)***	-0.012 (0.37)	-0.031 (2.21)**	-0.020 (0.84)
Wage arrears	-0.060 (2.15)**	0.022 (0.81)	0.000 (0.00)	0.038 (1.04)
In-kind income	-0.026 (0.59)	0.041 (0.96)	-0.009 (0.36)	0.156 (3.53)***
Forced leave	0.076 (1.39)	0.115 (2.24)**	0.028 (0.44)	0.065 (0.62)
Unemployment	0.123 (2.83)***	-0.001 (0.02)	0.024 (1.71)*	0.247 (10.26)***
Town (OV: Village)	0.043 (1.26)	-0.071 (1.97)**	0.030 (2.20)**	-0.102 (5.44)***
City	0.012 (0.35)	-0.136 (4.11)***	0.025 (1.63)	-0.146 (6.44)***
Kiev (OV: Center)	-0.091 (1.58)	-0.146 (2.15)**	-0.055 (2.27)**	-0.032 (0.72)
West	-0.158 (5.04)***	-0.050 (1.43)	0.022 (1.48)	-0.014 (0.67)
East	0.123 (2.98)***	0.115 (2.93)***	0.021 (1.25)	-0.097 (3.94)***
South	-0.063 (1.80)*	0.030 (0.83)	-0.010 (0.67)	-0.045 (1.89)*
Observations	1796	1796	3258	3258
Pseudo R-squared	0.13	0.11	0.06	0.18
Wald test, agehead=agehead2=0	21.604	3.853	2.979	9.552

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.