

THE SOCIETY TRANSFORMATION DURING TRANSITION: INCOME MOBILITY IN UKRAINE

The study is devoted to the analysis of income mobility in Ukraine. The issue of income mobility is examined on both macro and microeconomic levels using a number of statistic and econometric tools. The findings of the study include the analysis of mobility direction, mobility intensity, the behaviour of income movements of people in different income intervals, and the adjustment of different individual skills and characteristics in the transition period.

1. Introduction

The transition that Central and Eastern European economies undergo is by no means limited by the transformation of their production patterns and the establishment of market institutions, which can be relatively easily captured by economic statistics. The transition process affects the behaviour of people who suddenly find themselves in totally different economic and social situation. This research explores the people's response to the transition. More specifically, this research focuses on income mobility of Ukrainians.

High income mobility and substantial income inequality can roughly be associated with efficient economic system in which economic agents successively reap their factor rents. If people have specific highly demanded skills, then they can expect to be generously remunerated for their skills in that type of economy. Furthermore, if people suddenly lose their skills, they will be immediately forced to the low end of the income distribution. However, if a country sacrifices efficiency in the name of social equity, economic agents will be deprived of the part of their factor income in order to support those who are in the trouble. The main goal of the former USSR social policy was to eliminate poverty, i.e. to maintain relatively high minimum wage. Obviously, being an inefficient economy with a large military sector, the USSR could achieve this goal only by a substantial redistribution of factor incomes from skilled to unskilled people. Hence, income inequality was low. Further, in the situation of fairly small wage differentials, the amount of salary could not be a good motivating factor. Instead, people could enjoy gradual career growth which guaranteed a certain set of benefits at their retiring age. Consequently, almost all people could enjoy some little increments to their wages but the level of relative income mobility was very low.

The transition introduced market forces in the remuneration process which influenced the level of income mobility in Ukraine. However, we did not encounter any paper which deals with income mobility in Ukraine in a direct way so we believe that this research is the first comprehensive attempt to analyse the income mobility pattern for Ukraine.

High income mobility levels out the poor and the rich in the long run, and thus it enhances equity which might be beneficial for the society (see, for example, Aaberge et al. (2002)). Thus, in the presence of high income mobility, any level of income inequality is perceived by the society less painfully. Further, income mobility increases efficiency in the society because it implies quicker response to any external shock.

We are going to use the Ukrainian Longitudinal Individual Survey which contains the data needed for our research. The Survey contains the information on the incomes of individuals in 1986, 1991, and 1997 through 2003. The main problem with this data set is the recall bias that results from the fact that the data for the years 1986 through 2001 were formed retrospectively.

2. Literature review

The issue of income mobility has been the subject of fundamental research. Initially, the studies of income mobility that were carried out in the 60's and 70's aimed to explain the existing inequality patterns in the society. The main question that was implicitly raised in those studies concerned the possibility (or impossibility) of people to exert a substantial influence on their social position in the society.

This intellectual discussion was heated up by different social tensions, e.g. blacks vs. whites or women vs. men. Two conflicting streams of thought

were given birth as a result of this discussion. On the one hand, stratification models adherents suggested that the society assumed a dominating role in determining a person's social status; on the other hand, human capital theorists believed that people make their life themselves.

2.1 Stratification Models

Despite the apparent heterogeneity of the stratification models, one general conclusion may be drawn. The stratification models suggest that the society creates a number of deeply rooted barriers that restrict social and income mobility. Moreover, these barriers are traditionally seen as the cause of the decrease in a general economic efficiency. Thus, the models of stratification emphasise the binding role of a society, which restricts the income mobility.

Another approach to explain the stratification nature of labour markets is to assume the so-called duality barrier. According to this approach, the people who did not manage to overcome this barrier will find themselves unwelcome to prestigious jobs and so they will be forced to search a job in a "secondary" sector. At the same time the lucky people will enjoy the possibility to be employed in a "primary" sector. There is no absolute consensus among the adherents of dual labour market about the nature of the duality barrier. Nonetheless, it was empirically demonstrated that this barrier existed not only in the strictly structured labour market of the USA but also in the countries like the UK. For example, Bosanquet and Doeringer (1973) claim that British "primary" workers had higher earnings and lower mobility than "secondary" workers who were constantly looking for better job but were incapable of finding one.

2.2 Human Capital Models

The development of human capital (HC) models, on the contrary to stratification models, fits very well into the framework of strong individualistic behaviour. The HC models focus on the maximisation behaviour of individuals who try to maximise their present value earnings. People decide to invest in and to accumulate their HC today in order to reap the benefits of increased incomes tomorrow. The individuals will intensively invest in their HC only in the early stages of their lives. As they get older the return on their investment will decrease. Johnson (1970) explored the hypothesis of the decreasing profile of the HC investment along the lifetime if measured as the proportion of the earning capacity. He proposed the following sche-

dule for the level of the HC investment: at the beginning the individuals will forego their entire earning capacity on the behalf of education, or put differently, they will focus on investment only. As they start working they will forego less than 100% and this share will decrease in a linear fashion up until the point of their death at which this share will be equal to zero. Haley (1973) made the attempt to estimate the investment profile of a typical individual along her life that was put forward by Johnson (1970). He presented the data that roughly support this framework. However, the decrease of the HC investment share did not prove to be at constant rate but rather at an increasing rate first and then with a considerable slowdown.

Starting from the early 90's, the issue of income mobility became of particular concern in transitional countries, too. Bogomolova and Tapilina (1999) focus on both macroeconomic and individual factors of income mobility in Russia. Roughly 60 % of Russian households were considered as "highly mobile".

Despite the fact that the income mobility studies were carried out in a very broad number of countries (e.g. Spain, Italy, Scandinavian countries, Argentina, Mexico, Russia etc.), no similar study for Ukraine was carried out. The reason behind this was the absence of a comprehensive longitudinal study of Ukrainian households.

3. Methodology

3.1 Statistical Part

Very straightforward way to draw preliminary conclusions about the nature of income mobility is to look at the association between observed incomes at periods t and $t + 1$. This association can be seen by means of a number of analytical tools. We start with transition matrix approach. The number of people who belonged to i interval in time t , Y_i^t , is determined as follows:

$$Y_j^t = \sum_{i=1}^q P_{ij} Y_i^{t-1},$$

where P_{ij} is the percentage of those people who in time $t-1$ found themselves in i income interval, Y_i^{t-1} , but moved to j interval in time t . The state of "no mobility" would occur if the main diagonals would be composed of ones only. On the contrary, the lower is the percentage of those who did not change their quintile, the smaller number is in the main diagonal boxes, and the higher mobility is.

A useful extension of a mobility matrix is the analysis of mobility intensity. Here, we look at the movement of people across income quintiles. The formula for the computation of the percentage of people who stayed at the same quintile, moved 1, 2, 3, or 4 quintiles upward or downward is as follows:

$$P_{\Delta q, t, t+1} = \frac{n_{\Delta q, t, t+1}}{n_{t, t+1}},$$

where $n_{\Delta q, t, t+1}$ is the number of people who moved Δq quintiles upward or downward from the period t to the period $t+1$, and $n_{t, t+1}$ is the number of people who reported their incomes in both periods. High percentages of people who moved 3 or 4 quintiles upward and downward would mean that the society experiences high income turbulence. On the contrary, high percentages of people who moved 3 or 4 quintiles downward can be offset by even higher percentages of people who moved 1 or 2 quintiles upward. Thus, this knowledge is important in making inferences about the nature of income rotation.

Finally, we can look at the chances of people with different income levels to quit their income category over time. For example, the chances of changing the income status for the people who were in the poorest and richest quintiles in the period t can be traced by the construction of Kaplan-Meier survival functions for these two categories. The formula is as follows:

$$k_{t+\tau}^{qt} = \frac{n_{t+\tau}^{qt}}{n_{t, t+\tau}},$$

where $k_{t+\tau}^{qt}$ is the number of people who were in quintile q in period t and stayed at that quintile in period $t+\tau$, and $n_{t, t+\tau}$ is the number of people who reported their incomes in both periods t and $t+\tau$. The steeper the schedule of Kaplan-Meier survival function is, the higher chances to change their income status the people have.

Being good visual aids, transition matrices, intensity analysis, and Kaplan-Meier survival functions, however, are of little help if one wishes to compare the direction and the intensity of mobility across countries. Here, the use can be made out of the following mobility indexes: Spearman's mobility index, Gini-Shorrocks mobility index, Prais-Shorrocks mobility index, the normalised Bartholomew mobility index, Cramer's V index, and, finally, Fields and Ok mobility index.

The character of the dataset justifies the separation of the analysis of mobility into two independent sections. The first section concerns long run mobility, which can be estimated for the periods 1986-1991, 1991-1997, and 1997-2002. This long run analysis permits to catch the changes in the factors that explain mobility during the whole time span. We use three separate regressions to estimate the coefficients of the model. The use of the only model based on the observations from three time periods seems to be inferior to the estimation of three separate models because of two stated below problems.

The second section concerns short run mobility. This analysis is based on the longitudinal estimation of mobility for the period 1997 to 2002. Only those people who reported their salaries in all 5 years were considered. This approach is by far more powerful in explaining the effects of the changes in explanatory variables. The increased number of observations for short run analysis (typically more than 10,000 in our specifications) permits to obtain more easily statistically significant coefficients, which are robust to specification modifications.

In our first section, we use simple OLS estimation and, in the longitudinal section, we follow Aaberge et al. (2002) who estimated their parameters by using the Generalised Estimating Equations [GEE] approach, which is the longitudinal extension of FGLS and GLIM. The GEE technique is particularly powerful estimation if dependent variables are discrete, which is the case with our data. Further, the GEE estimates are robust to any misspecifications of the error structure, which is a useful practical property for the models involving a long list of variables. So, the model we estimate is of the following form:

$$m_{i,t,t+1} = \beta_0 + \bar{X}_{i,t,t+1} \bar{\beta} + u_i + \varepsilon_{i,t,t+1},$$

X being the mobility determinants, and m being the individual mobility between the periods t and $t+1$. The traditionally accepted approach to computing m is:

$$m_{i,t,t+1} = \text{rank}_{i,t+1} - \text{rank}_{i,t}.$$

However, this approach is practically unrealistic if the income distribution cannot be strictly ranked. To fix this problem, several solutions have been suggested. For example, Aaberge et al. (2002) use the following formula for computing individual mobility:

$$m_{i,t,t+1} = \frac{y_{i,t+1}}{\bar{y}_{t+1}} - \frac{y_{i,t}}{\bar{y}_{t,t}}$$

where $y_{i,t}$ is the income received by the individual i in year t , and \bar{y}_t is the income mean for the year t . Although this measure of mobility looks very intuitive and simple, we prefer to follow its modified version used by Bogomolova et al. (2002):

$$m_{i,t,t+1} = \log\left(\frac{y_{i,t+1}}{\bar{y}_{t+1}}\right) - \log\left(\frac{y_{i,t}}{\bar{y}_{t,t}}\right).$$

The inclusion of logarithms permits to smoothen big jumps in income levels, which is likely to happen in transition economies. Further, taking logarithms can normalise the skewed income distribution.

The determinants of individual income mobility are of very different nature. Firstly, income mobility is affected not only by income determinants themselves but also by the changes in these determinants, or, put differently, income mobility is affected by events. Further, as Regoli et al. (2003) notes, the determinants differ with respect to the nature of an event, f. e. demographic vs. income events. Finally, the division can be done with respect to the scientific polemics between the adherents of stratification and human capital models.

4. Data description

In our analysis, we use the data from the Ukrainian Longitudinal Monitoring Survey (ULMS). The dataset contains the information about earnings over 8641 individuals and it covers the years 1986, 1991, and 1997 to 2002.

The dataset does not provide the information about individual incomes; instead, it contains the retrospective data on individual salaries. We will use the data on individual salaries as the proxy for individual incomes. The use of salaries instead of incomes is perfectly plausible for the soviet period from 1986 to 1991 because the entrepreneurship activity was efficiently restricted. Starting from 1991, the choice of salaries as the proxy for incomes is partially justified by the fact that salaries constitute the main part of incomes in Ukraine, while incomes from stocks, property, heritage, and the like seem to be fairly small empirically.

The factor that can substantially distort the true values of individual incomes is unreported salaries.

However, to our best knowledge, there does not exist any credible dataset on "true" salaries in Ukraine.

The ULMS contains the data on salaries made in December of every observable year. However, not all individuals provided information for the whole range from 1986 through 2002. Normally only slightly more than two thousands of respondents reported their salaries in any particular year, the response rate ranging from 45.41 % in 1986 down to 23.54 % in 2002.

The data provided are obviously plagued by the recall bias. This means that people were asked questions in 2003 about their salaries in 1986 and 1991. The natural reaction to such questions was two report round numbers, e. g. 100 instead of 106, or 200 instead of 188. This defect is reflected in the low variability of salaries overtime, which significantly reduces explanatory power of any econometric model constructed with these data.

The ULMS covers the whole area of Ukraine with the maximum of 930 observations for Donetsk region, which is the biggest in population, and the minimum of 117 observations for Chernivtsi region, which has the smallest population in Ukraine. Further, the dataset is likely to capture the urban/rural structure of the Ukrainian population: e.g., 33,49 % of respondents come from villages.

To explain mobility, we make use of four groups of factors, which can be referred as to stratification factors, human capital factors, social events, and industry dummies.

The stratification factors primarily include the individual characteristics that cannot be changed by the individuals themselves. These are *age*, *gender*, his or her inherited skills proxied by the *education of his or her parents*, and the *city* the individual lives in. The last factor, however, cannot be treated as completely predetermined at the individual's birth but we find it reasonable to treat it as a stratification factor because the city the individual was born in or lives in influences his or her motivation. Thus, it exercises exogenous effect onto individual mobility and can be thought of as a stratification factor.

Human capital factors can be thought of as individual characteristics that are important for the employer. These include *education*, *type of education*, *experience*, *health*, the dummy for having *training on the job*, dummies marking the knowledge of *English*, *German*, and *French*, and finally, the dummy for the use of *computer*.

We do not have very clear expectations about the expected signs and values of stratification and human capital factors because the coefficients near them reflect the changes of returns of these factors

on individual mobility. We think, however, that the sign near the *gender* will be negative to reflect the fact that women managed to catch up with men in terms of income they get. The effect of education is expected to be positive, which means that returns on education increased during the transition period.

Highly statistically coefficients in these two groups of factors would suggest that income mobility exercised a profound effect on people's incomes.

The third group of factors explaining mobility includes social events. These include marriage, the birth of child, and the dummy for the change of residence. We also included in this group the variable for the salary that the individual obtained in the period *t-1* to proxy his or her social status.

Finally, the last group of factors contains ten industry dummies in which the individual was engaged at the corresponding period of time. These are dummies for *Agriculture, hunting, and forestry; Manufacturing and mining; Electricity, gas, and water supply; Construction; Wholesale and retail trade, repair of motor vehicles and motorcycles; Hotels and restaurants; Transport, storage and communication; Financial intermediation, real estate, renting and business activities; Public administration and defence; Education, health and social work; Other community, social and personal service activities*. The descriptive statistics for these dummies as well as for all variables used in the models are provided in the Appendix in Tables 22, 26, and 30.

5. Empirical results

5.1 Statistical Results

The empirical results that we obtained can be divided into statistic and econometric parts. We start with statistic part, which includes transition matrices, mobility intensity analysis, Kaplan-Meiers survival functions, and, finally, mobility indexes.

We constructed 3 transition matrices that cover the periods 1986-1991, 1991-1997, and 1997-2002 and 5 transition matrices for the periods 1997—1998 through 2001-2002. All transition matrices can be found in the Appendix Tables 3 through 10.

As can be seen from the Tables 3 to 5, the percentage of those who stayed at the same quintile drops from 58.88 % (in the first period: 1986-1991) to 42.00 % (in the second period: 1991-1997) and rises somewhat to 44.38 % (in the third period: 1997-2002). These figures, however, cannot be directly compared because the second period contains 6 years, while the first and the third periods contain 5 years only. However, even with slight upward correc-

tion for the second period, it can be noted that the percentage of those who were immobile significantly drops in the 90's if compared with the late 80's.

Another feature that is worth our attention is very pronounced upward movements in the second period. For example, 10.32 % of respondents who were in the lowest (poorest) quintile in the year 1991 jumped to the highest (richest) quintile in the year 1997 and 11.11 % of respondents jumped to the highest quintile from the second lowest quintile (compared to 1.99 % and 5.98 % for the first period, respectively). Less pronounced, but more intensive than in the first period, the downward movements in the second period indicate that the mid 90's were also the time of worse opportunities for the richest quintile: 23.55 % of those who were in the richest quintile in 1991 found themselves among three lowest quintiles in 1997 (compared to 12.31 % for the first period).

So, it can be inferred that the mid 90's were the time of relatively high income turbulence, which decreased somewhat in the late 90's and the early years after 2000 but still it was higher in the third period than in the first.

The transition matrix for the soviet period points to a very large level of immobility of those who were in the richest quintile in 1986 (73.01 % - the highest immobility rate across all cells in three matrices). This observation can be explained by a stable high level of income of those who belonged to "nomenklatura" in soviet times. As can be seen from the second transition matrix, the position of the richest quintile became much less stable (53.17 %).

Finally, it can be observed that there was no sign of labour market duality in the second period but there is a slight sign of its formation in the third period. In the third period, the movements between the first and second quintiles looked chaotic, while the positions of top three quintiles seemed to be more stable: for example, the sum of those who were immobile in top three quintiles was 137.35 % in the third period and it was only 121.77 % in the second period in top quintiles. The asymmetric transition matrix for the period from 1997 to 2002 with higher mobility at low end of income distribution and lower mobility at its high end also supports the hypothesis of middle class formation, whose primary characteristic is stable incomes.

The mobility intensity analysis, which is presented in the Appendix in Tables 11 and 12, also supports the hypothesis of higher income turbulence in the mid 90's: the percentage of people who moved 2 and more quintiles upwards or downwards in the second period was 21.55 % (compared with 11.51 % and 13.44 % for the first and third period, respectively).

Two survival functions for the lowest and highest quintiles for the period 1998 through 2002 are presented in the Appendix in Graph 1. The schedule for the lowest quintile looks to be more steeper than that for the highest. This finding again supports our conclusion about gradual formation of the middle class in Ukraine and the dual nature of the Ukrainian labour market in the late 90's and the early years after 2000. Besides this, the analysis of these two survival functions shows that it is easier for a poor person to become rich than for the rich person to lose his or her high-income status.

The visual comparison of transition matrices for Ukraine and other countries, found in e.g. Bogomolova and Tapilina (1999) for Russia and Schiller (1977) for the United States, suggests that the amount of mobility in Ukraine is considerably smaller. The same conclusion may be drawn from the comparison of different mobility indexes that are based on transition matrices. For example, Tables 14 and 15 in the Appendix provide four mobility indexes: Prais-Schorrocks index, normalised Bartholomew index, Cramer's V index, and Fields and Ok index computed for Ukraine and for other countries that were found in Kühl (2002) and Regoli et al. (2003). The values of the above mobility indexes for Ukraine are approximately twice as low as for Germany, France, UK, Spain, and Italy. Two possible explanations can be proposed to explain the phenomenon of relatively low mobility in Ukraine.

The explanation stems from the fact that our data series are significantly plagued by the recall bias, which reduces the variability of salaries and thus any mobility measure underestimates the true mobility level for Ukraine. The Fields and Ok decomposition made for Ukraine, which is presented in the Appendix in Table 10, provides the intuition behind lower mobility rates for Ukraine: the transfers component T for Ukraine was estimated to be 30.5 % for the period 1997 to 1998, while the estimate of the transfers component T for Italy was approximately 61 % in the period from 1993 to 2000 in Regoli et al. (2003), and it was estimated to be 85—95 % for other big European countries in the period from 1994 to 1998 in Ayala and Sastre (2002). This means that the recall bias erases the information about downward movements across quintiles, or, put differently, people are very reluctant to report the drops in their salaries over time.

5.2 Econometric Results

The fact that the recall bias distorts the information on downward income movements makes useless the separate estimations of upward and

downward mobility. This is why we will focus on the explaining of the aggregate mobility, which we measure as

$$m_{i,t,t+1} = \log \left(\frac{y_{i,t+1}}{\bar{y}_{t+1}} \right) - \log \left(\frac{y_{i,t}}{\bar{y}_{t,t}} \right)$$

Three OLS models with robust estimates have been estimated for the periods 1986-1991, 1991-1997, and 1997-2002, and one GEE model was estimated in the longitudinal section for the period 1997—2002. Each model includes two specifications: one with the variable *number of years of education*, and another with the variable *type of education*. Each model was then refined to include only significant, marginally significant, or critically important variables suggested by previous studies. All nine specifications can be found in the Appendix in Tables 19 through 29.

The OLS models estimated for the periods 1986-1991, 1991-1997, and 1997-2002 proved to be of low explanatory power with R^2 ranging from 9.6 % to 20.93 % and fairly low z-statistics. This result comes with no surprise, however, because the constructed models lack intermediate data, e.g. for the years 1987, 1993, or 2000, and they were aimed at capturing only very common trends in explaining mobility during the last 16 years. These trends can be systematised after looking at refined versions of three models presented in the Appendix in Tables 21, 25, and 29. The general results are summarised in Table 1 (see p. 25).

The following conclusions can be drawn after analysing Table 1.

The adjustment of human capital factors took place only in the last period. This means that despite the fact that mid 90' were the period of high income rotation, the returns on human capital did not change during that period.

The adjustment of stratification factors has the counterbalancing effect on what was observed in the late 80's. For example, men enjoyed upward mobility in the late 80's but this trend was broken in the second period when women started regaining their social positions. Consequently, the disproportion between the remuneration of men and women was partially fixed during the period of transition. The same reversal can be observed in the remuneration schedule of the inhabitants of small cities. In the late 80's they suffered relative income decrease while in the late 90's and the early years after 2000 they managed more than to offset their previous losses in terms of incomes.

The effect of social events remained relatively constant in the observed period. For example, re-

Table 1. General results

Factors	1986-1991		1991-1997		1997-2002	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Stratification factors						
Gender	.0829569	0.000	-.0536404	0.084	nss	nss
City	.0090473	0.065	nss	nss	-.0205769	0.004
Kyiv	-.1305054	0.003	nss	nss	nss	nss
Human capital factors						
Vocational education	.0445958	0.011	nss	nss	nss	nss
Professional education	nss	nss	nss	nss	.0895945	0.045
Bachelor education	nss	nss	nss	nss	-.1833296	0.112
English	nss	nss	nss	nss	nss	nss
German	nss	nss	nss	nss	.1569656	0.176
French	-.5359887	0.000	nss	nss	-.5555407	0.003
Computer	n/a	n/a	n/a	n/a	.0804599	0.115
Health	.0216578	0.098	nss	nss	nss	nss
Social events						
Residence change	-.068636	0.050	nss	nss	-.1552537	0.004
Salary (lag1)	-.0012539	0.000	-.0005007	0.002	-.0010116	0.000
Marriage	nss	nss	.1167272	0.124	.0823711	0.188
Industry dummies						
Agriculture (lag)	-.0568261	0.022	nss	nss	nss	nss
Agriculture	.0347738	0.358	nss	nss	nss	nss
Financial sector (lag)	.1687707	0.074	nss	nss	nss	nss
Financial sector	-.1807944	0.100	nss	nss	nss	nss
Public administration (lag)	nss	nss	.2801097	0.017	nss	nss
Public administration	nss	nss	-.4721861	0.004	nss	nss
Education (lag)	nss	nss	.1551038	0.009	nss	nss
Education	nss	nss	-.1309025	0.033	nss	nss

sidence change seems to have a certain negative effect on mobility. This result, however, should be treated carefully because the above models can point to the effect of the residence change on mobility after 5-6 years, being purely a long run effect. Here, it should be noted that normally only rich people can afford to change residence and that is why the dummy for the residence change may be correlated with incomes, which, in turn, have a very pronounced negative effect on mobility during the whole period. The negative effect of incomes on mobility is perfectly explained by the common logic: it is more troublesome for a rich person to become even more richer, while for a poor person it is easier to get richer than to become even more poorer.

Finally, significant coefficients in the section of industry dummies in periods 1986-1991 and 1991 — 1997 partially advocated the job competition model, which states that relative income positions of individuals are determined by the industry the person works in. This seems to be false in the last period, in which no coefficient in the industry dummies section was significant.

The last part of empirical results concerns the analysis of the longitudinal data series in the period

from 1997 through 2002. The estimated specifications are presented in the Appendix in Tables 31, 32, and 33. The estimated specifications seem to have bigger explanatory power, with Wald χ^2 ranging from 143.86 to 166.82, and higher z-statistics. The general results are summarised in Table 2 (see p. 26).

The obtained coefficients roughly support the conclusions obtained after the OLS estimation:

In the period from 1997 to 2002, the intensive adjustment of human capital factors took place, which means that the transition processes in the society have not stopped yet. For example, the returns on education seem to increase for more educated people than for the less educated, which is captured by the negative coefficient near the *Education* and the positive coefficient near the *Square of education*. Another specification including the *Type of education* pointed to the upward mobility of those who had obtained professional education and the downward mobility of those who had obtained vocational or bachelor-type education. So, we may conclude that professionally trained people with fundamental knowledge (proxied by the number of years of education) enjoyed positive mobility adjustment. Further, people speaking Eng-

Table 2. General results

Factors	Coefficient	p-value	Factors	Coefficient	p-value
Stratification factors					
Age (lag1)	nss	nss	City	-.0046747	0.004
Square of age (lag1)	nss	nss	Kyiv	.0192675	0.037
Gender	nss	nss	Education of mother	nss	nss
Human capital factors					
Education	-.0083071	0.069	Computer	.0570222	0.011
Square of education	.0014667	0.088	Health	.0088051	0.052
English	.0221825	0.044	Training (lag1)	nss	nss
German	nss	nss	Experience (lag1)	nss	nss
French	-.0592296	0.031	Square of experience (lag1)	nss	nss
Social events					
Residence change	.030877	0.130	Marital status	-.0121418	0.053
Salary (lag1)	-.0001322	0.000	Child	-.0461598	0.098
Marriage	.0689509	0.008			
Industry dummies					
Agriculture (lag1)	.0816756	0.020	Public administration (lag1)	nss	nss
Agriculture	-.0845509	0.016	Public administration	nss	nss
Industry (lag1)	nss	nss	Education (lag1)	nss	nss
Industry	nss	nss	Education	nss	nss
Electricity (lag1)	nss	nss	Service (lag1)	nss	nss
Electricity	nss	nss	Service	nss	nss
Sales (lag1)	nss	nss	Finances (lag1)	.0816756	0.035
Sales	nss	nss	Finances	-.24608	0.022
Transport (lag1)	nss	nss	Construction (lag1)	nss	nss
Transport	nss	nss	Construction	nss	nss

lish enjoyed upward mobility, while those who speak French suffered relative income losses. However, it should be noted that French is not very widespread in Ukraine and the majority of those who speak French are school teachers, whose relative incomes behaved ambiguously. The effect of using computer and that of having good health are positive and statistically significant at 5 % and 10 % significance level.

The adjustment of stratification factors was only partial because their adjustment must have taken place in the mid 90'. The only evidence that the stratification section provides is that the inhabitants of small cities enjoyed positive mobility in the period from 1997 through 2002, which goes in line with OLS estimation. Here, we can conclude that in the late 90's and the early years after 2000 the general convergence was observed across Ukrainian cities of different size with the only exception of Kyiv, whose inhabitants enjoyed a pronounced upward swing in their income status, which can be seen by observing statistically significant coefficient near the variable *Kyiv*.

All social events proved to be significant or marginally significant. In contrast to OLS estimation, the effect of residence change has marginally significant positive effect on mobility. The section of

social events also provides the intuition of how marriage influences the mobility of spouses. In the short run, the marriage stimulates to earn more, which is captured by the coefficient near the variable *Marriage*; however, it takes only some 5—6 years of the matrimonial life to offset the positive effect of getting married, after which the downward mobility of married people takes place. It is to be also noted that the number of children born during the observed period seems to exercise downward mobility on women.

Finally, the majority of industry dummies were insignificant, with two exceptions: *Finances* and *Agriculture*. Both exercised positive effect on mobility: the incomes of people engaged in the agriculture must have risen because they received relatively lower remuneration in the previous periods, while the incomes of those engaged in the Financial Sector seem to diverge upwards.

6. Conclusions

Our study was the attempt to look at income mobility in Ukraine during the transition period from 1986 through 2002. We approached the issue of income mobility by using a number of statistic and econometric tools which permitted us to draw

the conclusions about mobility direction and mobility intensity, about the behaviour of income movements of individuals located in different income quintiles, and, finally, to draw the conclusions about the individual factors which were important in explaining upward and downward income swings. Here, we summarise our findings.

The highest mobility intensity, or, put differently, the highest income turbulence was observed in the mid 90's. This was the period when people's skills and individual characteristics started getting reappraised by the labour market. Many of those who were among the poorest people in 1991 found themselves in the top income intervals in 1997. Such an increase in mobility intensity prevented the Ukrainian society from further growth of income inequality, which started to augment in the late 80's.

In the late 90's and the early years after 2000, the mobility intensity calmed down, and starting from that time, Ukrainians witnessed two parallel processes taking place — the formation of the dual labour market and the formation of middle class. These are two indicators of the developed society, so we may conclude that the pattern of income mobility that took place in Ukraine was highly beneficial for the Ukrainian society.

The analysis of factors that explain income mobility points to a gradual adjustment of stratification and human capital determinants. This means that the reappraisal by the market of different individual characteristics and skills did not happen instantaneously. The extensive adjustment process, or sim-

ply the reappraisal, of human capital determinants started in the late 90's and it is expected to continue.

During this process, many distortions were fixed. Among the primary ones come the levelling of incomes of women with men's and the levelling of incomes of those who live in small cities and large cities. People with better education and professional skills enjoyed the upward mobility thus re-establishing the natural status quo.

It can be claimed that mobility managed to smooth away a number of social issues, e.g. long run poverty. The income mobility in Ukraine increased the chances of poor people to leave their low-income status. This means that the problem of poverty did not look to have a chronic character.

The general conclusion to be made is that income mobility in Ukraine carries many beneficial features for the society and the only thing that is unsatisfactory about the mobility is its speed. Four calculated mobility coefficients pointed to a lower mobility intensity in Ukraine comparing to other European countries. Although it is possible that the data that we had at our disposal somewhat biased downwards our estimates of income intensity, the retarded adjustment of individual skills and characteristics signals that the mobility in Ukraine was indeed lower than it had to be for the transition process to pass quickly. The main application of this study for the governing authorities is to intensify income mobility in Ukraine, which can be achieved by the abolishing of the restrictions that limit mobility, e.g. the registration procedure.

APPENDIXES

Table 3. Transition matrix 1986 to 1991, %

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	68.66	19.02	6.52	3.80	1.99
Quintile 2	21.70	50.99	16.46	8.14	2.71
Quintile 3	5.25	18.12	48.19	18.84	9.60
Quintile 4	2.17	5.97	25.68	53.53	12.66
Quintile 5	1.99	5.98	3.44	15.58	73.01

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	53.44	23.02	13.76	5.03	4.76
Quintile 2	18.21	34.83	33.25	9.76	3.96
Quintile 3	10.55	18.47	30.61	30.87	9.50
Quintile 4	7.39	12.66	13.47	37.99	28.50
Quintile 5	10.32	11.11	8.99	16.40	53.17

Table 5. Transition matrix 1997 to 2002, %

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	51.63	31.37	7.52	7.52	1.96
Quintile 2	32.25	32.90	22.48	9.45	2.93
Quintile 3	9.77	24.43	36.16	24.10	5.54
Quintile 4	4.56	7.82	28.99	35.18	23.45
Quintile 5	1.63	3.59	4.90	23.86	66.01

Table 6. Mobility intensity analysis, %

Number of quintiles passed	1986-1991	1991-1997	1997-2002
-A	0,40	2,06	0,33
-3	1,63	3,70	1,63
-2	2,93	6,44	4,50
-1	16,22	13,31	21,92
0	58,87	42,00	44,36
+1	13,40	23,14	20,29
+2	4,85	6,60	4,50
+3	1,30	1,80	2,09
+4	0,40	0,95	0,39

Table 7. Mobility intensity analysis, '

Number of quintiles passed	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
-4	0,13	0,00	0,29	0,10	0,05
-3	0,55	0,45	0,24	0,05	0,38
-2	0,77	0,81	1,05	0,55	0,82
-1	10,54	10,23	12,68	10,51	9,39
0	77,00	78,22	71,54	78,54	78,59
+1	8,93	7,89	12,30	8,76	9,50
+2	1,15	1,94	1,47	1,20	0,99
+3	0,72	0,36	0,33	0,20	0,16
+4	0,21	0,09	0,10	0,10	0,11

Table 8. Prais-Shorrocks, Normalised Bartholomew, and Cramer's V indexes

Indexes	Ukraine				
	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
Prais-Schorrocks index	0.2875	0.2722	0.3557	0.2683	0.2675
Normalised Bartolomew index	0.1776	0.1651	0.2106	0.1644	0.1549
Cramer's V index	0.2753	0.2566	0.3315	0.2524	0.2538
	Germany				
	1994-1995	1995-1996	1996-1997	1998-1999	1999-2000
Prais-Schorrocks index	0.5387	0.5264	0.5271	0.5021	0.4945
Normalised Bartolomew index	0.3601	0.3489	0.3507	0.3428	0.3288
Cramer's V index	0.4898	0.4804	0.4813	0.4660	0.4552
	France				
Prais-Schorrocks index	0.4435	0.4481	0.4488	n/a	n/a
Normalised Bartolomew index	0.2752	0.2728	0.2800	n/a	n/a
Cramer's V index	0.4044	0.4061	0.4114	n/a	n/a

UK					
Prais-Schorrocks index	0.5512	0.5840	0.5180	n/a	n/a
Normalised Bartolomew index	0.3984	0.4267	0.3472	n/a	n/a
Cramer's V index	0.5149	0.5446	0.4763	n/a	n/a
Italy					
Prais-Schorrocks index	0.5615	0.5205	0.5226	n/a	n/a
Normalised Bartolomew index	0.3888	0.3571	0.3588	n/a	n/a
Cramer's V index	0.5206	0.4851	0.4867	n/a	n/a
Spain					
Prais-Schorrocks index	0.6148	0.5910	0.5967	n/a	n/a
Normalised Bartolomew index	0.4164	0.4050	0.4045	n/a	n/a
Cramer's V index	0.5495	0.5342	0.5363	n/a	n/a

Source: Kühl (2003) and own calculations based on the ULMS

Table 9. Fields and Ok mobility indexes for different countries

Ukraine	0.0614	France	0.166	Italy	0.278
Germany	0.192	UK	0.250	Spain	0.295

Source: Ayala and Sastre (2002). 1994/98 balanced panel; and own calculations based on the ULMS, 1997/98

Table 10. Fields and Ok decomposition for Ukraine and Italy, %

Countries	Growth component K	Transfers component T
Ukraine	69.5	30.5
Italy	39	61

Source: Regoli et al. (2003). 1993/2000; and own calculation based on the ULMS, 1997/98

Table 11. Average Exchange Rates of UAH to USD and DM, 1997-2002

Currency	1997	1998	1999	2000	2001	2002
USD	186.17	244.95	413.04	544.02	537.21	532.66
DM	107.61	140.69	224.63	257.12	246.11	–

Source: NBU

Table 12. Descriptive statistics, 1986-1991 years
Robust OLS

Variable	Obs	Mean	Std. Dev.	Min	Max
mob 91 Ir	2759	-.0449676	.4146782	-2.564412	3.309269
age 1986	8640	26.26895	16.60798	1	59
age 1986 sq	8640	965.8509	902.1452	1	3481
sex	8641	.4273811	.494727	0	1
city	8641	3.318713	2.012066	1	6
kyiv	8641	.0518459	.2217285	0	1
educ long	5645	2.83888	1.453026	0	9
educ long sq	5645	10.17015	9.42752	0	81
educ voc	8611	.3989122	.489703	0	1
educ_prof	8611	.155769	.3626572	0	1
educ_bac	8611	.0146974	.1203455	0	1
education~ot	8346	4.358855	2.807254	1	11
marr gain~91	8641	.0796204	.2707203	0	1
child worn 91	8641	.0964009	.3362198	0	3
inc86 a	3924	173.5479	132.0324	2	4000
english	8641	.0481426	.2140798	0	1
german	8641	.0138873	.11703	0	1
french	8641	.0054392	.0735542	0	1
health	8581	2.039273	.7235439	1	4
resid ch -91	8641	.1079736	.310365	0	1
expl986	6974	6.0499	9.302959	0	43

The continuation of the Table 12

Variable	Obs	Mean	Std. Dev.	Min	Max
expl986 sq	6974	123.1339	261.8522	0	1849
agricult1986	8641	.1205879	.3256666	0	1
agricult1991	8641	.0672376	.2504475	0	1
industry 1986	8641	.2050689	.4037753	0	1
industry 1991	8641	.1286888	.3348746	0	1
electric 1986	8641	.0197894	.1392839	0	1
electric 1991	8641	.0162018	.1262584	0	1
construe 1986	8641	.0384215	.1922226	0	1
construe 1991	8641	.0278903	.164668	0	1
sale1986	8641	.0869112	.2817212	0	1
sale 1991	8641	.0698993	.254992	0	1
transpor1986	8641	.0724453	.2592388	0	1
transpor1991	8641	.0506886	.2193737	0	1
financial 986	8641	.0134244	.1150899	0	1
financial 991	8641	.0093739	.0963697	0	1
public a1986	8641	.0357598	.1857013	0	1
public a1991	8641	.0237241	.1521971	0	1
educatio1986	8641	.132855	.3394376	0	1
educatio1991	8641	.1080893	.3105112	0	1
other sei 986	8641	.049647	.2172272	0	1
other sei 991	8641	.0372642	.1894195	0	1

Table 13. STATE ESTIMATION OUTPUT, 1986-1991
Robust OLS, Refined

Regression with robust standard errors

Number of obs = 2379
F(1 1,2366) =
Prob > F =
R-squared = 0.1100
Root MSE = .39097

mob 91 Ir	Coef.	Robust Std. Err.	t	P> t	[95 % Conf. Interval]
sex	.0829569	.0174562	4.75	0.000	-.048726 .1171879
city	.0090473	.0049047	1.84	0.065	-.0005706 .0186652
kiev	-.1305054	.0441564	-2.96	0.003	-.2170947 -.0439161
educ voc	.0445958	.0174403	2.56	0.011	.010396 .0787956
inc86 a	-.0012539	.0001438	-8.72	0.000	-.0015359 -.0009718
french	-.5359887	.0249662	-21.47	0.000	-.5849466 -.4870308
health	.0216578	.0130991	1.65	0.098	-.0040292 .0473448
resid ch ~91	-.068636	.0350549	-1.96	0.050	-.1373775 .0001056
agricult1986	-.0568261	.0247006	-2.30	0.022	-.1052633 -.008389
agricult1991	.0347738	.0378618	0.92	0.358	-.0394718 .1090195
financial 986	.1687707	.0944857	1.79	0.074	-.0165126 .354054
financial 991	-.1807944	.11002	-1.64	0.100	-.3965399 .0349511
cons	.0676853	.0324974	2.08	0.037	.0039589 .1314117

Table 14. Descriptive statistics, 1991-1997
Robust OLS

Variable	Obs	Mean	Std. Dev.	Min	Max
mob 97 Ir	1885	.0082789	.616839	-4.998161	2.521934
age 1991	8641	31.26895	16.60798	3	64
age 1991 sq	8641	1253.54	1062.621	9	4096
sex	8641	.4273811	.494727	0	1
city	8641	3.318713	2.012066	1	6
kyiv	8641	.0518459	.2217285	0	1
educ long	5645	2.83888	1.453026	0	9
educ long sq	5645	10.17015	9.42752	0	81
educ voc	8611	.3989122	.489703	0	1
educjrof	8611	.155769	.3626572	0	1
educ bac	8611	.0146974	.1203455	0	1
education~ot	8346	4.358855	2.807254	1	
marr gain~97	8641	.0847124	.2784694	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
child worn 97	8641	.0788103	.3064375	0	3
inc91 a	3339	202.942	337.1127	0	16000
english	8641	.0481426	.2140798	0	1
german	8641	.0138873	.11703	0	1
french	8641	.0054392	.0735542	0	1
health	8581	2.039273	.7235439	1	4
resid ch ~97	8641	.1097095	.3125454	0	1
expl991	6974	8.736593	10.97472	0	48
expl991 sq	6974	196.7552	357.3111	0	2304
agricult!991	8641	.0672376	.2504475	0	1
agricult!997	8641	.0675848	.2510465	0	1
industry 1991	8641	.1286888	.3348746	0	1
industry 1997	8641	.1181576	.3228133	0	1
electric!991	8641	.0162018	.1262584	0	1
electric 1997	8641	.0162018	.1262584	0	1
construe 1991	8641	.0278903	.164668	0	1
construe 1997	8641	.0282375	.1656602	0	1
sale 1991	8641	.0698993	.254992	0	1
sale 1997	8641	.073024	.2601909	0	1
transpor!991	8641	.0506886	.2193737	0	1
transpor!997	8641	.0488369	.2155395	0	1
financial 991	8641	.0093739	.0963697	0	1
financial 997	8641	.0099526	.0992705	0	1
public a!991	8641	.0237241	.1521971	0	1
public a 1997	8641	.0223354	.1477804	0	1
educatio!991	8641	.1080893	.3105112	0	1
educatio!997	8641	.1053119	.3069726	0	1
other sei 991	8641	.0372642	.1894195	0	1
other sei 997	8641	.0364541	.1874281	0	1

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Table 15. STATE ESTIMATION OUTPUT, 1991-1997
Robust OLS, Refined

Regression with robust standard errors

Number of obs : 1587
 F(7, 1579) = 5.51
 Prob > F = 0.0000
 R-squared = 0.1379
 Root MSE = .57374

mob_97 Ir	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
sex	-.0536404	.0310268	-1.73	0.084	-.1144984 .0072177
marr gain~97	.1167272	.0758713	1.54	0.124	-.0320919 .2655463
inc91 a	-.0005007	.0001582	-3.16	0.002	-.0008111 -.0001903
public a!991	.2801097	.1177246	2.38	0.017	.0491967 .5110227
public a! 997	-.4721861	.1632234	-2.89	0.004	-.7923435 -.1520286
educatio!991	.1551038	.0589869	2.63	0.009	.039403 .2708046
educatio!997	-.1309025	.0612851	-2.14	0.033	-.2511112 -.0106938
cons	.1197956	.0341608	3.51	0.000	.0527902 .1868009

Table 16. Descriptive statistics, 1997-2002
Robust OLS

Variable	Obs	Mean	Std. Dev.	Min	Max
mob 02 Ir	1519	-.0326785	.5042195	-2.718714	2.700051
age 1997	8641	37.26895	16.60798	9	70
age!997 sq	8641	1664.768	1257.114	81	4900
sex	8641	.4273811	.494727	0	1
city	8641	3.318713	2.012066	1	6
kyiv	8641	.0518459	.2217285	0	1
educ long	5645	2.83888	1.453026	0	9
educ long sq	5645	10.17015	9.42752	0	81
educ voc	8611	.3989122	.489703	0	1

The continuation of the Table 16

Variable	Obs	Mean	Std.Dev.	Min	Max
educjprof	8611	.155769	.3626572	0	1
educ bac	8611	.0146974	.1203455	0	1
education~ot	8346	4.358855	2.807254	1	11
marr gain~02	8641	.067932	.2516437	0	1
child worn 02	8641	.0561278	.2625943	0	6
inc97 a	2802	187.8995	184.3075	0	4000
english	8641	.0481426	.2140798	0	1
german	8641	.0138873	.11703	0	1
french	8641	.0054392	.0735542	0	1
comp 97 02	8641	.1536859	.3606683	0	1
health	8581	2.039273	.7235439	1	4
resid ch 9-2	8641	.0924661	.2896996	0	1
exp!997	6974	12.61557	12.84528	0	54
exp!997 sq	6974	324.1303	491.8824	0	2916
train98 02	8641	.069205	.253817	0	1
agricult!997	8641	.0675848	.2510465	0	1
agricult2002	8641	.0668904	.2498466	0	1
industry 1997	8641	.1181576	.3228133	0	1
industry2002	8641	.1173475	.3218526	0	1
electric 1997	8641	.0162018	.1262584	0	1
electric2002	8641	.0159704	.125368	0	1
construe 1997	8641	.0282375	.1656602	0	1
construc2002	8641	.0287004	.1669727	0	1
sale 1997	8641	.073024	.2601909	0	1
sale2002	8641	.0726768	.2596202	0	1
transport 997	8641	.0488369	.2155395	0	1
transpor2002	8641	.0482583	.2143239	0	1
financial 997	8641	.0099526	.0992705	0	1
financia2002	8641	.0098368	.0986975	0	1
public a!997	8641	.0223354	.1477804	0	1
public a2002	8641	.0223354	.1477804	0	1
educatio!997	8641	.1053119	.3069726	0	1
educatio2002	8641	.1053119	.3069726	0	1
other sei 997	8641	.0364541	.1874281	0	1
other se2002	8641	.0366856	.1879995	0	1

Table 17. STATE ESTIMATION OUTPUT, 1997-2002
Robust OLS, Refined

Source	SS	df	MS	Number of obs =	1203
Model	30.1956803	11	2.74506185	F(11, 1191)=	11.49
Residual	284.433993	1191	.238819473	Prob > F =	0.0000
				R-squared =	0.0960
				Adj R-squared =	0.0876
Total	314.629673	1202	.261755136	Root MSE =	.48869

mob 02 Ir	Coef.	Std. Err.	t	P> t	[95 % Conf. Interval]	
sex	.0082445	.029086	0.28	0.777	-.048821	.06531
city	-.0205769	.0071288	-2.89	0.004	-.0345633	-.0065905
educ voc	-.032027	.0341548	-0.94	0.349	-.0990373	.0349833
educ_prof	.0895945	.0445816	2.01	0.045	.0021273	.1770617
educ bac	-.1833296	.1151579	-1.59	0.112	-.4092646	.0426054
marr gain~02	.0823711	.062463	1.32	0.188	-.0401786	.2049208
inc97 a	-.0010116	.0001079	-9.37	0.000	-.0012234	-.0007998
german	.1569656	.1160214	1.35	0.176	-.0706634	.3845947
french	-.5555407	.1871947	-2.97	0.003	-.9228089	-.1882726
comp 97 02	.0804599	.0509498	1.58	0.115	-.0195015	.1804213
resid ch 9-2	-.1552537	.0533786	-2.91	0.004	-.2599803	-.0505272
cons	.2290662	.0374573	6.12	0.000	.1555766	.3025557

Table 18. DESCRIPTIVE STATISTICS, 1997- 2002

GEE

Variable	Obs	Mean	Std. Dev.	Min	Max
mob	10420	-.0087948	.2734149	-5.768921	4.659561
age 1	43205	39.26895	16.66732	9	74
age 1 sq	43205	1819.844	1327.691	81	5476
sex	51846	.4273811	.4947032	0	1
health	51846	2.039273	.7235087	1	4
city	51846	3.318713	2.011969	1	6
kyiv	51846	.0518459	.2217179	0	1
educ long	33870	1.854586	1.790122	0	9
educ long sq	33870	6.643966	9.026712	0	81
educ voc	51666	.3989122	.4896794	0	1
educ prof	51666	.155769	.3626397	0	1
educ bac	51666	.0146974	.1203397	0	1
education~ot	49974	4.343258	2.788647	0	11
comp	51846	.0283532	.1659814	0	1
english	51846	.1065849	.3085877	0	1
french	51846	.0126143	.1116038	0	1
german	51846	.0451337	.2075993	0	1
marr gain	51846	.0115342	.1067771	0	1
man-	51846	.5990819	.4900892	0	1
child worn	51846	.0093546	.1011519	0	2
inc 1	12387	220.9933	211.4975	1	8058.15
train 1	51845	.0105121	.1019892	0	1
exp 1	41844	14.59141	13.46751	0	59
exp sq 1	41844	394.2788	558.2304	0	3481
resid ch	51846	.0211974	.1440433	0	1
agricult	51846	.0711916	.2571471	0	1
agricult 1	43205	.0720518	.2585767	0	1
industry 1	43205	.1245689	.3302333	0	1
industry	51846	.1233654	.3288593	0	1
electric 1	43205	.0164101	.1270481	0	1
electric	51846	.0163368	.1267685	0	1
sale 1	43205	.0797361	.2708874	0	1
sale	51846	.0785596	.2690527	0	1
transpor 1	43205	.0506654	.2193161	0	1
transpor	51846	.0502642	.2184918	0	1
public a 1	43205	.0228214	.1493356	0	1
public a	51846	.0227404	.1490762	0	1
educatio 1	43205	.1077422	.3100581	0	1
educatio	51846	.1073371	.3095444	0	1
other se 1	43205	.038815	.1931559	0	1
other se	51846	.0384601	.192306	0	1
construe 1	43205	.0308298	.1728583	0	1
construe	51846	.0304749	.1718916	0	1
fmancia	51846	.0104155	.1015243	0	1
financia 1	43205	.0105312	.102081	0	1

Table 19. STATA ESTIMATION OUTPUT, 1997-2002

GEE, Refined

GEE population-averaged model			Number of obs =	8817	
Group variable:		v1	Number of groups =	2593	
Link:		identity	Obs per group: min =	1	
Family:		Gaussian	avg =	3.4	
Correlation:		exchangeable	max =	5	
			Waldchi2(21) =	149.40	
Scale parameter:		.0770118	Prob > chi2 =	0.0000	
mob	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
age 1	-.001547	.0015305	-1.01	0.312	-.0045466 .0014527
age 1 s^	.0000202	.0000171	1.18	0.237	-.0000133 .0000538
sex	.0034611	.0057996	0.60	0.551	-.007906 .0148281
health	.0088051	.0045272	1.94	0.052	-.0000681 .0176783

The continuation of the Table 19

mob	Cof.	Std. Err.		P> z	95% Conf.	Interval
city	-.0046747	.0016405	-2.85	0.004	-.0078901	-.0014593
kviv	.0192675	.0092318	2.09	0.037	.0011735	.0373614
educ long	-.0083071	.0045713	-1.82	0.069	-.0172667	.0006524
educ long sq	.0014667	.0008596	1.71	0.088	-.0002182	.0031515
comp	.0570222	.0223388	2.55	0.011	.0132388	.1008055
english	.0221825	.0109939	2.02	0.044	.000635	.0437301
french	-.0592296	.0274104	-2.16	0.031	-.112953	-.0055061
german	.0087587	.014468	0.61	0.545	-.0195981	.0371155
marr gain	.0689509	.025872	2.67	0.008	.0182427	.119659
marr	-.0121418	.006276	-1.93	0.053	-.0244426	.000159
child worn	-.0461598	.0278621	-1.66	0.098	-.1007686	.0084489
inc l	-.0001322	.0000139	-9.52	0.000	-.0001594	-.000105
resid ch	.030877	.0203947	1.51	0.130	-.0090958	.0708498
agricult	-.0845509	.0351174	-2.41	0.016	-.1533797	-.0157222
agricult l	.0816756	.0350339	2.33	0.020	.0130105	.1503407
financia	-.24608	.1071399	-2.30	0.022	-.4560704	-.0360897
financia l	.2273339	.1076265	2.11	0.035	.0163899	.438278
cons	.0484015	.0345843	1.40	0.162	-.0193825	.1161855

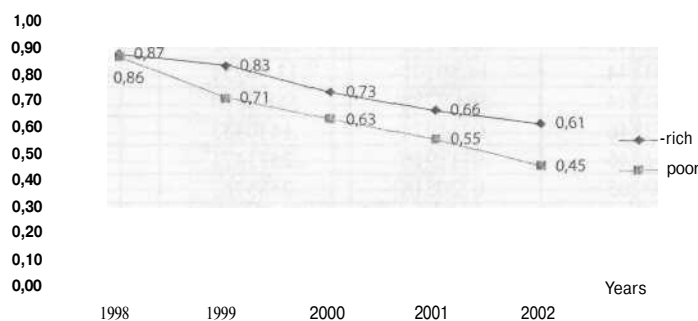


Fig. 1. Kaplan-Meier survival analysis, 1997-2002 years

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ТРАНСФОРМАЦІЯ СУСПІЛЬСТВА В ПЕРЕХІДНИЙ ПЕРІОД: МОБІЛЬНІСТЬ ДОХОДІВ В УМОВАХ УКРАЇНИ

У статті проаналізовано мобільність доходів в Україні за допомогою ряду статистичних та економетричних інструментів. Ця проблема досліджується як на макро-, так і на мікроекономічному рівнях. Розглянуто напрямки руху та інтенсивність мобільності, зміни доходів людей у різні доходні інтервали, а також індивідуальних навичок і характеристик у перехідний період.