INTERNAL LABOR MIGRATION
IN UKRAINE:
EVIDENCE FROM
INDIVIDUAL LEVEL DATA

by

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Abstract

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This study drawn the portrait of internal labor migrants in Ukraine based on 2012 LFS data. Results show that interregional labor migrants in Ukraine are more likely to be young men from rural area with complete secondary education. Regional disparities were found to determine most of the intragerional movement of internal labor migrants. We observe that internal labor migrants face negative selection in employment conditions. They are 5.9% less probable to be employed with written contract rather than oral contract and work on average for 4.6 hours more than nonmigrant. Moreover, their chances to be permanently employed are less by 10.6% comparing to nonmigrants. Therefore, internal labor migrants face the risk of "bottom trap" due to rigidity of labor market and policy aimed at programs targeting less skilled workers and improving government labor market institutions and liberalization of employment legislation is needed.

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GLOSSARY

Labor force survey (LFS). Survey of Ukrainan population about their economic activity performed by State Statistics Service.

Internal labor migrant. Individual who crosses the border of administrative unit of their permanent residence inside the country with a purpose of employment.

C h a p t e r   1

INTRODUCTION

Internal migration is considered as playing a significant role in improving labor market outcomes and eliminating regional disparities in unemployment and wages. According to Ezzeddine (2011) labor mobility enhances European labor market, particularly by lowering unemployment. He suggests that mobility within the Union should be guaranteed and encouraged. Kahanec (2012) concludes that mobility of labor provides for "an improved allocative efficiency of European labor markets, a higher innovation potential, increased utilization of resources and their higher productivity, and the resulting fiscal relief for EU" and migrants themselves receive benefits of migration net of migration costs. The important question is how to manage migration activity effectively. Understanding, which factors are drivers of making migration decision, can be helpful in that.

Recent reports and research devoted to the Ukrainian internal migration and labor market outcomes point to low internal mobility of labor. According to Babenko et. al (2012) and Kupets (2012) mobility of Ukrainians inside the country is very low despite income and labor market differences across regions. In addition, workers do not necessarily choose regions with better labor market conditions when migrate internally. Thus, internal migration in Ukraine is concluded to be ineffective and does not eliminate regional disparities in unemployment or wages. Studying internal migration in Ukraine could reveal problem, that should be addressed to facilitate internal mobility in Ukraine.

Studies in Ukraine on the topic are mostly based on the district-level administrative data (inflows, outflows of people from large regions) on

registration by the place of permanent residence. According to The Law of Ukraine people are obligated to register in 10 day period on a new place of residence. In practice re-registration requires a lot of documents, so, it is a burdensome and time-consuming procedure. Thus, there is substantial evidence (World Bank report, 2012) that people do not bother to document well their internal (and often even external) reallocations. Thus, official administrative data are not accurate since unregistered movements are not accounted by them. This issue is also discussed in Voznyak (2008). He suggests using individual and household surveys data in micro-level investigations of internal migration decision-making and used ULMS data in particular. Studying determinants of internal migration with the individual level data can provide more accurate picture and put new light on the issue.

More important is that migration statistics, official or ULMS data, reports may reflect movements of the population, which are not necessarily driven by an employment opportunity. Such movements can be related to other important life-cycle events such as gaining post-secondary education, marriage or divorce, birth of a child, moving in/out from parents or relatives, retirement, improvement of housing conditions, and others (Kupets, 2012).

This study is going to add to our understanding of the Ukraine economy functioning by using recent data of Labor Force Survey and considering labor migrants in particular. From LFS data we can distinguish people who work at the place of their permanent residence, who commute within the region of residence (oblast) and those who have their work in the other than residence region. The last group of workers is treated as internal labor migrants in this investigation and we consider migration theories, which can explain their decision-making. We are going to define factors determining different spatial movement of people induced

by new employment opportunities. Factors of internal labor migration decision-making and propensities to migrate internally for different demographic group will be estimated by using logit/probit techniques. Therefore, we aim on answering the following questions in this work: Who are internal labor migrants? What kind of selection is present for internal labor migration? The results obtained will give a possibility to compare determinants of internal migration in Ukraine with theories predictions and other empirical studies results.

LITERATURE RIVIEW

In general, internal migration is defined as a movement of people from one area of a country to another for the purpose or with the effect of establishing a new residence (IOM, 2004).

In this study we define that internal labor migrant is an individual who crosses the border of administrative unit of their permanent residence (interregional movement) inside the country with a purpose of getting employment there. It is supported by an assumption that in such situation people cannot simply commute daily, they probably have to stay at the place of work at least for a working week and to have some housing and established living conditions there. While commuter is the one who moves to a place of work within the boundary of the region of permanent residence (intraregional movement). We assume it is primarily rural-to-urban migration. Decision to go for work in another region for farer distance obviously requires some evaluation by an individual as it brings additional cost comparing to working at home or commuting in our definition. In this perspective it is reasonable to consider migration theory in explaining such migration decision. So, it can be considered as an individual labor migration decision making. Additionally, economics does not refer to decision making process or selectivity issues in studies of commuting. Commuting is rather an object of urban economics.

In this definition of internal migrant few issues can arise. The main is that individuals that live cross to the border of an administrative unit (oblast) can go to the close one for short distance. If we cannot distinguish them, such cases

weaken our assumption. However, treating all these types of internal spatial reallocation as a commuting event is a strong assumption either. Ideally, if we could access rayon level data on residence and place of work we would calculate exact distance and make more realistic assumption.

Migration is a multilateral process that can be studied from macro and micro perspectives. Macroeconomic theories study migration flows between countries or large regions while microeconomic theories try to explain migration as an individual decision making process. This work is going to focus on the micro level.

First considerable contributions for explaining migration were made by Ravenstein (1876-1889). In his three articles he develops major conclusions about migration, which are stated as Laws of Migration. They are rules reflecting the motivation of migrants. Laws of Migration served as a basis for a lot of latter theories and are being proved until now. Among his main conclusions are the following (D. B. Grigg, 1977):

- The majority of migrants move only for a short distance and prefer centers of commerce or industry as their destination;
- Migration proceeds step by step: from rural areas – to urban, from small towns – to bigger cities ;
- City-dwellers are less migratory than residents of rural areas;
- Females are more prompt to migrate within the country than males;
- Most migrants are single adults, and families rarely migrate out of their county of birth;
- Migration increases in volume as industries and commerce develop and transportation improves;

- The major direction of migration is rural-to–urban;

- The major causes of migration are economic.

Further theoretical development has not contributed to the formation of one theory of migration. Several theories and models emerged, but they can only be grouped according to a general framework. Some of them are mostly applicable to international migration and cannot be used effectively to discuss internal migration.

The general approach to migration was developed by Lee (1966). According to his "push-pull" theory, migration results from various spatial social and economic differences encouraging people to move from less to more attractive areas. Four groups of "push-pull" factors what influence the process of migration can be distinguished:

- Characteristics of area of origin

- Characteristics of area of destination

- Intervening obstacles

- Personal factors

Greenwood (1997) makes a detailed literature review on micro-level studies of migration. He suggests that all economic models of migration can be viewed from the disequilibrium or equilibrium perspective. Disequilibrium perspective assumes that differentials in wages and employment conditions between regions results in potential utility gains from migrating for individuals. Such disequilibrium is considered as the most influential factor of migration. The second approach uses assumption that households and firms are in equilibrium at every point of time. All spatial variations in wages are compensated by prices and

as a result do not reflect opportunities for utility gains that can be obtained from migration. Thus, those regional differentials that remain uncompensated after controlling for income differentials across regions represent utility differentials, which appear from migration.

These two aggregated approaches imply that in the empirical analysis we should account for regional economic characteristics such as wage or income variables, unemployment rate, and various regional services.

From the micro perspective it is the household that should be an object of migration study. This approach is developed by Mincer (1978). Migration decision affects the entire family of a migrant rather than a particular individual. It affects their total income and can cause reallocation of the whole family to a new place of residence. So, it is family that can be treated as the relevant decision-making unit.

Based on this view the New Economics of Migration was developed by Stark and Bloom (1985). They claim that migration decision is not made by a person individually, but by a group of people close to the migrant, mostly family. According to this theory income maximization of the household is a strong motive for migration, but it can be insufficient. Diversification of the risk is more powerful determinant of migration for a household.

In practice, conducting studies with families as decision-making units encounters a lot of difficulties. The main question is how to distinguish individualistic and family decisions. The individual level study allows to consider the influence of family-related factors as well, at the same time it avoids complications and can cover a wider range of other factors.

All theories of migration assume that variations in expected utility driven by monetary/nonmonetary factors motivate migration decisions. Using this approach Harris-Todaro (1970) shows that income differentials and probability to find a job are the main factors of a migration decision. But they cannot explain why under the same conditions in mentioned factors some people choose to migrate while others do not. At this point Harris-Todaro theory is tangent to human capital theory of migration. Sjaastad (1962) starts to develop it. He looks deeper in the migration decision-making process. An individual faces monetary and nonmonetary benefits and costs of migration. Thus, a person decides to move if the value of benefits of migration is higher than the cost. Sjaastad concludes that non-monetary factors often exceed monetary ones. According to the classic human capital theory (Becker, 1975) perspective migrants look not only at a higher income level, but also at career perspectives and skills upgrading and they can consider labor migration as an investment in their human capital. Thus, human capital theory of migration defines personal characteristics and subjective evaluation of factors as a key decision making determinants. Empirical studies also show that differential in income is not always a key motivation factor. Greenword (1997), Etzo (2008) does not find any clear evidence in literature that wage differential plays the main role in migration decision.

Individual characteristics are recognized to play a role in determining propensity to migrate. Etzo (2008) points out to selective influence of demographic factors though all relevant literature. Gender differences in migration propensities were mentioned by Ravenstein (1876-1889). Since then selectivity of demographic characteristics were supported with many empirical findings. In particular Sahn and Herrera (2013) conclude that young women are more likely to migrate internally, and more over the determinants of migration are different for men and

women. Mitra and Murayama (2008) find that in India women and men migration is correlated, probably women follow their husbands' migration. Female interregional migration rate are substantially high.

Probability to migrate also varies with age. Greenwood (1997) and Etzo (2008) state that age and marital status are among the most influential factors. Single people, without children in age 20-30 are more likely to migrate according to Finnie (2004), Ackah and Medvedev (2010), Etzo (2008).

Education is one of crucial factor: it was shown that propensity to migrate increases with education. In Ghana more educated individuals from communities with a lower average level of education are more prompt to migrate (Ackah and Medvedev, 2010). It was estimated that in Italy regional migration rate increases with higher education acquisition (Etzo, 2008). Thus, internal migration facilitates spatial inequalities in education levels by lowering the concentration of educated people in the origin communities with worse working conditions.

Another step in analyzing migration is including of contextual variables. The hypothesis is that such regional characteristics as climate, ecology, public services, culture, and crime situation influence decision to migrate. The problem of such variables is that it is hard to measure them. Cromartie and Nord (1997) estimate that good weather conditions positively affect moves to a particular region. Goets (1999) conclude that public services such as schooling, medical services, infrastructure and cultural institutions are among crucial for migration decision to cities.

Regarding modeling approach, logit/probit method is the most spread and useful for this kind of micro level study. Most of the analyzed paper including Finnie

(2004), Greenwood (1997), Voznyak (2008), Ackah and Medvedev (2012) recommend and use it.

Most recent empirical studies on the topic were devoted to developed countries and there are very few studies for transition economies due to the lack of the appropriate data. There are studies for developing countries of Asia and Africa, but their results cannot be very relevant for Ukraine due to substantial economics and cultural differences. We can learn about methodology from them.

There are district-level flow analyses for Ukraine. Kupets (2012) analyzes patterns of internal migration and applied gravity model using official data on changing place of residence. Voznyak (2008) performs individual-level data analysis of internal migration decision-making using the Ukrainian Longitudinal Monitoring Survey (ULMS) of 2003 and logit model estimation. We can use his findings as expected for our study. In particular he found that probability to migrate is higher among men; decreases with age; increases with educational attainment. These results are consistent with the literature. Some findings are not so obvious: marital status is positively related to migration decision for women and has no influence for men; married young people migrate more often than non-married persons of the same age; there is positive correlation between the number of children under 15 and migration probability for men but not for women; previous migration experience has unexpected negative effect on migration probability; unemployed men and inactive women move more; and settlement type matters for migration decision.

Therefore, the existing literature on the topic provides guidance for this study. In particular it suggests including individual characteristics to account for migration selectivity process, regional characteristics to estimate "push-pull" factors, especially wage rates to consider income motivation. As a modeling approach,

logit/probit is recommended. Literature review shows lack of relevant studies for Ukraine or transition economies, what additionally motivates this study.

This study extends existing findings on Ukrainian internal labor migration by examination of wider range of factors affecting migration decision-making and using the most recent individual level data about economic activity of Ukrainian population. Additionally, it tries to capture some evidence on selection of internal labor migrants.

DATA DESCRIPTION

Database for this research is a data of Labor Force Survey (Employment Household Sample Survey) conducted by State Statistic Service in 2012. Regional level data used in this research are the official data of State Statistic Service of Ukraine.

Dependent variable of interest in investigating such migration decisions is reflected in LFS question: "where place of your work, occupation is located?". It suggests the following answers for respondents: (1) In an inhabited locality, where you live – 16`975 obs. Corresponds to $y_i=1$ for our specifications. (2) In the other inhabited locality, but within the oblast – 2630 obs. Corresponds to $y_i=2$. (3) In the other type of the populated locality, beyond the boundaries of an oblast, but on the territory of Ukraine – 480 obs. Corresponds to $y_i=3$. Such treatment of this variable is used in specifications (4) and (5).

This survey considers individual migration omitting cases, when the whole family is moving. Questionnaire can be answered by a representative of the family on behalf of the one who is absent. Consequently residence of the family is considered as a permanent residence of a labor migrant. If all family members are reallocating, survey does not capture event of this kind of internal migration. Therefore, his study looks at individual internal labor migration, as it was mentioned. LFS is national and the survey sample is claimed to be representative of the whole population.

We constructed dataset that consists of all employed individuals, who are wage workers. In order to obtain such a sample unemployed, self-employed individuals and those who work abroad were dropped. This sample has 20`085 observations. Additionally we distinguish interregional labor migrants (480 obs.) versus non-migrants (19`602 obs.).

We observe some patterns for individual characteristics depending on the spatial type of employment. The average age of commuters of both types is lower than the sample`s one. Men and married individuals are the majority among commuters. The analysis of respondents' educational level shows that most commuters are with secondary education and there are less people with higher education among them than on average in sample. Intraregional commuters are mostly from rural areas and from Western Ukraine, while interregional ones are representatives of Northern part of the country and do not have majority in any type of area. The full descriptive of individual characteristics of the sample is provided in Table 1.

Family characteristics of individuals of the sample are presented in the Table A1. Based on this information it is hard to claim about some unconditional patterns. Distribution of internal labor migrants on different family sizes follows general pattern of the sample. The same situation is with the number of elderly in the household. We can observe small difference in the distribution on number of children in the family. There are higher share of workers with 1 child among internal labor migrants than all employed, 30% versus 26%. While share of childless people is less for 4%, 55% versus 59%.

Table 1. Descriptive statistics of individual characteristics

	All employed	Intraregional	Interregional
Groups of age, % of total in a group			
15-24 years	7.59	10.89	14.91
25-29 years	11.58	14.54	14.29
30-34 years	11.69	11.33	11.80
35-39 years	13.21	11.74	15.32
40-49 years	28.64	28.50	26.29
50-59 years	23.73	20.89	15.53
60-70 years	3.55	2.10	1.86
Age mean, years	41.13	39.48	37.75
Age range, years	15-70	18-70	18-65
Gender			
Female	49.01	40.13	28.99
Male	50.99	59.87	71.01
Education, % of total in a group			
Complete higher	27.83	19.12	18.22
Base or incomplete higher	23.29	22.04	18.01
Complete secondary	45.06	54.60	61.08
Basic secondary or primary general	3.82	4.25	2.69
Area, % of total in a group			
Urban	68.32	29.94	52.59
Rural	31.68	70.06	47.41
Territorial zone, % of total in a group			
North	18.36	14.95	51.97
Centre	12.76	9.78	13.66
South	15.85	9.97	3.93
East	27.14	24.92	7.45
West	25.89	40.38	22.98
Marital status, % of total in a group			
Married	67.00	64.67	60.46
Unmarried	16.97	21.37	27.33
Separated+widowers	16.03	13.96	12.21

Another section of data to be analyzed is regional level data. Descriptive statistics of such variables is in Table A2. Because of the survey design we can only observe the oblast of residence of a person, but not at lower level as rayon. So, unemployment rates and average wages for oblasts, Kyiv, Crimea and Sevastopol in 2012 are analyzed. Given the fact that LFS was performed in May-July 2012, we use an assumption that average annual data reflected the general tendency and patterns. At first we examine regional distribution of interregional commuters. It is very clear that internal labor migration is concentrated near the capital city Kyiv. This city is the destination point for 76.5% of the labor migrants, and 31.5% are from Kyiv region. The regional data show that Kyiv has the highest wage in 2012 – 4607 UAH, and the lowest unemployment rate – 5.5%. The lowest wage is in Ternopil region – 2185 UAH, the lowest unemployment rate is 9.9% in Rivne, Ternopil, Chernihiv regions. Those regions are not quite attractive as the destination for internal migration. Average values for Ukraine are 3026 UAH and 7.5% respectively.

Table 2. Descriptive statistics of employment characteristics

	All employed	Intraregional	Interregional
Employment type by period, % of total in a group			
Permanent	5.83	5.51	19.56
Temporary	94.17	94.49	80.44
Type of agreement, % of total in a group			
Written labor agreement	89.79	89.85	75.42
Oral agreement	10.21	10.15	24.58
Time worked, hours			
Time worked plan	39.89	40.17	43.64
Time worked fact	38.83	39.07	40.71

At the next stage of data analysis employment available conditions of employment were analyzed. Data in Table 2 demonstrates that labor migrants rarely have permanent job and written labor agreement, they also work more hours and variance between planned and actual worked time is larger for labor migrant. Moreover, these differences are more substantial for interregional labor migrants. It can be concluded that workers that move from their place of residence to work in other regions are worse off in terms of mentioned employment conditions. This is very important observation, so, t-test was performed to test whether differences in employment conditions for internal labor migrants and nonmigrants are statistically significant. T-test results approve that discussed differences are statistically different from zero (see results in Table A3).

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METHODOLOGY

Interregional internal migration is the focus of this study. It is characterized as temporal individual migration with a primary purpose of employment.

Modeling approach for defining determinant of migration decision is a multinomial and binary logistic model framework. Sample that is going to be used in empiric analysis has only 2.4% realization of an event of migration. So, we are going to use relogit estimations – model for rare event data, as a robustness check. Relogit technique was developed by King et al. (2001). This model has some drawbacks: not reporting significance of the models, complication with obtaining marginal effects. However, it gives opportunity to compare results of standard logit estimates and rare event logit model.

Dependent variable in the model reflects the probability of an individual to become a labor migrant inside the country, in particular whether an individual chooses between working at the place of their current residence (including commuting within the region) or move to some other place to work there.

Based on theory and previous research findings we suggest using three blocks of variables as regressors: individual, family characteristics and regional characteristics. Those are factors that account for costs and benefits of labor migration. Some factors can reflect both cost and benefits, so their estimation is the total effect on migration probability.

Dependent dummy variable was generated from the survey data. It has outcome 1 if person works in oblast other than registered residence, 0 – otherwise. Binary regression estimating person`s propensity to be a labor migrant has the following form:

$$\ln\left(\frac{P(y_i=1)}{P(y_i=0)}\right) = a_0 + A_1 * X_1 + A_2 * X_2 + A_3 * X_3 + \varepsilon_i \qquad (1)$$

Here X_1 is an individual characteristics matrix (sex, age, marital status, education, area of residence), X_2 – household characteristics matrix (family size, number of children under 15 years, number of elderly above 70 years in the family), X_3 – matrix of regional variables (wage, unemployment in oblast of place of work, dummy for macroregion of origin);

We can use multinomial logistic model as well to determine propensity of an individual to migrate intraregionally or to have a job in other region rather than work at the territory of origin. The dependent variable has three possible outcomes: outcome 1 if individual works in a locality, where he lives; 2 if place of his work is in some another locality, but within the oblast; and 3 if he works in another type of locality beyond the boundaries of the oblast.

Regression equation is the following:

$$\ln\left(\frac{P(y_i=2 \; or \; 3)}{P(y_i=1)}\right) = a_0 + A_1 * X_1 + A_2 * X_2 + A_3 * X_3 + \varepsilon_i \qquad (2)$$

Here, similarly, X_1 – individual characteristics matrix (sex, age, marital status, education, area of residence), X_2 – household characteristics matrix (family size,

number of children under 15 years, number of elderly above 70 years in the family), X_3 – dummies for macroregion of origin.

Individual characteristics help to correct for heterogeneity and play a role of proxies for some parameters. We include gender, age, marital status and level of education. Age is a rough proxy for work experience. It also reflects some nonmonetary cost of migrating. The probability of internal is expected to increase with age, but at a decreasing rate. Estimates of gender effect on probability of being internal labor migrant vary in empirical studies for different countries due to various cultural differences. Education is implied to capture earning and employment potential of a labor migrant. Another control variable is a dummy for urban/rural area.

Household characteristics are called to reflect ties to the family like necessity to look after kids or old people and ties to the place of residence as a result. According to the theory, being married or having family members who need some care increases cost of labor migration and also reflects possible physiological pressure and need to visit family. All these make people more reluctant in migrating. Yet empirical result are often opposite (Vozniak, 2008; Ackah, Medvedev, 2012).

Regional discrepancies that affect internal migration decision include average wage and unemployment rate in the region of origin and place of work. As it was mentioned, we can access only oblast level wages and unemployment rates. Difference in these parameters between origin and destination points occurs only in the case of going to another oblast for a work (outcome 1 in dependent variable). Thus, variation is present only for internal labor migrant. It can cause difficulties in logit model convergence. In such case maximization options or

restriction in iteration can be applied. Since we observe individuals after decision to migrate was realized and we do not know in what point in time it was done, reasonable solution can be to include wage and unemployment at region of work only. While each migrant decides based on individual opportunities, regional average characteristics play a role of proxies for particular labor market conditions the migrant is facing. Since regional average wage and unemployment rate do not correlate with other individual's characteristics (including unobservables) in this way the endogeneity between migrant's decision and working conditions is removed.

Thus, our final regression specification equations for this section are:

$$ln\left[\frac{p(y_i=3)}{1-p(y_i=3)}\right] = a_0 + a_1 * male + a_2 * age + a_3 * age^2 +$$
$$A_4 * edu + a_5 * urban + a_6 * mar + a_7 * fsize + a_8 * \quad\quad (3)$$
$$nkid15 + a_9 * nold + A_{10} * Reg + a_{11} * unempDes + a_{12} *$$
$$wageDes + \varepsilon_i$$

$$ln\left[\frac{p(y_i=2\ or\ 3)}{p(y_i=1)}\right] = a_0 + a_1 * male + a_2 * age + a_3 * age^2 +$$
$$A_4 * edu + a_5 * urban + a_6 * mar + a_7 * fsize + a_8 * \quad\quad (4)$$
$$nkid15 + a_9 * nold + A_{10} * Reg + \varepsilon_i$$

Here *male* is dummy with value 1 for individuals of male sex, 0 for females; *age* and a*ge²* – age and its squared term; *edu* – category of educational level from 1 to 4: basic secondary or primary general, complete secondary, base or incomplete higher, complete higher; *urban* – dummy with 1 for urban citizen, 0 for resident from rural area; *mar* – marital status with 1for married individuals, 0 for not married, separated or widowed ones; *fsize* is the number of members in the family

of worker; *nkids* – dummy with a value 1 if children under 15 years are present in the family of an individual, 0 otherwise; *nold* – dummy with a 1 if elderly is present in the family of an individual, 0 otherwise; *Reg* – macroregion of residence with values from 1 to 5: North, Centre, South, East and West of Ukraine respectively; *unempDes* – unemployment rate in the region of work; *wageDes* – average wage level in the region of work; ε – error term.

Descriptive statistics without taking into account the effect of other factors shows that internal labor migrants are worse off in terms of employment conditions such as type of employment, job agreement comparing to all workers. Migrants also work more hours usually and actually on the surveyed period, overwork 40 hours, moreover, difference between planned and actual worked time is larger for labor migrant. Theory suggests people move to other place to work while there are some monetary or other benefits to offset migration cost. Here we observe that migrant workers get worse conditions compare to other workers, what is likely to suggest some negative selection.

As a next step we check whether being an internal labor migrant affects one`s employment conditions we use logistic and OLS regression. Endogeneity problem can appear again in this specification, because we do not know in particular whether migration decision was made observing employment conditions or not. Thus, there can be reverse causality or simultaneity between employment conditions and migrant status dummy. To solve this problem predicted values of probability to migrate internally are used instead of realized values. In such a way we instrument migrant status with factors that affect migration decision, but do not influence employment conditions outcome. Such factors are family characteristics and regional variables from equation (1). Using predicted values allows excluding unobservable factors which can influence both

migration decision and employment conditions. Additionally occupation group is added to individual characteristics variables vector.

Model specification:

$$Y_i = b_0 + b_1 * X + b_2 * E + b_3 * M + \varepsilon \qquad (5)$$

Here, Y_i is the type of employment (permanent, temporary), or type of contract (oral, written), or actual hours of working time. X is an individual characteristics matrix (sex, age, area of residence, education, occupation), E – employer characteristics matrix (size of an enterprise, organizational form, type of economic activity), M – predicted values of probability of being internal labor migrant.

We are interested in significance and value of migrant dummies. Positive significant values support hypothesis build based on descriptive statistics that migrants are worse off in term of employment condition.

C h a p t e r   5

RESULTS

At first let`s consider estimation of a propensity to migrate interregionaly using only personal and household characteristics and then adding regional level variables. Standard logit technique is considered to conduct this analysis (see Appendix B). Marginal estimates of the models are obtained as average marginal effect of logit regression. It estimates the mean marginal effect for the population. The choice of average marginal effects, but not marginal effect at means, is motivated by major presence of dummy variables. Average predicted probability of internal labor migration event of 2.4% should be considered while discussing marginal effects.

It can be concluded that dependence of probability to migrate internally on age does not follow quadratic form, since *age* variable and its squared term are insignificant (see column 1,3 and 5 in Table B1). In specification with only *age* variable it becomes significant and other variables are not affected in terms of their significance. Thus, specification without squared term of age is considered in further analysis.

Obtained results are robust to rare event logit estimates. Results for relogit robustness are presented in Table B2. All variables remain their level of significance and coefficients are sufficiently close.

Let`s examine average marginal effects of discussed variable, which are presented in Table 3 and in Table B3 with more extended output. Most results are consistent with theory and related studies (Kupets, 2012; Voznyak, 2008). In

particular, the propensity to migrate decreases with age. If a person considers labor migration as an investment and accounts for total future benefit of generating higher income for some period of work, definitely younger people have higher lifetime expected returns, while older people have lower expected benefits . Moreover, it was shown that they have higher cost of migrating due to higher difficulty of finding job and psychological factor (Sahn and Herrera, 2013).

Table 3. Average Marginal Effects of logit estimates of probability to migrate internally

Variable	Margins	t-statistics
Male	0.00879***	(-4.78)
Age	-0.000234***	(-2.77)
Urban	-0.0263***	(-10.83)
Marital status	-0.00238	(-1.16)
Family size	0.00190**	(-2.45)
Kids dummy	-0.00189	(-0.84)
Elderly dummy	0.00294	(-1.06)
Level of education		
Complete secondary	0.00893*	(-1.68)
Incomplete higher	0.00574	(-1.03)
Complete or base higher	-0.00602	(-1.08)
Unemployment rate	-0.0170***	(-8.00)
Log of wage	0.124***	(-11.39)
Region of residence		
Centre	0.0571***	(-10.31)
South	0.0103*	(-1.75)
East	0.00612	(-1.57)
West	0.0526***	(-10.18)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Base cases: *edu* – basic secondary or primary general, complete secondary; *Region of residence* – North macroregion

Urban citizens are less likely to go for a job to other region and effect is very strong – 2.6%. Obviously, it is the city that attracts labor migrants and migration is directed to urban centers. This fact has been approved since the first studies of migration processes.

Probability to migrate is also higher among men in all specification. If individual is a male his probability to migrate is 0.8% higher than the one for a female holding other variables constant. It is quite a high value accounting for 2.4% average propensity for the sample. This finding is contrary to Kupets (2012) estimates that in Ukraine women are more likely to commute intraregionally and migrate for a work to other region.

People with full secondary education are more likely to migrate compared to those ones with basic secondary education or lower for 0.9%. Marginal effects of higher levels education dummies are insignificant and lower economically. Thus, obtaining advanced education does not contribute to the decision to migrate internally. This finding is somewhat unusual, because mostly probability of migration increases with the level of education. However, it echoes the findings of the World Development Report (World Bank, 2012b) as well as the most recent results for international migration of Ukrainians (Vakhitova and Coupe, 2013). Probably people with higher education do not see much job perspectives in reallocation. This conclusion supports our hypothesis of negative selection of internal migrants

Marital status appears to be insignificant. It is not a driver of monetary cost, since we look at individual migration only and there is no cost associated with family reallocation. Psychological cost of family separation could occur, but as we see it does not influence migration decision-making.

Household size positively influence propensity to migrate internally, while dummy variable for presence of children in the family appears to be not significant after controlling for regional variables. Still it has a negative sign meaning that children reflect ties to the residence. Dummy for elderly in the family is insignificant in all specification. Big family stimulates wage-earner to earn more and ties are not an obstacle for them. Additional member in the household increases probability to migrate interregionally by 0.2% other factors being fixed.

Controlling for a macroregion of origin and unemployment rate and wage in the region of destination increased pseudo R^2 significantly from 0.05 up to 0.48, which implies that regional disparities determine most of the intragerional movement. We observe significant positive effect of the wage and negative effect of the unemployment rate in the origin. These results show that labor migration is effective in spatial equalizing of labor productivity contrary to residence migration in Ukraine (World Bank, 2012a). People from northern part of Ukraine are the most probable to migrate internally. People here move more actively, since Kyiv city (the capital) is situated in the northern part. It was shown in data description section that Kyiv is the most attractive place for labor migrants and it has the most favorable labor market conditions.

Multinominal estimation findings gives the opportunity to look at marginal effects of variables on both interregional and intraregional movements. Results from Table B4 show the same dependence of migration decision on regressed factors. Decision of intraregional migration is driven by dependent variables with the same pattern but with lower marginal effects. This finding suggests that people are more reluctant to go for work for further distance.

Estimation of employment conditions models proved hypothesis of negative selection of migrants (see Table B5). Predicted values for individual probability of migrating appear to be significant in all specifications. In particular, being an internal migrant decreases probability of employment with a written contract condition by 5.9%, holding other factors constant. Chances to be permanently employed are 10.6% less for a labor migrant. From OLS estimates of time actually worked we observe that internal labor migrants work on average 4.6 (around 10%) hours more than nonmigrants holding other factors constant.

In 2012 World Bank experts (World Bank, 2012a) expressed concerns about spatial rigidity of the Ukrainian labor market caused by strict employment protection legislation and weak employment institutions. In particular, they emphasized that Ukrainian workers are mainly relying on social networks but not on governmental institution while finding a job and migrating. These networks are less efficient and limit potential migrant`s opportunities. Given that institutional environment our findings raise a very serious concern in terms of policy implications. It seems that disadvantaged workers which try to improve their situation through migration do not succeed much.

Internal labor migrants get minimum protection. Their employment is less likely to be permanent, raise their human capital and generate good perspectives. They do not really prosper from migration. As a result, internal labor migrants face the risk of "bottom trap".

Therefore, policy should aim at programs targeting less skilled workers and improving government labor market institutions and liberalization of employment legislation.

CONCLUSIONS

This work tries to define factors that determine different spatial movements of people induced by new employment opportunities. We were aimed on answering the following questions in this work: Who are internal labor migrants? What kind of selection is present for internal labor migration?

Factors of internal labor migration decision-making and propensities to migrate internally for different groups were estimated using logit/probit techniques. Following developed theories and previous empirical findings we rely on three groups of determinants in our model: individual, family and regional. In particular, our findings draw a socio-demographic portrait of a person who is prompt to migrate internally looking for an employment. Thus, young males with complete secondary education from rural areas, probably with some family ties are the most probable to migrate internally. Controlling for regional characteristics showed that better labor market conditions attract internal labor migrants.

Estimation of employment conditions models proved hypothesis of negative selection of migrants that was raised after observing unconditional evidence of it.

Migration status is instrumented in this specification to correct for possible simultaneity or reverse causality of migration decision and employment condition outcomes. Analysis shows that being an internal migrant decreases probability of employment with written contract by 5.9% comparing to those who are employed at the place of residence, holding other factors constant. Chances to be permanently employed are less for 10.6% for a labor migrant other factors being

fixed. From OLS estimates of time actually worked we observe that internal labor migrants work on average for 4.6 hours more than nonmigrants holding other factors constant.

Future study can be devoted to deeper investigation of found negative selection of migrants, studying whether internal labor migration drives further residence migration.

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APPENDIX A

Table A1. Descriptive statistics of family characteristics

	All employed	Intraregional	Interregional
Family size, % of total in a group			
1	9.23	7.22	5.83
2	27.07	20.49	20.00
3	28.94	26.43	29.79
4	20.79	25.17	22.92
5	8.70	12.21	12.71
6	3.50	5.93	5.42
7	1.17	1.83	2.08
8	0.37	0.49	1.25
9	0.10	0.15	0.00
10 and more	0.13	0.08	0.00
Number of kids, % of total in a group			
0	59.33	58.56	55.00
1	26.71	25.10	30.21
2	11.99	13.95	12.50
3	1.59	2.09	1.46
4 and more	0.38	0.30	0.83
Number of old, % of total in a group			
0	89.79	91.05	84.49
1	7.71	7.90	13.88
2-3	2.50	1.05	1.63

Table A2. Descriptive statistics of regional characteristics

Region	No. internal immigrants	%	No. internal emigrants	%	Unemployment rate, 2012*	Avr. Wage, 2012
Crimea AR	7	1.45	11	2.28	5.8	2654
Vinnytsia region	1	0.21	21	4.35	8.8	2432
Volyn region	5	1.04	12	2.48	8.1	2339
Dnipropetrovsk region	9	1.86	11	2.28	6.6	3138
Donetsk region	5	1.04	11	2.28	8	3496
Zhytomyr region	1	0.21	34	7.04	9.7	2369
Zakarpatska region	4	0.83	0	0.00	8.7	2351
Zaporizzia region	7	1.45	3	0.62	7	2927
Ivano-Frankivsk region	0	0.00	44	9.11	7.9	2539
Kyiv region	14	3.11	152	31.47	6.3	3157
Kirovohrad region	1	0.21	21	4.35	8.4	2428
Luhansk region	8	1.66	9	1.86	6.4	3090
Lviv region	6	1.24	4	0.83	7.5	2578
Mykolaiv region	0	0.00	3	0.62	7.9	2822
Odessa region	11	2.28	0	0.00	5.8	2700
Poltava region	11	2.28	11	2.28	8.6	2850
Rivne region	2	0.41	19	3.93	9.8	2575
Sumy region	1	0.21	13	2.69	8.6	2503
Ternopil region	4	0.83	8	1.66	9.8	2185
Kharkiv region	4	0.83	2	0.41	6.8	2753
Kherson region	1	0.21	5	1.04	8.7	2269
Khmelnytsky region	3	0.62	20	4.14	8.6	2425
Cherkasy region	0	0.00	13	2.69	9	2508
Chernivtsi region	11	2.28	4	0.83	8	2329
Chernihiv region	4	0.83	49	10.14	9.8	2308
Kyiv	348	72.46	3	0.62	5.5	4607
Sevastopol	12	2.48	0	0.00	5.9	2891
Total \ Average	480	100	480	100	7.5	3026

* ILO methodology , age 15-70

Table A3. T-test estimates of difference in employment conditions

	Nonmigrants	Interregional migrants	Difference
Employment type by period, 1 – permanent, 0 - temporary			
Mean	0.9189	0.7542	0.1647***
Standard error	0.0019	0.0197	0.0197
Standard deviation	0.2730	0.4310	
Type of agreement, 1 – written, 0 – oral			
Mean	0.9014	0.7542	0.1472***
Standard error	0.0021	0.0197	0.0198
Standard deviation	0.2981	0.4310	
Time worked, hours			
Mean	40.024	43.860	-3.837***
Standard error	0.049	0.334	0.338
Standard deviation	6.891	7.318	

*** different from zero with 0.000 probability

Table B1. Coefficients of logit models for propensity to migrate internally

Variable	1	2	3	4	5	6
Male	0.801***	0.799***	0.794***	0.788***	0.612***	0.608***
	(-7.66	-7.66	-7.56	-7.53	-4.84	-4.81
Age	-0.0151	-0.0243***	0.00378	-0.0196***	0.023	-0.0162***
	(-0.49)	(-5.46)	-0.12	(-4.02)	-0.61	(-2.78)
Age squared	-0.00012		-0.0003		-0.00048	
	(-0.30)		(-0.75)		(-1.05)	
Urban	-0.552***	-0.553***	-0.505***	-0.508***	-1.814***	-1.821***
	(-5.79)	(-5.80)	(-5.24)	(-5.26)	(-11.10)	(-11.14)
Marital status	-0.178*	-0.169*	-0.283**	-0.264**	-0.196	-0.165
	(-1.68)	(-1.65)	(-2.38)	(-2.27)	(-1.35)	(-1.16)
Complete secondary	0.770***	0.770***	0.764***	0.766***	0.620*	0.618*
	(-2.68	(-2.68	(-2.66	(-2.67	(-1.69	(-1.68
Incomplete higher	0.509*	0.509*	0.516*	0.517*	0.395	0.397
	(-1.68	(-1.68	(-1.7	(-1.7	(-1.02	(-1.03
Complete\base higher	0.244	0.244	0.262	0.264	-0.423	-0.417
	(-0.8	(-0.8	(-0.86	(-0.87	(-1.09	(-1.08
Family size			0.160***	0.156***	0.139***	0.132**
			(-4.08)	(-4.01)	(-2.58)	(-2.46)
Kids dummy			-0.211*	-0.195	-0.159	-0.131
			(-1.69)	(-1.58)	(-1.01)	(-0.84)
Elderly dummy			-0.207	-0.199	0.192	0.203
			(-1.29)	(-1.25)	(-0.99)	(-1.06)
Unemployment					-1.170***	-1.173***
					(-8.16)	(-8.18)
Log of wage					8.571***	8.556***
					(-11.66)	(-11.64)
Centre					3.939***	3.948***
					(-10.42)	(-10.45)
South					0.716*	0.712*
					(-1.75)	(-1.74)
East					0.423	0.423
					(-1.56)	(-1.56)
West					3.639***	3.640***
					(-10.29)	(-10.3)
Constant	-3.525***	-3.361***	-4.353***	-3.933***	-66.46***	-65.60***
	(-5.53)	(-10.02)	(-6.48)	(-10.51)	(-9.90)	(-9.85)
N	20085	20085	20085	20085	20085	20085
R²	0.0443	0.0443	0.0478	0.0477	0.4836	0.4833

t-statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01;
y =1 if a person is an interregional internal labor migrant, 0 otherwise.

Table B2. Relogit robustness check

Variable	1	2
	logit	relogit
Male	0.608***	0.604***
	-0.126	-0.1150
Age	-0.0162***	-0.0160***
	-0.00582	-0.00493)
Urban	-1.821***	-1.808***
	-0.163	-0.182)
Marital status	-0.165	-0.167
	-0.142	-0.12)
Education		
Complete secondary	0.132**	0.132***
	(-0.0535)	(-0.0477)
Incomplete higher	-0.131	-0.129
	(-0.156)	(-0.147)
Complete or base higher	0.203	0.21
	(-0.192)	(-0.184)
Family size	0.618*	0.571*
	(-0.368)	(-0.293)
Kids dummy	0.397	0.355
	(-0.386)	(-0.318)
Elderly dummy	-0.417	-0.457
	(-0.386)	(-0.329)
Unemployment	-1.173***	-1.156***
	(-0.143)	(-0.23)
Log of wage	8.556***	8.480***
	(-0.735)	(-0.949)
Macroregion		
Centre	3.948***	3.893***
	(-0.378)	(-0.549)
South	0.712*	0.711
	(-0.409)	(-0.512)
East	0.423	0.409
	(-0.271)	(-0.33)
West	3.640***	3.585***
	(-0.353)	(-0.454)
Constant	-65.60***	-65.02***
	(-6.663)	(-8.654)
N	20085	20085

t-statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.
y =1 if a person is an interregional internal labor migrant, 0 otherwise.
Base cases: *education* – basic secondary or primary general, complete secondary;
Macroregion – North macroregion of residence

Table B3. Average marginal effects for logit models for propensity to migrate internally

Variable	1	2	3
Male	0.0184***	0.0181***	0.00879***
	(-7.31)	(-7.2)	(-4.78
Age	-0.000560***	-0.000451***	-0.000234***
	(-5.33)	(-3.97)	(-2.77)
Urban	-0.0127***	-0.0117***	-0.0263***
	(-5.65)	(-5.15)	(-10.83)
Marital status	-0.00390*	-0.00608**	-0.00238
	(-1.65)	(-2.26)	(-1.16)
Education level			
Complete secondary	0.0178***	0.0176***	0.00893*
	(-2.67)	(-2.65)	(-1.68)
Incomplete higher	0.0117*	0.0119*	0.00574
	(-1.67)	(-1.7)	(-1.03)
Complete\base higher	0.00563	0.00607	-0.00602
	(-0.8)	(-0.87)	(-1.08)
Family size		0.00359***	0.00190**
		-3.96	(-2.45)
Kids dummy		-0.00449	-0.00189
		(-1.58)	(-0.84)
Elderly dummy		-0.00459	0.00294
		(-1.24)	(-1.06)
Unemployment			-0.0170***
			(-8.00)
Log of wage			0.124***
			(-11.39)
Macroregion			
Centre			0.0571***
			(-10.31)
South			0.0103*
			(-1.75)
East			0.00612
			(-1.57)
West			0.0526***
			(-10.18)

t-statistics in parentheses;   * p < 0.10, ** p < 0.05, *** p < 0.01.
y =1 if a person is an interregional internal labor migrant, 0 otherwise
Base: *education* – basic secondary or primary general, complete secondary; *Macroregion* – North macroregion of residence

Table B4. Average marginal effects for multinominal logit estimates of propensity to migrate internally

Variable	1	2	3
Male	-0.0537***	0.0364***	0.0177***
	(-10.87)	(-7.93)	(-7.26)
Age	0.00189***	-0.00139***	-0.000437***
	(-7.64	(-6.04)	(-3.92)
Urban	0.193***	-0.182***	-0.0108***
	(-40.87	(-39.82)	(-5.25)
Marital status	0.0190***	-0.0140***	-0.00637**
	(-3.24	(-2.58)	(-2.44)
Education level			
Complete secondary	-0.0442***	0.0278***	0.0130***
	(-3.61)	(-2.86)	(-2.81)
Incomplete higher	-0.0423***	0.0315***	0.0067
	(-3.25)	(-2.98)	(-1.35)
Complete\base higher	-0.0159	0.0118	0.000937
	(-1.22)	(-1.14)	(-0.2)
Family size	-0.00976***	0.00885***	0.00360***
	(-4.44)	(-4.01)	(-3.58)
Kids dummy	0.0300***	-0.0208***	-0.0027
	(-4.76)	(-5.39)	(-1.50)
Elderly dummy	-0.0234***	0.0163***	-0.00107
	(-3.12)	(-2.78)	(-0.36)
Macroregion			
Centre	0.0498***	-0.0202***	-0.0411***
	(-5.51)	(-2.70)	(-7.89)
South	0.0945***	-0.0307***	-0.0614***
	(-9.84)	(-4.37)	(-14.12)
East	0.0287***	0.0262***	-0.0607***
	(-3.69)	(-3.77)	(-14.25)
West	-0.0195***	0.0574***	-0.0483***
	(-2.76)	(-8.16)	(-10.68)

t-statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01

y =1 if a person works at the place of his residence, y =2 if a person is an intraregional internal labor migrant, y =3 if a person is an interregional internal labor migrant.

Base cases: education – basic secondary or primary general, complete secondary; *Macroregion* – North macroregion of residence

Table B5. Average marginal effects and OLS estimates for employment conditions

Variable	AME	AME	OLS
	1=written contract	1=permanent	time worked
Male	-0.0298***	0.0119***	1.168***
	(-7.44)	(-2.72)	(-10.9)
Age	0.000657***	0.00211***	-0.0142***
	(-4.52)	(-12.49)	(-3.37)
Urban	0.000852	0.0186***	0.580***
	(-0.24)	(-4.79)	(-5.51)
Education			
Complete secondary	0.0190***	0.0275***	0.0752
	(-2.87)	(-3.74)	(-0.3)
Incomplete higher	0.0332***	0.0404***	0.19
	(-4.4)	(-4.65)	(-0.71)
Complete\base higher	0.0387***	0.0273***	-0.164
	(-4.57)	(-2.86)	(-0.57)
Occupation			
Professionals	-0.0331*	-0.0699***	-3.113***
	(-1.88)	(-5.76)	(-14.74)
Technicians	-0.0644***	-0.0501***	-0.407*
	(-4.02)	(-3.92)	(-1.78)
Clerks	-0.0636***	-0.0470***	0.153
	(-3.02)	(-3.02)	(-0.5)
Service and sales workers	-0.0824***	0.0083	0.813***
	(-5.58)	-0.65	(-3.45)
Skilled agricultural workers	-0.150***	-0.0956***	0.945**
	(-7.90)	(-5.52)	(-2.18)
Craft and related workers	-0.137***	-0.105***	-0.581**
	(-9.28)	(-8.42)	(-2.37)
Plant, machine operators	-0.0732***	-0.0423***	0.487**
	(-4.80)	(-3.19)	(-2)
Elementary occupations	-0.168***	-0.129***	-0.402
	(-11.46)	(-10.44)	(-1.63)
Organizational form			
Business partnership	-0.100***	0.0158***	1.484***
	(-6.77)	-2.62	(-12.05)
Private	-0.206***	-0.0377***	2.608***
	(-14.95)	(-7.14)	(-19.35)
Public, international organization	-0.183***	0.0621	-1.591**
	(-7.68)	-1.59	(-2.21)
Size of a firm, # of employees			
5-10 people	0.0653***	0.0753***	1.015***
	(-17.06)	(-13.83)	(-5.37)
11-50 people	0.119***	0.110***	0.452***
	(-31.09	(-21.02)	(-2.63)
50 and more	0.171***	0.121***	1.271***
	(-29.17)	(-20.83)	(-7.12)
Predicted probability to migrate	-0.0592***	-0.106***	4.461***
	(-5.04)	(-8.15)	(-8.89)
_cons			37.95***
			(-92.71)

t-statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. Base cases: *education* – basic secondary or primary general, complete secondary; *Organizational form*– State; *size* – below 5; *occupation* - legislators, senior officials and managers.