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Determinants of Poverty during Transition:
Household Survey Evidence from Ukraine

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Abstract

The paper analyzes the incidence, the severity and the determinants of household poverty in Ukraine during transition using two comparable surveys from 1996 and 2004. We measure poverty using income and consumption and contrast the effects of various poverty lines. Poverty in both periods follows some of the determinants commonly identified in the literature, including greater poverty among households with children and with less education. We also identify specific 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 the experience of transition and restructuring.

1. Introduction

The paper analyzes household poverty in a transition economy in times of economic restructuring, structural adjustment and subsequent growth. In particular, we study the incidence, severity and determinants of household poverty 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, ethnicity, assets, location and transition-specific labor market issues like wage arrears. We pay particular attention to adjustments of the labor market which is a key mechanism by which households experience macroeconomic and firm-level restructurings. The 'how much' is addressed by studying household consumption and household income, analyzing various poverty lines and emphasizing the role of inequality.

The focus on Ukraine is not by accident. First, the country is particularly well suited to address the questions on the long-term changes in poverty induced by the transition process characterized by large initial shock and following recovery. Indeed, the magnitude of the restructuring was enormous, with real GDP declining by more than 60% in the 1990s, and the recovery of the 2000s was impressive. Second, Ukraine is characterized by considerable regional diversity and the well-known divide along the ethnic and linguistic lines that became particularly pronounced since the 2004 Orange revolution. Finally, Ukraine is also the only

(apart from the Russian Federation) country in the CIS which has an established household panel dataset.

We find a substantial level of extreme poverty in Ukraine in the middle of the recession, which halved after four years of robust economic growth. However, absolute poverty declined less or even increased slightly, depending on the measure used, while inequality improved only when measured by income. These measurement issues are highly relevant in the context of transition and may have led previous studies to underestimate the extent of poverty in Ukraine. We also find that the determinants of poverty in Ukraine are largely in line with the poverty literature, including greater poverty among households with children and with less education. In addition, we 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 emergence of competitive labor markets as one aspect of the processes of transition and restructuring.

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 and we investigate the potential role of ethnic discrimination. Finally, no single study has previously addressed the questions of transition and structural change on poverty using Ukrainian data. 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.

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 a sound 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, using newly collected data.

The structure of the paper is as follows. The next section reviews the empirical literature on poverty in transition countries. Section 3 presents the conceptual framework. Sections 4 and 5

introduce the data and the methods respectively. Section 6 discusses the summary statistics and regression results while section 7 concludes.

2. Transition and household welfare: literature review

Macroeconomic and firm-level structural changes that accompanied the transition from a planned to a market economy in Central and Eastern Europe resulted in a dramatic decline in economic activity, rivaling that of the Great Depression in the 1930s. From the start of transition in 1989 until the resumption of economic growth, these countries lost from between one fifth to more than two-thirds of their pre-transition level of GDP (EBRD 2000). The magnitude and length of the recession differed a great deal across countries depending on their initial conditions as well as the nature, sequencing and speed of the political and economic reforms implemented. Two common patterns emerged in the region. One pattern occurred in Central Europe with modest declines and quick recoveries. The other pattern was characteristic of the CIS countries with much deeper and longer declines, turning into robust economic growth only by the end of the 1990s (World Bank 2002). Despite certain differences across the countries, the dramatic fall of output in the 1990s is regarded as the main defining feature – and also the major surprise – of the transformation process in the entire region at the macroeconomic level (Gomulka 1998).

The transition process could not pass without far-reaching consequences for the standard of living of individuals and households in Central and Eastern Europe. The main channels propagating the changes induced by the economic transition were adjustments of the labor market, changes in social spending and transfers by the governments, and the loss of financial savings wiped out by hyperinflation in the early years of the transition.

The labor market had to accommodate the fall in the demand for labor, which was not only the result of the output collapse during the transition but also a consequence of inefficient use of labor resources during the central planning period (Adam 1982). The reaction of the labor market to declining demand was via falling employment rates, raising unemployment and decreasing real wages. Moreover, the labor market adjustment included sectoral and occupational reallocation of labor as well as large shifts in relative pay (Jackman 1998). The latter was driven by a move from compressed wage differentials, that were imposed by the central planner and barely took into account workers' productivity, to a more market-based wage setting mechanism.

As in the case of output dynamics, the adjustment of the labor markets in the transition countries followed rather different paths (Svejnar 1999). Central European countries experienced falling employment rates and growing unemployment, accompanied by a modest decline in real wages. The former Soviet Union instead saw collapsing real wages with relatively limited rises in unemployment and falls in employment at least conditional on output losses (Boeri and Terrell 2002). In addition, non-standard mechanisms of labor market adjustment became widespread in the region, especially during the phase of economic decline. These included wage arrears, forced leaves, reduction in hours of work and in-kind payments (Lehmann, Wadsworth and Acquisti 1999; Earle and Sabirianova 2002; Haltiwanger, Lehmann and Terrell 2003).[1] With the resumption of economic growth, the incidence of these non-standard mechanisms was reduced considerably (Klugman and Kolev 2001; Gerry, Kim and Li 2004; Boyarchuk, Maliar and Maliar 2005).

A change in the wage-setting mechanism became another important element of the transition process with potentially strong effects for household well-being. Rather than being fixed by the state as in the Soviet period, wages started to reflect individual productivity and effort with gradually increasing returns to human capital (Gorodnichenko and Sabirianova Peter 2005; Munich, Svejnar and Terrell 2005). This resulted in a raising inequality of the wage distribution, driving the rise in income inequality (Keane and Prasad 2002). Additional factor increasing income inequality was the development of the private sector, including the privatization of formerly state-owned enterprises, though the evidence concerning the role of this channel in different countries is somewhat mixed (Commander, Tolstopiatenko and Yemtsov 1999; Milanovic 1999; Birdsall and Nellis 2003).

The reduction in welfare benefits and transfers caused by shrinking fiscal revenues also affected household welfare (Barbone and Polackova 1996; Klugman and Kolev 2001). However, the transition countries experienced considerable heterogeneity with respect to the dynamics and effects of social spending. For example, Garner and Terrell (1998) argue that the social safety nets in Central Europe confined inequality that would have resulted from the introduction of market forces while according to Commander, Tolstopiatenko and Yemtsov (1999) the Russian social safety net rather contributed to higher income inequality. Evidence suggests that compared with the states of the former USSR, the countries of Central Europe better managed to contain the drop in transfers, presumably due to better tax collection but also because of better economic and political contestability established from the start of the transition process.

[1] Boeri and Terrell (2002) provide evidence that the differences in labor market adjustment are related to the different levels of expenditure and structures of non-employment benefit between these two regions.

The transition process suddenly brought many households in Central and Eastern Europe to the edge of physical survival. Poverty, as conventionally defined to indicate the lack of a minimum standard of material well-being, hence became one of the most important problems facing the region.[2] At the height of the macroeconomic crisis poverty rates in some countries approached 50% (World Bank 2000a; 2005).[3] As economic growth resumed throughout the region at the end of the 1990s, poverty rates declined substantially (World Bank 2005). The remainder of this section summarizes the empirical research of the determinants of the poverty in the region.

Existing research has firmly established several common correlates or determinants of poverty in the transition countries. For example, it is typically found that the incidence of poverty is larger among large households, single parent households as well as households with a higher than average number of dependants in relation to income earners (Milanovic 1996; Lokshin and Popkin 1999). These are also common patterns observed in developing countries. Interestingly and in contrast to the stylized facts of poverty in many low- and middle-income countries, there has been little evidence of higher poverty risk for the elderly in the region (Milanovic 1996; Klugman, Micklewright and Redmond 2002). Many other factors, which usually determine poverty in less developed countries, do not show a consistent pattern either across transition countries or over time. For example, some evidence suggests that families with low educated heads or main income providers were more likely to fall into poverty in the Central European countries. The same relationship in the CIS was found to be very weak in the second half of the 1990s (World Bank 2000a) but strengthening in the 2000s (World Bank 2005). Unemployment is another case in point. Compared with the Central European region, this factor seems to have been relatively less pronounced in the CIS countries in the 1990s, but appears to have grown since 2000 (World Bank 2000a; 2005). Note, however, that most such evidence comes from a simplified approach using $1 or $2 international poverty lines to construct poverty profiles and relative risk ratios as in World Bank (2000a; 2005), which ignores a number of important methodological issues such as equivalence scales. Gustafsson and Nivorozhkina (2004) provide a more rigorous evidence on the evolution of poverty and its determinants over the course of transition. However, they focus on one city only. Overall, the existing knowledge on the determinants of poverty during transition remains scarce, especially in the CIS countries.

[2] Hereafter our view of poverty emphasizes the material aspect of well-being, as much of the economics literature does. However, there are other dimensions of deprivation such as poor health, lack of access to education, limited access to basic infrastructure as well as psychological dimensions (powerlessness, voicelessness, dependency, shame, humiliation, etc).

[3] Poverty was not unknown in the region during the communist rule, but its scope was limited. According to World Bank estimates, only 2% of people were poor before the start of the transition (World Bank 2000a).

Our study aims to fill this gap for Ukraine. Ukraine was experiencing economic decline for 10 consecutive years between 1990 and 1999 with its real GDP falling by over 60% (Table 1). The rebound since 2000 has been remarkable, but the real GDP in 2004 represented only about 58% of its 1989 value. The decline of real wages followed a similar pattern. Until 1999 real wages dropped to less then half of their 1989 value and experienced a vigorous recovery, almost reaching the 1989 values by 2004. Interestingly, the employment ratio was much less variable, falling from 77.2% in 1996 to 67.0% in 2004. Unemployment only rose to almost 12% in 1999, dropping to 8.6% in 2004.

Previous evidence on poverty in Ukraine largely comes from two studies by the World Bank (1996; 2005). These use different survey instruments and are therefore 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 is not very informative about the developments in the 1990s, the period of the most intense transition.

3. Conceptual approach

3.1. Measures of welfare

Most poverty studies focus on income or consumption expenditures measures of the material aspect of individual and household welfare. There is considerable ambiguity as to which of these indicators is a better measure of welfare. The use of income may be advocated on the grounds that it better proxies for living standards, which are generally hard to quantify (Atkinson 1991). Another argument in favor of income is the idea that the welfare indicator should measure the opportunities for consumption open to a family rather than consumption per se (Atkinson 1991; Ravallion 1992). However, the income indicator of welfare suffers from a number of flaws. First, when measured over short periods, it may considerably understate or overstate the standard of living due to significant variations in income over time (for example, due to the seasonality of earnings). Second, income measures are expected to underestimate the 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). Consumption is often considered to be a better indicator of the general welfare (as households smooth their consumption over time) and to contain smaller measurement error compared with income.

The relative merits of one measure versus the other depend to a large extent on the economic and institutional environment of the country under study. In particular, income measures are

considered to be quite problematic in less developed countries where much of the population are involved in non-market activities and where income is subject to considerable seasonal variability with much income deriving from agriculture. In many empirical applications, the measure of choice in developed countries is income while in developing countries it is consumption (Ravallion 1992).

Given the transition nature of Ukraine and the fact that we analyze and compare two years which are very distinct in terms of the market institutions of the country, it is impossible to identify a preferred measure a priori. While acknowledging their weaknesses and strengths, we thus employ both measures – income and consumption – in order to draw a more comprehensive picture of household poverty. There exist several reasons to expect differences between both welfare measures in a transition context: First, households make intensive use of home production in many transition countries. Second, there might be a bias from underreporting income from the shadow economy. Third, the non-monetary exchange of commodities and barter became widespread, especially at the early stage of transition. Fourth, consumption smoothing and insurance mechanisms separate actual income from consumption flows, with the degree to which households are actually able to smooth their consumption or separate their consumption from their income streams likely to change over the transition process.

3.2. The estimation framework

The analysis of poverty is mostly based on multivariate regression methods that attempt to identify the determinants of poverty at the household level, using reduced form models of various structural relationships that affect poverty (Glewwe 1991). One approaches is to estimate a „welfare function" of a continuous measure of household welfare, such as income or consumption expenditures. Alternatively, „poverty functions" link household-related variables to a household-specific poverty indicator, defined on the basis of a „poverty line" (Appleton 2002). The latter is a predetermined standard of well-being below which a person or a household is classified as poor (Ravallion 1992).[4] Regardless of the definition of the poverty line, most commonly used dependent variables in poverty functions are binary indicators of poverty status or measures of the poverty gap.

Both approaches have some merits. One the one hand, the welfare functions are advocated on the grounds that they utilize full information on the distribution of income or consumption

[4] These may be absolute, relative or subjective.

while the poverty functions waste a significant fraction of it, if not collapsing the welfare measure into just two values (Ravallion 1992; Grootaert 1997). However, the level regressions have long been criticized for imposing constant parameters over the entire distribution thus assuming that the effect of household composition, education, and other variables is the same for poor and non-poor households.[5] Another pitfall of the level regressions is that they do not pay explicit attention to the poor and give excessive weight to outliers (Baulch and Masset 2003). Given the complementary insights from both models we use and compare both approaches. To overcome some of the limitations of these estimation strategies and to gain further insights into how the determinants of household well-being change across the entire welfare distribution, we also estimate welfare quantile regressions.

3.3. Explanatory variables in a transition context

The right-hand-side of the household welfare regression equation typically comprises household composition variables, measures of physical assets and human capital, transition specific labor market shocks, and geographic controls. The age-specific and-gender-specific household composition might play a decisive role especially in a transition context with continuous changes of the role of the state and an ongoing development towards market adjustment mechanisms. The household composition affects the distribution and importance of different incomes sources: labor market earnings, state benefits to families or pensioners, stipends to students. The role of the age composition of the household (also indicating the status in the household life cycle) has a special meaning in a transition context: different age groups are associated with different levels of the household's Soviet experience, which might be disadvantageous under the rules of a market economy. However, the effect of elderly on household well-being is not clear ex ante: although potentially disadvantaged due to Soviet training and experience, pensioners might be better off after the substantial increases in the pension level over the last years. For example, the share of pensions (and stipends) in total household resources has increased from 18 to 22% between 2003 and 2004 while the share of labor remunerations remained stable at 45% (State Statistics Committee of Ukraine 2007). It is furthermore important to focus on gender differences and vulnerable groups like female households, especially in an intertemporal comparative analysis, since the transition process in Ukraine was generally associated with changing and increasing gender wage gaps (e.g.,

[5] Appleton (2002) for instance suggests several arguments why returns to assets may be different among the poor and non-poor.

Brainerd 2000), as well as shrinking child care facilities and increasing child care costs like in Russia (Lokshin 2004).

The role of ethnicity has become an important field of research in countries of the former Soviet Union in general and for Ukraine specifically (Constant, Kahanec and Zimmermann 2006). Expert interviews in Ukraine led us to hypothesize that the country does not suffer from ethnically based discrimination. To investigate the issue in more detail, we take a closer look at welfare differences between Ukrainian-speaking and non-Ukrainian-speaking households.

The physical and human capital variables will be included in the analysis on the premise that poverty on the individual or household level is linked to the absence of assets, low returns to these assets and the volatility of these returns (World Bank 2000b). For example, the level of education of a household might well affect the ability of a household to access and process relevant information to cope with economically difficult situations or to improve one's situation on the labor market. The command over a productive asset, as another example, might improve the welfare of the household by making it more autarkic if it enables self-employment activity. On the other hand and as a consequence of a shock, households may lose assets or deliberately deplete them to smooth their consumption which might translate into long-term negative effects on household welfare.

We are also interested in understanding the transmission channels and the effects of macro-level changes through the labor market on household welfare. We thus introduce several measures to capture the household's status regarding its labor market participation as well as its exposure to negative labor market shocks. We intend to shed light on the black box of how the following labor market shocks impact on household welfare: wage arrears, in-kind payments, forced leave and unemployment.

Three issues are of special importance when analyzing the effect of these shocks on household welfare: First, there is a shift over the transition process regarding the general incidence of shocks and the degree to which the likelihood of experiencing a shock can be linked to worker and/or job-specific characteristics. We hypothesize that the propensity to be affected by a labor market shock was generally high and rather randomly distributed. In other words, shocks were not primarily linked to the individual characteristics of workers but rather with an industry sector or enterprise.[6] In the late transition the frequency and incidence of

[6] For example, Lehmann and Wadsworth (2007) show for Russia that the distribution of (contractual) wages of the workers experiencing arrears is very close to the distribution of wages in the population, suggesting „randomness" of the arrears from an individual perspective.

shocks became smaller and – along with developing labor market institutions – much more selective and related to worker specific characteristics, like education.

Second, the immediate loss of income differs across shocks. Forced unpaid leaves and unemployment represent the two most extreme forms of income loss. The former shock might be attenuated by some fringe benefits, which are associated with formal employment but independent of actual hours worked. The latter loss may be reduced through unemployment benefits, although unemployment benefits were rare and the level of the benefits was very low at the beginning of transition. The implications of wage arrears and in-kind payments for household welfare are likely to be less severe, as only a fraction of the wage is not being paid (in time).

Third, behavioral consequences at the household level may differ across the types of shock, since different shocks might be associated with different expectations regarding future income streams. A household facing wage arrears may expect the employer to pay back the outstanding wage. Wage arrears, in-kind payments or forced leave are all connected to persons under contract. These employees may expect higher future income streams – at least in terms of fringe benefits – than unemployed persons.

The above mentioned shocks influence the „freely disposable" time of the household: While wage arrears and in-kind payments are more likely to be associated with ordinary working hours, unemployment and forced leave provide time for complementary coping strategies. Those strategies may partly compensate for the consumption and/or income gap and affect the extent, to which income shocks are translated into consumption shocks. However, this last issue is beyond the scope of this paper and will be addressed in future research.

Geographic controls contribute to the understanding of special risk exposure, for example of single enterprise towns. They thus partly proxy for industry structure which was highly „spatialized" during Soviet times, they also give an indication for the regional diffusion processes of shocks and growth between the centre and the periphery of the country.

4. Data

This study uses data from two household surveys collected in Ukraine by the Kiev International Institute of Sociology (KIIS) in 1996 (abbreviated Ukraine-96) and 2004 (Ukrainian Longitudinal Monitoring Survey, abbreviated ULMS) (Lehmann and Terrell 2006). Ukraine-96 is representative of all households in Ukraine while ULMS is representative of the working age population of Ukraine. Similar sampling strategies and

substantial similarities of the survey instruments provide an excellent opportunity for the intertemporal comparison of household welfare. Both surveys define a household as consisting of all those persons living together and sharing at least some common income and expenditures. The quality of the surveys is very high and comparable to that of the RLMS for Russia. We are not aware of higher quality households surveys spanning almost a decade in any other country of the former Soviet Union (apart from Russia). Key information on both surveys is provided in Table 2.

Among the most important variables in our analysis are the two welfare measures household consumption and household income. To enable intertemporal comparisons it is important to choose and construct these variables such that they measure and capture the same information. The income variable represents the sum of all incomes received by all household members during the last 30 days. It comprises monetary income as well as income received in the form of goods and services (their monetary evaluation was given by the respondents). Among the main income sources included were after-tax incomes from individual labor activities, incomes from the sale of home production, from capital investments, rental income from property, pension payments, unemployment and social benefits, alimony payments as well as help and gifts. To improve data quality on income, household income components from different income generating sources (e.g. wage income, benefits, pensions) from the household survey were cross-checked with the aggregated values from individual data. Since high-income households are likely to be underrepresented we refrained from deleting outliers from the sample[7].

The consumption measure captures actual household consumption on around 60 food items (including alcohol and eating out), expenditure on non-food day-to-day items including tobacco (around 20 items), as well as payments for services, rent and utility in the last 30 days. Due to insufficient information we refrained from evaluating assets or including purchases of durable goods. After correcting for outliers and missing values in food consumption and expenditures, households' food consumption is evaluated using actual unit prices paid by households or by median regional unit prices if the respective household was lacking expenditure information on that specific item. By looking at actual food consumption rather than food expenditures, our consumption measure reflects more comprehensively the actual level of household well-being. However, given this definition, the consumption measure also potentially reflects coping strategies (home grown and produced food) adopted by household.

[7] Nevertheless, excluding all households with welfare levels above the ninety-ninth percentile does not alter the results of the regression analysis (results not shown); inequality measures, of course, are affected.

Table 3 shows descriptive statistics of both welfare measures and all variables used in this paper[8]. To aid intertemporal comparisons, we express all monetary measures in July 2004 Ukrainian hryvnias using monthly national CPI deflators. It should be mentioned that the officially published deflators are calculated from Ukrainian household budget surveys and may suffer from seasonal as well as regional biases, especially because they are collected under the premise that rural households exhibit a similar consumption behavior to urban households.[9]

Table 3 shows a considerable difference between the two welfare measures, household income and consumption. This may be driven by the fact that of home produced food is incorporated in the consumption but not income measure. Nevertheless, the gap between consumption and income could be furthermore interpreted as an indicator of the shadow economy (and non-reported income stemming from respective activities) or might be driven by saving and borrowing and emerging credit markets.[10]

Other variables in our household welfare model include household composition characteristics, productive assets, transition specific shocks measured at the household level, and geographical controls. We control for household composition by including the size of the household (in logs) and shares of persons in different age groups in the household (share of children younger than 15; of persons aged 15-25, persons aged 26-40 (omitted category); persons aged 41-pension age; and persons in pension age). We furthermore include a dummy variable identifying households consisting only of females. The variable *ukrainian* indicates that a household normally speaks Ukrainian.

As proxies for human capital and productive assets of the household we use average years of schooling of all household members in the working age as well a variable indicating whether a household owned or used any land in the last 12 months (*access)* and a lagged variable indicating the possession of a car or truck in the previous year (*carown*). The former measure affects welfare primarily via the labor market while the latter variables indicate the capacity of households to engage in coping strategies (Zimmerman and Carter 2003). The asset variables can also be interpreted as proxies for the cumulative wealth status of the household.

The labor market and shock related information enters the regression equations through several dummy variables, indicating whether the household has no economically active

[8] In the regression equations, the natural log of the welfare measures are used instead.
[9] Official publications by the Ukrainian State Statistics Committee provide limited information on the methodology to construct the national CPI (Revenko 2006).
[10] Gorodnichenko and Sabirianova Peter (2007) use the discrepancy between income and consumption of public sector workers to assess the extent of corruption in Ukraine.

members (*inactive*) and whether at least one person in the household experienced one of the following transition related shocks recently: wage arrears (*arrears*), in-kind payments of wages (*inkind*), forced leave (*leave*) and unemployment status (*unemploy*).[11]

The remaining variables in Table 3 and in our regression analysis are geographical controls. We distinguish between rural areas, towns with population up to one hundred thousand inhabitants and big cities as well as macro-regions (as conventionally defined by the KIIS).

5. Methodology

Our empirical strategy to assess the incidence of poverty and its determinants over time involved the following steps and methods, which will be described and discussed in more detail below: (1) setting the poverty line, (2) analysis of determinants of welfare in a broad sense (OLS regressions) and (3) an analysis of poverty in a more narrow sense (probit regressions). In order to further refine the analysis we (4) investigate differences in the determinants across the welfare distribution (quantile regressions) and (5) test for ethnic discrimination (Oaxaca-Blinder decomposition).

5.1 Setting the poverty line

To identify poor households, we calculated household specific poverty lines according to the cost of basic needs method (see Kakwani (2003) for a review): (I) The *extreme poverty line* states the monetary amount needed to cover the cost of the calorie requirements of a household, given its age and gender specific composition and accounting for regional food price differences. By accounting for gender- and age-specific calorie needs, we address the differential needs of different household members (Deaton 1997; Lanjouw, Lanjouw, Milanovic and Paternostro 2004). (IIa) The *absolute poverty line* adds to the extreme poverty line a non-food allowance, which is set according to the share of non-food expenditures in total consumption expenditures of those households close to the extreme poverty line (21% in 1996 and 34% in 2004).

Both poverty lines were calculated for both years taking into account the respective food and overall consumption patterns and baskets in the relevant years. This is done as the transition process can be expected to lead to changes in the composition of monetary household consumption basket, for example as social services and utilities cease to be subsidized

[11] The variable *leave* denoted forced unpaid leave in 1996 and forced leave (both paid and unpaid) in 2004.

substantially. In fact, the share of the non-food allowance increases from 21% in 1996 to 34% in 2004. Table 4 provides examples of the poverty lines for two different household types.

To better assess and compare the extent of poverty as it would have prevailed in 2004 had only prices changed compared to 1996 (and not the food consumption basket nor the non-food share), we furthermore calculated (IIb) an *absolute poverty line* deflating the *extreme poverty line* from 1996 to 2004 values using the national CPI and adding the 1996 non-food allowance.

5.2 Household welfare model (OLS)

We analyze the determinants of welfare ω of household $i = 1 \ldots N$ in a multivariate framework using the following reduced-form linear model:

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

The specification contains the exogenous welfare determinants describing household characteristics L_i, productive assets and human capital A_i, indicators for labor market shocks, $(transition\ shocks)_i$, and geographic controls V_i. In equation (1) ε_i is an error term that is assumed to be uncorrelated with the explanatory variables.

5.3 Household poverty status (probit regression)

Our second approach to assess the determinants of poverty is by estimating the households' probability of being either income or consumption poor. We expect these poverty functions to yield similar results as the welfare functions. A household is considered to be poor ($p_i = 1$) if its total consumption or income ω_i are below the calculated *absolute poverty line* π_i in the respective year. Otherwise it is considered non poor ($p_i = 0$). The 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):

$$Prob\ (p_i = 1) = F\ (L_i \beta + A_i \gamma + (transition\ shocks)_i \mu + V_i \delta + \varepsilon_i) \qquad (2)$$

5.4 Differences in determinants across the distribution (quantile regressions)

The impact of factors on household welfare may vary depending on the location of the household in the overall distribution of welfare. To explore whether transition specific labor market shocks have a more detrimental impact on poorer households, we employ quantile regressions to estimate equation (1) for household consumption C_i,. Thus, to study how the distributional position of a household affects the interplay between explanatory variables and

C_i we estimate a semi-parametric model[12] similar to equation (1) with $Q_\theta(C_i| X_i)$ instead of $E(C_i| X_i)$ and $\theta \in \{0.1, 0.25, 0.5, 0.75, 0.9\}$, where $Q_\theta(C_i)$ 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 now analyze determinants of welfare at specific percentiles of its distribution. The estimation procedure implies minimizing (weighted) absolute value deviations rather than least squares of deviations and follows a linear programming algorithm. Advantages of this estimation strategy can be found in a higher robustness against outliers compared to least-squares regression and a better consistency performance under weaker stochastic assumptions (Koenker and Hallock 2001).

5.5 Differences across households (Oaxaca-Blinder decomposition)

To specifically explore the potential role of ethnic discrimination in the income generating process, we decompose the gap in the outcome variable (household income) between Ukrainian-speaking and non-Ukrainian speaking households with an Oaxaca-Blinder-type decomposition (Blinder 1973; Oaxaca 1973). Therefore we estimate model (1) for both groups of households separately. The differential in mean outcomes of both groups *j* and *k* can be expressed as

$$\begin{aligned} \Delta R = \quad & x_j'b_j - x_k'b_k \quad && = \quad (x_j-x_k)'b_k \quad + \quad x_k'(b_j-b_k) \quad + \quad (x_j-x_k)'(b_j-b_k) \\ & && = \quad E \quad + \quad C \quad + \quad CE \end{aligned} \qquad (3)$$

and can be attributed to inter-group differences in either endowments of observable explanatory variables (*x*), their returns and remunerations (*b*) or the interaction effect (CE). The proportion unexplained by the endowment effect (E) is due to differences in coefficients, which may be interpreted as discrimination (C). It has to be noted that there is no clear answer as how to interpret the interaction effect. We therefore report two estimations, first ignoring the interaction effect for the discrimination part (D=1) and then weighting it with the population share of the discriminated group ($D=F^H$). The former result can be seen as a lower bound of the size of the discrimination effect. Since Oaxaca-Blinder-type decompositions suffer from path-dependency, i.e. the results differ depending on the base category chosen for computing the differentials, we report the discrimination analysis in both directions and additionally estimate Neumark's (1988) pooled approach. The latter gives a good indication whether discrimination remains after assuming away the existence of a true, non-discriminatory income generation process. As a limitation, this approach compares both

[12] A parametric form is assumed for the deterministic portion of the model but not for the distribution of the error term.

subgroups *j* and *k* at population endowment means and can thus not contribute to the understanding of differences in discrimination at lower or upper parts of the income distribution.

6. Results

6.1 Incidence and evolution of poverty and inequality over time

Tables 5 and 6 show indicators characterizing poverty and inequality in Ukraine in 1996 and 2004. The headcount ratios reflect the share of the poor in the entire population, where „poor" households and individuals are those whose consumption and income positions fall below one of the three household-specific poverty lines. Not surprisingly, the specification of the poverty lines discussed above and the choice of the welfare measure (household consumption or income) have a strong effect on the estimates for poverty incidence and severity as well as for inequality. Not only do the figures differ across the different poverty measurements for each year, but also the conclusions one can draw regarding the evolution of poverty in Ukraine over the transition process are highly dependent on the poverty measure and specification used.

Evaluating poverty using household consumption as welfare measure in 1996, we find 11.4% of all households below the extreme poverty line and 21.2% below the absolute poverty line (including the non-food allowance). The corresponding headcount ratios when using household income as welfare measure are much higher, 55.4% and 66.2% respectively. More than half of the population was income poor in 1996, however measured. The lower consumption poverty levels point to the importance of activities such as subsidiary farming, barter activities, mutual help and other activities in the shadow economy, which are imperfectly measured.

When assessing the long-term changes of poverty, we find that extreme consumption poverty almost halved from 11.4% to 6.0%. However, the extreme poverty line I only evaluates whether households can meet their required calorie intake. When considering the absolute poverty line IIa that incorporates an allowance for non-food consumption the picture looks very different. Thus measured poverty actually increased from 21.2% to 22.6%. We also calculated the headcount ratios for 2004 according to the „original" absolute poverty line from 1996 that has been inflated to 2004 prices. According to this poverty line IIb, poverty measured by household consumption decreased over time from 21.2% to 7.7%.

These data indicate that, in the case of Ukraine, transition contributed to rising poverty through changes in the composition of household consumption baskets and relative price changes - while the growth experienced in that period actually helped to dampen poverty. In a process of transition, it is hence crucial to account for consumption composition and relative price effects on the one hand and for the effects of changes in employment and wages when assessing changes in living standards over time. For instance, our results are in contrast to evidence reported by the World Bank, which found that „Ukraine recorded one of the sharpest declines in poverty of any transition economy in recent years" (World Bank 2007: iv). However, the estimates used by the World Bank do not account for the transition-induced changes in consumption baskets and hence systematically underestimate the true incidence of poverty in Ukraine.

In contrast to the mixed evidence for consumption poverty, the evolution of income poverty is much clearer: the share of the population falling below the poverty line is decreasing, but remains at a high level of 47.9% when considering the absolute poverty line IIa and drops to 28.4% with poverty line IIb.

The huge discrepancy between the poverty figures related to income and consumption found in 1996 becomes smaller in 2004, which is in line with ongoing market oriented reforms and increasing „formalization" and „monetization" of income earning activities and incomes, typical for transition economies. Furthermore, as the difference between poverty rates measured with poverty lines IIa and IIb shows, growth and transition in Ukraine was not unambiguously pro-poor. The income data confirms that the rise in poverty is mainly due to the changes in relative prices rather than to declining real wages.

Our findings on inequality of consumption and income (Table 6) correspond to the general findings on poverty: the Gini coefficients show a strong decrease of inequality in income (still at a rather high level of 0.375 in 2004) while consumption inequality has remained stable over the period at around 0.29. The former may in part reflect advances in the positions of pensioners, as compared to income earners. Again, the „formalization" of incomes might drive these results to a large extent thus calling into question the extent to which growth and transition really are inequality reducing, if these results depend in part on the reduction of measurement errors.

Table 7 shows the poverty profiles for 1996 and 2004, indicating the poverty headcount ratios for different subgroups and thus giving a more detailed, albeit still rough picture on poverty trends. Very large households and households consisting only of persons in pension age are particularly at risk of poverty. A considerable change can be noticed for the well-being of

single parent families, which are much worse of in 2004. These basic figures illustrate furthermore huge discrepancies in poverty rates between different regions and settlement types in Ukraine and considerable changes in their relative position over the years: whereas the population in Kiev is generally doing better in both years, the West, which is more advantaged in 1996, is much worse off in 2004, while the opposite is true for the East. The situation of villages, doing much better than urban areas in terms of consumption, but much worse in terms of income in 1996, deteriorates: in 2004 rural areas have much lower income as well as in consumption levels. This points the significant role of rural informal coping strategies in times of economic crises. However, the same strategies are not suitable to long-term welfare growth hence representing a potential poverty trap.

Poverty rates also differ substantially by households being exposed to different types of labor market shocks: the high poverty rates among households having members on forced leave from work are especially high in 1996 and point to the phenomenon of „working poor" during the early years of transition. In 2004 in contrast, the highest poverty rates are found among households having at least one unemployed member.

Tables 8 and 9 give more insights into the distribution and incidence of the labor market shocks in 1996 and 2004. In the early transition period labor market shocks were almost randomly distributed among poor and non-poor households, highlighting the universal character of the transition shock (Table 8): While unemployment and forced leaves were associated with poor households, the incidence of wage arrears was surprisingly significantly higher among non-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 by 2004.

As the industrial structure differs across 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 affected very substantially by a strong negative shock in a single industry. Table 9 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 increase 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

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 with towns and rural areas being the relative losers of the transition process.

6.2 Multivariate regression results

OLS and probit regressions: Table 10 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.[13] We also analyze the probabilities of falling into poverty defined by the household specific absolute poverty line with regional price adjustments (Table 11).[14]

The number of observations differs slightly between the different specifications due to limited information on some variables or implausible zero income values. The relevant goodness-of-fit statistics (R^2 and pseudo R^2) indicate a reasonably good fit for all our model specifications. In all analysis we tested for the joint significance of all restructuring variables and found that the shocks are jointly significant on the 1% level in all cases (except for the quantile regressions, where in two cases they are only significant at the 10% and 5% level). Finally, there is no indication for multicollinearity impeding the precision of our results as indicated by a variance inflation factor test (results not shown).

We generally find strong effects of household composition on household welfare. The share of children exhibits negative and significant coefficient. Moreover, the analysis shows that the inverse link between the share of children and household welfare strengthened in 2004 . Compared to the omitted age bracket between 26 and 40 years, all other age groups fare worse in terms of consumption in the year 2004. Juveniles are the only exception and even had higher consumption in 1996. Households consisting only of economically inactive members were significantly (and increasingly) worse off over the course of transition. Having a larger share of household members in the pension age significantly lowers consumption in both years. But it does not increase the probability to become consumption poor as indicated in the probit regression.

In fact, larger share of elderly reduces the risk of income poverty in 2004. This surprising finding might be attributable to strong pension increases and is in line with the view expressed by the World Bank (2005) that elderly may positively contribute to household income (column 4 in Table 11).

[13] The following results reflect unweighted household data.

[14] As a robustness check we repeat the probit analysis with the alternative absolute poverty line and find considerable stability in our results (results not shown).

We find strong gender effects. Female-only households appear to have suffered from lower income levels in 1996, but in 2004 this effect has almost halved. At the same time, the consumption gap gained significance with female households lagging behind by 12%. Overall, the results for gender and age groups provide evidence of growing social stratification between 1996 and 2004. The lower levels of such stratification in 1996 was due to the 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 and opportunities. However, declining overall inequality may mask rising inter-group inequality, which in turn may be due to specific economic problems faced by some socio-economic groups.

The importance of education for household welfare increased during transition as shown by the rise in the coefficients' magnitude and significance in 2004 compared with 1996. The gain associated with an additional year of schooling raised from 2.5% to 4.1% of the mean consumption level. The increasing importance of education as a safeguard against poverty in Ukraine is also consistent with findings of increasing returns to human capital in Ukraine and other transition countries (Munich, Svejnar and Terrell 2005). Access to land was an important contributor to household consumption in both 1996 and 2004, and apparently stronger in 1996. As markets regained stability and more options for cash generation became available, subsistence agriculture – which required access to land –diminished in importance. Lagged ownership of a car, which can potentially be used as a productive asset, exhibits a stable and highly significant positive contribution to the level of household welfare.[15]

We also find strong effects of the geographical location of households on their welfare. This is true of settlement types as well as macro-regions. Households in urban settlements could generally enjoy higher income levels than rural households; however, the result is insignificant 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). Households residing in large cities clearly were the relative winners during transition – having significantly higher income levels and lower poverty risks than rural households and households located in towns.

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 substantially in

[15] This lagged variable reduces the number of observations due to sample enlargement between 1995 and 1996. As a robustness check, we re-estimate the regressions omitting the lagged car ownership variable and find the signs of the remaining coefficients unchanged (results not shown).

terms of income. The capital of Kiev has had a significant welfare advantage throughout the whole period. Note that this effect is independent of ethnicity which was controlled as well (see below).

Of special interest are the transition specific labor market shocks in the regression equations.[16] While wage arrears naturally reduced household income in both years, the receipt of in-kind payment appears to have been positively associated with consumption and income in 1996. 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 received, too. Forced leave and unemployment played a significant role in the determination of welfare at the beginning of transition. By 2004, when the restructuring process accelerated and (formal) unemployment became widespread, unemployment became the most important and highly significant labor market determinant of welfare (columns 3 and 4 in Tables 10 and 11). For example, the shock variables show that the probability of being poor in 1996 was 15 to 19% higher for households with at least one member on forced leave. In 2004, unemployment constitutes the main labor market risk of falling into poverty, with at least one unemployed household member increasing the probability of being income poor by 29.9%. The low level of significance for non-standard forms of unemployment in 2004 can have two statistical explanations. First, some shocks became quite rare (for example forced leaves), leading to large standard errors. Second, the fraction of „missing household income" due to these shocks decreased from 1996 to 2004 since the experience of cumulative shocks inside the household was dramatically reduced. The share of households with at least two household members suffering income losses dropped from one third in 1996 to 3.8% in 2004. At a smaller scale, similar trends are observable for in-kind payment and forced leave.

The regression evidence confirms the link between the transition process, labor market adjustments mechanisms and the evolution of poverty in Ukraine. For example, the lesser importance of unemployment in 1996 is consistent with the fact that being employed did not necessarily imply higher income as arrears, unpaid leave, etc. were widespread. Over time, the Ukrainian labor market moved from non-standard adjustment mechanisms via arrears, in-kind payments and forced leave towards adjustment via unemployment (Ganguli and Terrell 2006; Kupets 2006).

[16] We are aware of the potential endogeneity of our transition shock variables. As a robustness check we run the same regressions without transition shocks exhibiting qualitatively similar findings (results not shown).

Quantile regressions: Further insights into the determinants of household poverty over the welfare distribution (measured by household consumption) are given by the results of the quantile regressions (Table 12). The pseudo R^2 for these regressions, which reports the share of absolute median deviations explained by the model, is between 0.30 and 0.33 in 1996 and 0.23 and 0.26 for 2004 showing a reasonable good fit of our estimation.

The first remarkable result concerns female-only households. In both 1996 and 2004, those households were associated with significantly lower consumption. However, in 1996 this was true at higher quantiles of the consumption distribution only. Thus, for less well-off and poor households the gender factor was of minor importance in the early transition phase. In 2004, the gender effect increased with consumption deciles. Overall, this result suggests a growing gender gap in poverty between 1996 and 2004. This evidence of marked differences in material well-being between men and women confirms to previous work on the gender wage gap in Ukraine (Ganguli and Terrell 2006).

Elderly members of the household were associated with lower household consumption in 1996, though the result is significant only at the top end of the distribution. In 2004, a higher share of elderly members drove household consumption down at all but the lowest quantiles, with the effect especially gaining strength in the middle of the distribution. As with the OLS and probit results, having more children was negatively related to household consumption in 2004 across the quantiles. In 1996, children had little effect on consumption throughout the entire distribution.

The quantile regressions provide evidence of a highly positive impact of access to land in the lower quantiles of the consumption distribution in 1996 compared to 2004, indicating a more important role of subsistence agriculture for the poorest households in the early transition period. In terms of geographical locations, the quantile regressions confirm strong regional patterns in consumption as reported above. In 1996, households in cities had significantly lower consumption at higher quantiles. In combination with our above results, this is consistent with findings from other transition countries that rural households are more likely to be income poor, while urban households were more likely to be consumption poor (Knight and Shi 2006). We also observe a positive and significant effect for households in the capital Kiev compared to households residing in the Center 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 prior to 2004. Another remarkable result is that households in Western regions of Ukraine completely lost their advantage over the Center (or are even disadvantaged in lower

percentiles) in terms of consumption between 1996 and 2004, the result being robust in all parts of the consumption distribution.

The significant and negative effect of forced unpaid leave on welfare were particularly strong in the bottom quantile of the distribution in 1996, while the significant effect of unemployment was especially detrimental for households at higher quantiles of the distribution. In 2004, the effects of forced leave almost entirely disappeared, while unemployment had increasingly negative effects with higher positions in the consumption distribution. As the quantile regression shows, the significant positive effect of in-kind income on consumption in 1996 remains limited to the top 10% of the distribution while the impact is not different from zero for other households. We conclude that labor market shocks are not only time specific, but also differ in their impact on households depending on the welfare position.

Oaxaca-Blinder decomposition: Ukrainian-speaking households faced significantly lower incomes in 2004 and a higher probability of being income poor in both years. To explore whether this is an indication of ethnic discrimination, we decomposed the differences between two separate regressions for Russian-speaking (supposed to be non-discriminated) and Ukrainian-speaking households (supposed to be discriminated) into endowment and discrimination effect (Table 13). For 1996, the differences due to discrimination are not significantly different from zero. Depending on the methodology employed, it turns out that in 2004 a highly significant 70% of the difference can be attributed to different endowments of Russian-speaking compared to Ukrainian-speaking households, while the discrimination effect explains about 30% of the variation. This result is confirmed by the pooled approach.

7. Conclusions

Our paper analyzed the incidence and determinants of household poverty 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 six issues.

First, there is substantial evidence of some decline in both poverty and inequality over the eight-year period of analysis in Ukraine, especially when measured by income. Progress in the reduction in consumption poverty and inequality is much more limited. 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, the 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-only households, for example, had lower consumption and income but were not more likely to be poor in both years. 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 analysis 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 more 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 worse-off households, which is in contrast to a study for Russia in the 1990s (Cheidvasser and Benítez-Silva 2007) but in accordance with competing but thorough evidence for Russia and Hungary (Flabbi, Paternostro and Tiongson 2007). In line with these authors, our finding may indicate a way for pro-poor growth through investments in human capital.

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.

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 both years, especially for poorer people. This result motivates us to study land-based coping strategies of households in transition economies in more detail in future work.

Fifth, 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 those city dwellers already 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.

Finally, we found some presence of ethnic discrimination against Ukrainian-speaking households (controlling for macro regions) in the income generating process in the year 2004. As above, this could have potentially contributed to the outbreak of the Orange Revolution.

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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: TransMONEE (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 (rural) and rajons (urban)	Multistage random sampling with probability proportional to size PPS: 24 oblasts plus AR Crimea; settlements (rural) and rajons (urban)
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: Overview over variables

	1996					2004				
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
consumption	1485	658.22	455.11	13.86	3,984	3381	863.36	560.62	34.09	5,999
income	1414	362.19	603.83	0	12,047	3267	650.49	611.54	0	14,985
household size	1485	3.17	1.55	1	11	3381	2.93	1.34	1	13
share of children	1485	0.14	0.19	0	0.67	3381	0.09	0.16	0	0.75
share 15-25 yrs	1485	0.12	0.18	0	1	3381	0.15	0.21	0	1
share 26-40 yrs	1485	0.17	0.23	0	1	3381	0.17	0.24	0	1
share 41 yrs-pension age	1485	0.21	0.28	0	1	3381	0.26	0.32	0	1
share pension age	1485	0.36	0.40	0	1	3381	0.33	0.40	0	1
female-only household	1485	0.13	0.34	0	1	3381	0.14	0.34	0	1
average yrs schooling	1485	10.41	2.88	4	15	3381	11.10	2.32	4	15
Ukrainian speaking	1485	0.51	0.50	0	1	3381	0.49	0.50	0	1
carown	1485	0.17	0.38	0	1	3381	0.21	0.41	0	1
access to land	1485	0.77	0.42	0	1	3381	0.75	0.43	0	1
inactive	1485	0.27	0.45	0	1	3381	0.28	0.45	0	1
arrears	1485	0.47	0.50	0	1	3381	0.07	0.25	0	1
inkind	1485	0.11	0.31	0	1	3381	0.01	0.12	0	1
leave	1485	0.05	0.21	0	1	3381	0.01	0.10	0	1
unemploy	1485	0.11	0.31	0	1	3381	0.15	0.36	0	1
village	1485	0.39	0.49	0	1	3381	0.34	0.47	0	1
town	1485	0.20	0.40	0	1	3381	0.27	0.45	0	1
city	1485	0.41	0.49	0	1	3381	0.39	0.49	0	1
Kiev	1485	0.03	0.17	0	1	3381	0.04	0.20	0	1
West	1485	0.23	0.42	0	1	3381	0.21	0.41	0	1
East	1485	0.22	0.41	0	1	3381	0.23	0.42	0	1
Center	1485	0.26	0.44	0	1	3381	0.27	0.45	0	1
South	1485	0.26	0.44	0	1	3381	0.24	0.43	0	1

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

Table 4: Examples of poverty lines for certain types of households
(monthly allowances for entire household, July 2004 hryvnias)

	1996		2004	
	Extreme poverty line I	**Absolute poverty line IIa***	**Extreme poverty line I**	**Absolute poverty line IIa***
Example 1: Single household, male, aged 19-60	116.58	147.57	138.49	209.86
Example 2: Household with two adults (aged 19-60), one 14-year-old girl	299.78	379.48	356.13	539.64

** incl. non-food allowance of 21% for 1996, 34% for 2004*
Source: Ukraine-96 and ULMS 2004, authors' calculations.

Table 5: Poverty headcount ratios and other FGT-poverty indicators

Poverty line	**Extreme poverty line I**		**Absolute poverty line IIa**		**Absolute poverty line IIb from 1996; in 2004 hryvnia**	
	Cons	*Inc*	*Cons*	*Inc*	*Cons*	*Inc*
1996						
Headcount (%)	11.35	55.37	21.15	66.22	21.15	66.22
Poverty gap (a=1)	0.03	0.29	0.06	0.36	0.06	0.36
Squared poverty gap (a=2)	0.01	0.20	0.02	0.25	0.02	0.25
2004						
Headcount (%)	6.04	25.49	22.64	47.86	7.71	28.41
Poverty gap (a=1)	0.01	0.09	0.06	0.18	0.02	0.10
Squared poverty gap (a=2)	0.00	0.05	0.02	0.10	0.01	0.05

Source: Ukraine-96 and ULMS 2004, authors' calculations. Headcount ratios, weighted by household size.

Table 6: Measures of inequality

		Household consumption (per capita)		**Household income (per capita)**	
		1996	**2004**	**1996**	**2004**
Gini coefficient	excluding „0"	0.291	0.290	0.465	0.375
	trimmed*	0.274	0.270	0.416	0.345
Polarization p90/p10	excluding „0"	3.92	3.80	9.41	5.53
	trimmed*	3.76	3.59	8.98	5.33

** excluding 1/99 percentiles*
Source: Ukraine-96 and ULMS 2004, authors' calculations. Figures according to per capita household consumption and income, weighted by household size.

Table 7: Poverty headcount ratios (%) and distribution of subgroups in sample (%)

	Absolute poverty line IIa				Absolute poverty line IIb from 1996		Distribution in sample	Distribution in sample
Year	**1996**		**2004**		**2004**		**1996**	**2004**
Welfare measure	cons.	inc.	cons.	inc.	cons.	inc.		
Entire sample	21.15	66.22	22.64	47.86	7.71	28.41	100	100
Household size								
1	16.29	55.39	11.71	26.12	3.98	10.12	5.13	4.25
2	18.89	61.29	14.23	39.06	3.84	19.00	18.45	21.24
3	18.97	59.37	18.40	43.81	6.32	26.95	19.92	26.94
4	20.55	67.00	26.09	49.59	9.78	29.59	24.85	25.59
5	20.72	71.09	33.33	63.04	11.11	39.57	15.85	12.07
6+	28.93	79.44	35.04	65.80	11.95	45.39	15.8	9.9
Household types								
Only adults in working age	18.89	61.29	14.23	39.06	3.84	21.39	9.58	20.47
HH with one child	18.97	59.37	18.40	43.81	6.32	30.79	16.45	18.85
HH with children (>1)	20.55	67.00	26.09	49.59	9.78	44.82	19.62	11.85
Single parent families	20.72	71.09	33.33	63.04	11.11	37.56	1.71	2.05
Pensioners only	28.93	79.44	35.04	65.80	11.95	11.71	13.81	11.4
Other households	25.46	71.74	28.09	52.55	9.30	30.98	38.82	35.39
Regional differences								
Kiev	17.59	30.51	11.11	25.37	5.78	15.12	4.14	4.50
Centre	21.66	70.56	20.50	56.15	6.20	35.29	24.92	26.28
West	11.87	66.11	28.04	59.45	9.46	37.19	27.92	24.27
East	34.02	69.11	22.53	33.33	8.66	18.77	18.84	21.84
South	21.56	66.08	21.80	44.67	7.09	23.38	24.18	23.11
Settlement type								
Village	13.15	77.99	24.19	63.74	7.27	42.26	38.02	35.66
Town	25.62	69.81	22.48	46.82	9.26	25.87	17.78	26.33
City	26.06	54.30	21.33	33.68	7.07	17.23	44.2	38.01
Economic shocks and labor market information								
At least 1 household member experiences								
in-kind payments	17.03	64.38	21.30	67.07	7.69	50.90	11.83	1.68
wage arrears	18.67	69.24	21.10	53.25	8.22	37.99	52.00	7.28
forced leave	35.61	81.77	23.53	34.34	6.86	28.28	6.06	1.04
unemployment	29.42	68.05	30.42	68.03	9.80	51.93	12.91	17.73
Household is inactive on labor market	23.36	71.21	24.82	55.40	7.87	28.56	19.95	19.84

Source: Ukraine-96 and ULMS 2004, authors' calculations. Headcount ratios, weighted by household size.

Table 8: Incidence of standard and non-standard forms of unemployment by poverty status

	1996			2004		
	non-poor	poor$^{\Psi}$	t-test	non-poor	poor$^{\Psi}$	t-test
unemployment (ILO)	9.39%	15.40%	***	13.41%	21.63%	***
wage arrears	47.12%	41.41%	**	6.731%	6.13%	
payment in-kind	10.12%	8.33%		1.42%	1.38%	
forced leave	3.93%	8.33%	***	0.94%	0.92%	

Source: Ukraine-96 and ULMS 2004, authors' calculations.
* significant at 10%; ** significant at 5%; *** significant at 1%
$^{\Psi}$ according to consumption poverty line IIa

Table 9: Incidence of standard and non-standard forms of unemployment by settlement type

	1996			2004		
	village	town	city	village	town	city
unemployment (ILO)	6.8%	10.8%	10.1%	15.8%	16.2%	11.7%
wage arrears	44.4%	39.0%	38.3%	5.9%	5.9%	4.8%
payment in-kind	13.7%	7.8%	5.1%	7.7%	3.4%	0.6%
forced leave	5.5%	4.3%	5.0%	0.5%	0.6%	0.8%

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

Table 10: OLS regressions: Household consumption and income

	1996		2004	
	(1) Household consumption	(2) Household income	(3) Household consumption	(4) Household income
Log of household size	0.583 (12.58)***	0.451 (4.97)***	0.571 (21.08)***	0.625 (18.37)***
Share of children in household	-0.044 (0.35)	-0.668 (2.39)**	-0.372 (4.67)***	-0.765 (7.20)***
Share of age 15-25	0.270 (2.83)***	0.193 (0.95)	0.005 (0.10)	-0.039 (0.53)
Share of age 41-pension age	-0.087 (1.19)	-0.153 (1.03)	-0.140 (3.37)***	-0.057 (1.07)
Share of pension aged in household (f: 55+ m: 60+)	-0.132 (1.74)*	0.014 (0.09)	-0.175 (4.04)***	0.042 (0.76)
Household with only women and children (<15)	-0.074 (1.52)	-0.284 (3.57)***	-0.123 (4.27)***	-0.171 (5.09)***
Average years of schooling (15-72)	0.026 (4.89)***	0.054 (6.55)***	0.041 (10.49)***	0.050 (10.88)***
Ukrainian is preferred language	0.038 (0.97)	0.031 (0.45)	0.004 (0.15)	-0.113 (3.74)***
Lagged car ownership	0.158 (4.68)***	0.199 (2.90)***	0.181 (8.52)***	0.139 (5.04)***
Land access	0.244 (6.16)***	0.082 (1.32)	0.120 (5.42)***	0.035 (1.28)
Inactive	-0.173 (3.52)***	-0.417 (5.33)***	-0.192 (7.55)***	-0.424 (13.70)***
Wage arrears	-0.009 (0.29)	-0.252 (4.04)***	0.001 (0.04)	-0.125 (2.51)**
In-kind income	0.087 (2.12)**	0.270 (3.27)***	-0.106 (1.61)	-0.114 (1.15)
Forced leave	-0.251 (3.71)***	-0.579 (4.31)***	-0.046 (0.57)	-0.172 (1.26)
Unemployment	-0.145 (3.17)***	-0.073 (0.94)	-0.179 (7.63)***	-0.496 (14.97)***
Town (OV: Village)	-0.051 (1.47)	0.331 (5.22)***	-0.022 (0.97)	0.091 (3.17)***
City	-0.071 (1.98)**	0.362 (5.24)***	0.020 (0.82)	0.253 (8.46)***
Kiev (OV: Center)	0.278 (3.10)***	0.708 (4.75)***	0.316 (7.28)***	0.292 (4.74)***
West	0.168 (4.84)***	0.105 (1.40)	-0.041 (1.74)*	0.046 (1.48)
East	-0.061 (1.16)	0.016 (0.18)	-0.021 (0.73)	0.138 (4.09)***
South	0.114 (2.75)***	0.188 (2.38)**	0.022 (0.87)	0.051 (1.54)
Constant	5.261 (46.90)***	4.437 (21.47)***	5.654 (82.06)***	5.160 (59.22)***
Observations	1485	1293	3381	3248
R-squared	0.51	0.28	0.44	0.43
Wald test, arrears=inkind=leave=unemploy=0	8.29	10.90	15.07	59.29
Prob > F	0.000	0.000	0.000	0.000

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

Table 11: Probit regressions of being consumption or income poor (marginal effects)

	1996		2004	
	(1) Consumption poor	(2) Income poor	(3) Consumption poor	(4) Income poor
Log of household size	0.190	0.227	0.179	0.260
	(5.26)***	(4.87)***	(7.92)***	(8.23)***
Share of children in household	-0.152	-0.028	-0.046	0.223
	(1.53)	(0.21)	(0.71)	(2.47)**
Share of age 15-25	-0.191	-0.195	-0.035	-0.084
	(2.51)**	(1.99)**	(0.78)	(1.32)
Share of age 41-pension age	0.013	-0.014	0.024	0.055
	(0.23)	(0.21)	(0.69)	(1.22)
Share of pension aged in household	-0.028	-0.150	-0.017	-0.133
(f: 55+ m: 60+)	(0.47)	(1.96)**	(0.45)	(2.67)***
Household with only women	-0.035	0.021	-0.024	-0.020
and children (<15)	(0.94)	(0.43)	(0.93)	(0.58)
Average years of schooling (15-72)	-0.017	-0.029	-0.021	-0.040
	(4.04)***	(5.45)***	(6.47)***	(8.73)***
Ukrainian is preferred language	-0.085	0.077	-0.012	0.075
	(2.69)***	(1.96)**	(0.58)	(2.82)***
Lagged car ownership	-0.081	-0.139	-0.060	-0.079
	(3.13)***	(3.80)***	(3.64)***	(3.35)***
Land access	-0.151	-0.033	-0.088	-0.045
	(4.97)***	(0.91)	(4.60)***	(1.74)*
Inactive	0.067	0.195	0.091	0.300
	(1.83)*	(4.56)***	(4.07)***	(10.16)***
Wage arrears	-0.031	0.070	-0.013	0.069
	(1.25)	(2.15)**	(0.47)	(1.77)*
In-kind income	-0.019	-0.121	-0.016	0.093
	(0.54)	(2.63)***	(0.29)	(1.19)
Forced leave	0.155	0.191	0.007	-0.085
	(2.93)***	(3.22)***	(0.10)	(0.88)
Unemployment	0.075	0.024	0.089	0.299
	(2.14)**	(0.53)	(4.48)***	(10.88)***
Town (OV: Village)	0.023	-0.139	0.014	-0.079
	(0.77)	(3.64)***	(0.78)	(3.20)***
City	0.053	-0.164	0.009	-0.170
	(1.77)*	(4.32)***	(0.44)	(6.35)***
Kiev (OV: Center)	-0.099	-0.184	-0.105	-0.090
	(1.97)**	(2.04)**	(3.02)***	(1.58)
West	-0.115	-0.114	0.042	-0.011
	(4.32)***	(2.84)***	(2.05)**	(0.40)
East	0.027	0.122	0.016	-0.119
	(0.72)	(2.64)***	(0.69)	(3.85)***
South	-0.062	0.016	-0.024	-0.031
	(1.94)*	(0.38)	(1.11)	(1.03)
Observations	1485	1415	3381	3267
Pseudo R-squared	0.14	0.11	0.08	0.17
Test: arrears=inkind=leave=unemploy=0	18.989	19.745	20.601	123.308

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

Table 12: Quantile regression, dependent variable: log of household consumption

	1996					2004				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Log of household size	0.796	0.545	0.504	0.534	0.554	0.622	0.624	0.563	0.526	0.511
	(9.45)***	(6.81)***	(10.11)***	(8.57)***	(7.12)***	(11.64)***	(16.51)***	(17.00)***	(15.76)***	(12.93)***
Share of children in household	-0.202	-0.192	0.053	0.040	-0.113	-0.364	-0.469	-0.374	-0.372	-0.168
	(0.75)	(0.80)	(0.37)	(0.24)	(0.57)	(2.25)**	(4.17)***	(3.83)***	(3.85)***	(1.46)
Share of age 15-25	0.207	0.325	0.308	0.320	0.150	0.027	-0.031	-0.061	-0.010	0.160
	(1.11)	(1.85)*	(2.90)***	(2.46)**	(0.96)	(0.25)	(0.41)	(0.90)	(0.14)	(1.88)*
Share of age 41-pension age	-0.106	-0.151	0.027	-0.056	-0.158	-0.102	-0.166	-0.146	-0.131	-0.081
	(0.74)	(1.21)	(0.35)	(0.62)	(1.43)	(1.23)	(2.97)***	(2.95)***	(2.67)***	(1.37)
Share of pension aged in household (f: 55+ m: 60+)	-0.010	-0.178	-0.095	-0.137	-0.362	-0.076	-0.128	-0.230	-0.214	-0.196
	(0.06)	(1.33)	(1.13)	(1.38)	(3.11)***	(0.84)	(2.13)**	(4.31)***	(4.00)***	(3.05)***
Household with only women and children (<15)	-0.039	-0.037	-0.133	-0.125	-0.087	-0.073	-0.100	-0.130	-0.159	-0.190
	(0.40)	(0.41)	(2.41)**	(1.88)*	(1.05)	(1.21)	(2.37)**	(3.47)***	(4.31)***	(4.34)***
Average years of schooling (15-72)	0.033	0.022	0.021	0.022	0.020	0.039	0.046	0.040	0.035	0.034
	(2.82)***	(2.30)**	(3.59)***	(3.20)***	(2.33)**	(4.97)***	(8.28)***	(8.11)***	(7.05)***	(5.44)***
Ukrainian is preferred language	0.107	0.119	0.056	-0.016	-0.083	0.023	0.038	0.007	-0.012	-0.004
	(1.35)	(1.61)	(1.29)	(0.31)	(1.24)	(0.46)	(1.09)	(0.22)	(0.42)	(0.13)
Lagged car ownership	0.163	0.180	0.141	0.156	0.201	0.140	0.151	0.184	0.180	0.186
	(2.18)**	(2.81)***	(3.62)***	(3.35)***	(3.49)***	(3.18)***	(5.14)***	(7.04)***	(6.94)***	(6.10)***
Land access	0.351	0.306	0.201	0.148	0.072	0.130	0.144	0.132	0.117	0.099
	(4.50)***	(4.41)***	(4.91)***	(3.12)***	(1.29)	(2.82)***	(4.54)***	(4.75)***	(4.33)***	(3.08)***
Inactive	-0.096	-0.171	-0.169	-0.140	-0.035	-0.188	-0.204	-0.179	-0.180	-0.171
	(0.96)	(2.02)**	(3.33)***	(2.30)**	(0.49)	(3.58)***	(5.81)***	(5.70)***	(5.81)***	(4.41)***
Wage arrears	0.064	0.002	-0.003	0.006	-0.023	0.002	-0.029	-0.026	0.003	0.086
	(0.96)	(0.03)	(0.08)	(0.13)	(0.43)	(0.03)	(0.60)	(0.62)	(0.07)	(1.68)*
In-kind income	0.029	0.031	0.081	0.093	0.203	-0.003	-0.055	-0.083	-0.118	-0.306
	(0.32)	(0.38)	(1.64)	(1.61)	(2.89)***	(0.03)	(0.55)	(0.95)	(1.39)	(3.12)***
Forced leave	-0.435	-0.276	-0.206	-0.149	-0.203	0.145	0.031	-0.010	-0.176	-0.067
	(3.52)***	(2.39)**	(2.92)***	(1.84)*	(2.04)**	(0.84)	(0.26)	(0.10)	(1.67)*	(0.54)
Unemployment	-0.096	-0.101	-0.184	-0.163	-0.123	-0.156	-0.147	-0.170	-0.185	-0.220
	(1.06)	(1.26)	(3.74)***	(2.77)***	(1.76)*	(3.12)***	(4.31)***	(5.65)***	(6.28)***	(6.28)***
Town (OV: Village)	-0.060	-0.055	-0.029	-0.079	-0.092	-0.135	-0.044	-0.001	0.012	0.032
	(0.81)	(0.81)	(0.72)	(1.63)	(1.50)	(2.86)***	(1.40)	(0.04)	(0.44)	(0.97)
City	-0.003	-0.059	-0.065	-0.112	-0.131	-0.027	-0.024	0.019	0.051	0.052
	(0.03)	(0.85)	(1.58)	(2.39)**	(2.29)**	(0.51)	(0.69)	(0.60)	(1.71)*	(1.49)
Kiev (OV: Center)	0.173	0.181	0.217	0.243	0.195	0.299	0.376	0.361	0.318	0.222
	(1.05)	(1.19)	(2.33)**	(2.22)**	(1.41)	(3.23)***	(5.75)***	(6.23)***	(5.62)***	(3.38)***
West	0.170	0.126	0.167	0.174	0.147	-0.086	-0.058	-0.023	-0.021	-0.018
	(2.19)**	(1.80)*	(3.95)***	(3.52)***	(2.44)**	(1.69)*	(1.69)*	(0.75)	(0.70)	(0.51)
East	-0.061	-0.051	-0.047	-0.036	-0.022	-0.044	-0.020	-0.009	-0.010	0.044
	(0.64)	(0.57)	(0.88)	(0.54)	(0.25)	(0.74)	(0.50)	(0.25)	(0.28)	(1.09)
South	0.166	0.138	0.113	0.055	0.038	0.025	0.026	0.015	0.022	0.027
	(1.88)*	(1.74)*	(2.42)**	(0.98)	(0.55)	(0.44)	(0.69)	(0.45)	(0.68)	(0.70)
Constant	4.121	4.970	5.385	5.772	6.253	5.027	5.262	5.695	6.073	6.310
	(19.28)***	(25.70)***	(43.63)***	(39.61)***	(34.05)***	(35.52)***	(53.29)***	(66.79)***	(71.33)***	(62.76)***
Observations	1485	1485	1485	1485	1485	3381	3381	3381	3381	3381
Wald test, arrears=inkind =leave=unemploy=0	4.53	2.21	7.31	3.78	4.36	2.68	4.84	8.27	10.81	13.07
Prob > F	0.001	0.066	0.000	0.005	0.002	0.030	0.001	0.000	0.000	0.000

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 13: Ethnic discrimination in Ukraine

	1996 income				**2004 income**			
	Raw differential	% unexplained ({C+(1-D)CE}/R)			Raw differential	% unexplained ({C+(1-D)CE}/R)		
	Δ R	D=1	D=F^H	Neumark pooled	Δ R	D=1	D=F^H	Neumark pooled
base: non-Ukrainian	0.080	99.0	-106.4	-19.1	0.289	28.6*	30.6***	17.9***
base: Ukrainian	0.080	-312.7			0.289	32.8**		

F^H is the frequency of the high group; C is the differential due to coefficients; CE is the differential due to interaction
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: Ukraine-96 and ULMS 2004, authors' calculations.