

UNDERSTANDING MOTIVES  
BEHIND DISPLACEMENT  
DESTINATION CHOICE: THE  
CASE OF IDPS IN UKRAINE

by

Oleksandra Abrosimova

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Thesis Supervisor: \_\_\_\_\_ Professor Hanna Vakhitova

Approved by  
Head of the KSE Defense Committee,

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\_\_\_\_\_

Date \_\_\_\_\_

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Abstract

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Forced migration was always highly debatable topic among economists, because of its complex and specific framework. One of the manifestations of this phenomenon is a big internal displacement of people, in which certain trends are evolved. The center of attention in this thesis is dedicated to the motives of displacement destination choices of Ukrainian Internally Displaced Persons. Utilizing seemingly unrelated regression we find that such motives as access to basic and health services, work, safety, as well as family and friends networks are the most popular motives. During the analysis we discovered that certain groups of people are driven by specific motives. We suggested certain policy implications, which we assume will help to build future policy regarding Internally Displaced Persons in Ukraine.

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## *Chapter 1*

### INTRODUCTION

Since 2014 Ukraine has been involved into the ongoing military conflict in Donetsk and Luhansk regions. According to the latest World Bank report over 10,000 people were killed, over 4 million people have been directly affected by continuing hostilities, among them 2.7 million persons were displaced (World Bank, 2017). For the first time since its independence, Ukraine experiences such a massive relocation of its citizens.

Currently available analysis of the situation mostly includes descriptive reports on the number of internally displaced persons across Ukraine and general humanitarian situation of regions. United Nations High Commission for Refugees (UNHCR) shows global displacements trends and indicates that Ukraine is one of 10 countries with the highest number of Internally displaced persons (IDPs) (UNHCR, 2018). World Bank initiates a discussion concerning forcibly displaced people and highlights the distinctive features of displacement in Ukraine, particularly, the disproportionate share of elderly people among the registered IDPs (World Bank, 2017). IDPs in Ukraine face the number of challenges, such as legislative issues (IDMC, 2016), the lack of assistance (IOM, 2017), skills mismatch and insecure employment (OSCE, 2018). Ukrainian organizations, such as Donbas SOS, monitor the situation at the checkpoints and provide some help to displaced people from the government controlled and non-controlled areas. Organizations located in Ukraine performed different surveys in order to fill in information gaps, investigate humanitarian trends (U. H. C., 2016) and provide better support to IDPs and host communities (KIIS, 2016). Overall, these reports draw a general picture of the situation and unfortunately, they do not allow to investigate specific issues of internal migration in Ukraine controlling for the impact of certain factors.

This paper seeks to address motives of forced internal migration in Ukraine. The related literature revealed that migrants are driven by economic motives, but the situation differs for people who are forced to move. Our research question is to analyze how factors such as people's personal characteristics, household composition, security and financial factors are related to the choice of the displacement destination.

Large internal displacement creates many challenges for the country where it occurs. Such a massive relocation is likely to have serious economic and social implications for the country. In particular, from economic perspective, the choice of destination may affect successful adaptation for IDPs as well as and the cost of corresponding programs to the state. Current situation affects whole country, but bordering oblasts, Donetsk and Luhansk, are the most sensitive to the influx of IDPs. Moreover, in a democratic society with a freedom of movement the state can only promote (through adequate policy mechanisms) a more efficient relocation of its displaced citizens.

A large number of studies pays attention to relocations, which occur due to violence or war activities (Balcilar and Nugent, 2018; Ibáñez and Vélez, 2008). Most relevant studies rely upon the individual data and link the decision to migrate or to displace to social, political, personal factors (Ibáñez and Vélez, 2008; Kirwin and Anderson, 2018). Only scattered findings about destinations chosen by refugees are available. For example, Balcilar and Nugent (2018) found that Syrian refugees who spent longer time in Turkey were more likely to permanently settle in the European countries. These results are not informative to develop effective policies addressing the needs of IDPs in Ukraine and worldwide.

Our research is concentrated on analyzing Ukrainian IDPs. The novelty is the using displacement motives as dependent variables for three-year Ukrainian data. The methodology we used includes the multivariate probit, separate probits and seemingly unrelated estimation.



During the analysis we got valuable results. There are certain trends in migration patterns in Ukraine. Younger and more educated population is more likely to flee due to the work motive. Larger households and people having vulnerabilities are driven by the motive of accessing basic and health services. Based on this, the policy response should include better access to information, establishing common projects between IDPs and locals, and the provision of training programs that help IDPs to acquire new skills for the work.

The remainder of the thesis is structured as follows. In Chapter 2 we discuss literature related to the forced migration, special focus will be dedicated to factors that matter for this type of migration. In Chapter 3 we will explore the data used for the research with detailed variables specifications and describe Ukrainian case with IDPs. Also we will explain the methodology we used to build our models. Chapter 4 will show the estimation results we obtained and discuss the achieved results. Chapter 5 will summarize the conclusions to which we came and possible policy implications for future policy regarding Ukrainian IDPs.

## *Chapter 2*

### LITERATURE REVIEW

The existing literature defines various types of migration. This phenomenon can be seen from different angles such as the macro and micro points of view, international or internal, and others. Since our research is dedicated to the underlying motives of people, a special emphasis will further be made in this particular direction. This way, in each case the motive for relocation of people may vary.

Available literature highlighted the existing difference for the choice of destination in the context of voluntary and involuntary migration, as well as the non-random nature of the destination choices made by IDPs (Kondylis, 2010; Ruiz, Vargas-Silva, 2013; Verme, 2017; Bradley, 2017).

Historically, a traditional strand of literature supported the idea that economic motives are primary and the main cause of migration. Back in the XIX century, a German geographer Ernst Georg Ravenstein formulated migration laws and stated that economic factors were major reasons for migrating (Ravenstein, 1885). Actually, this statement has a lot of support among economists. Thereby, J. Hicks investigated that the differences in net economic advantages, namely in wages, compel people to move (Hicks, 1932).

Developing the idea of priority of economic reasons researchers analyze migration at different levels. Both, macro- and micro-based papers focused at voluntary migration show the desire of migrants to improve their financial well-being (Docquier, 2008; Deluna, Darius 2014; Sadat, 2013).

Docquier (2008) used the macroeconomic approach to highlight the essence of the skill level of people who migrate. In his research, the essential role in explaining the movement of people were given to GDP per capita, unemployment rate, and the distance to the place of migration. At the same

time, he reports that a common language is an important factor explaining migration.

In contrast to results obtained by Docquier, Filipino professors Deluna and Darius (2014) concluded that GDP and distance are not significant for international migration in their country. In a similar fashion, they found that religion and cost of living were not significant for Filipinos either. Among their findings crucial were such pull factors as the population in the destination country, low level of corruption and English as a country's primary language.

Similar to Docquier's results were reported by Sadat (2013), who studied the motives of labor migrants to Sweden. She obtained that wage rate, unemployment rate, and taxes were important factors for migration decisions. As important non-economic factors, migration policy and migration network are mentioned in the study.

As migration literature revolutionized, researchers began to investigate the specificity of forced migration. As practice shows, it can be caused not only by people's own decision to move, but by some external factors which compel them to move. The reasons for forced migration include war conflicts, natural disasters, ethical conflict or discrimination involving a threat to one's life. So, a special focus of non-economic motives can be found in forced migration context. It is natural to expect that non-voluntary decisions can be largely affected by non-economic motives.

Similar to voluntary migrants, IDPs not only decide whether to leave their place of origin, but also where to move. Their decisions may or may not be accidental and dependent on certain factors. The existing literature on forced migration offers a number of insights.

In particular, Balcilar and Nugent (2018), Ibáñez and Vélez (2008), Adhikari and Prakash (2013) as well as Verme (2017) emphasize such **factors as violence and threat to life**. Specifically, Balcilar and Nugent (2018) found

that duration of violence and time being a refugee increase the probability of not coming back to Syria. Refugees experienced property damage, without shelter in their home country are less likely to return to Syria, and have a higher probability to re-allocate within Turkey or stay at the current location as well as to migrate internationally, correspondingly.

Threats to people's lives and insecurity are also emphasized by Ibáñez and Vélez (2008) in their study of displacement in Colombia. It was concluded that non-economic motives strongly affects people's desire to leave a dangerous place. The authors also found that some factors may even have different effects on the displacement decisions, i.e. land size has a positive effect for non-displaced households as opposed to the case of displaced households. The authors stated that illegal armed groups targeted small farmers who are mostly headed by young people to take over the land.

Using Nepalese data, Adhikari and Prakash (2013) infer that even the threat of violence influences the decision to move. They found that the variables for land ownership and crop losses are positively correlated with the decision to flee. Authors stated that people with bigger amount of land owned are more likely to be the target of rebels and to be displaced from the village. Their motivation is expected, to flee from dangerous environment. The significance of coefficient for crop losses is connected to the importance of agriculture for people. At the same time, higher income and economic opportunities in the village decrease the probability of a person moving somewhere. In addition, a presence of **social network** is negatively correlated with displacement, which implies that a wider community can protect its people from threats.

**Monetary (income and savings) and non-monetary (security and survival) indicators** are directly contrasted by Verme (2017). He wrote that in the context of forced migration, non-monetary factors become so essential that monetary even fade into the background.

The influence of the violence level is further discussed by Bradley (2017). The author offers a comprehensive discussion of internal displacement and war conflict. She concludes that the level of violence and its threats are essential for choosing the destination to move. Moreover, violence could have both direct and indirect components. Direct effects include physical security, as well as property rights and employment status, whereas indirect violence can mitigate itself through **political institutions and social networks**. An interesting finding is that the information people possess significantly affect the choice of destination.

**Institutional factors** were found to matter for migration too. In particular, using microdata, Geis, Uebelmesser, and Werding (2013) obtained that **public health expenditures and PISA scores** were positively associated with the intention to migrate for educated people. A study of researchers from Humanitarian Policy Group shows that in Kenya relocation to urban areas is explained by acquired **access to services and livelihoods** (Pavanello, Elhawary, 2010).

**Higher education and better access to basic services** decrease the probability of displacement, as found by Engel and Ibáñez (2007) in Colombia. Although household characteristics explain the decision to migrate only partially, the **age and the level of education** play an important role in determining displacement.

Additional non-economic motives were brought by Lindley (2009) who studied displacement in Mogadishu. Using the micro-economic data, he indicates that the choice of displaced persons can be affected by such factors as **proximity to the border, the geography of transport, political geography of the conflict**.

In some particular cases, **statelessness** should be taken into account in explaining the destination choice of refugees. Thus, Palestinian migrants in their choice of asylum between Germany and Sweden were guided by their desire to naturalize as soon as possible. Overall, migrants who have a limited

choice want to get a secure status and join their family, economic factors play a minor role for them (Tucker, 2018).

Among other determinants of displacement decision literature mentions the **international humanitarian assistance**. Song (2012) finds that a higher presence of UNHCR reduces the ratio of refugees to forced migrants Sub-Saharan Africa. In contrast, the influence of UN supports peace on refugee inflow and outflow are not statistically significant.

In conclusion, most important factors of displacement include violence and threat to life (Balcilar and Nugent, 2018; Ibáñez and Vélez, 2008; Adhikari, Prakash 2013; Verme, 2017; and Bradley, 2017), geographical proximity (Lindley, 2009), institutional factors (Geis, Uebelmesser and Werding, 2013; Bradley, 2017; Tucker, 2018), household characteristics (Engel and Ibáñez, 2007), and humanitarian conditions (Song, 2012). In a conflict-induced context, non-economic motives seem to play a relatively higher role. In contradiction to voluntary migrants, forced people found themselves in a more complicated situation. They faced different obstacles as limited time-horizon of decision the making process, not full information, threats to life and uncertainty of the future. All these accounted for non- economic motives which significantly affect people's choice of destinations.

Hence, our paper contributes to the existing literature in a few dimensions. Firstly, from econometric point of view we use as dependent variables, relocation motives of people. Secondly, we take a close look at Ukrainian realities with forced internal migration.

Papers are consistent with the theory that choices of displacement destinations are non-random. This study further develops the discussed literature by looking at the factors that may explain choosing the particular motives of IDPs.

## METHODOLOGY AND DATA DESCRIPTION

Similar to other studies discussed in the Chapter 2 we build our model upon the utility theory. We assume that people flee due to violence and insecurity as well as other noneconomic and, to a lesser extent, economic factors, such as, for example, livelihood opportunities.

### **3.1. Methodology of modelling motives**

The theoretical foundation of our model is linked to the concept of utility. As stated in the utility theory every person tries to maximize his/her own utility. As well as other researchers in the field, we expect that IDP also behave this way.

We build up our econometrical model on the basis of the paper by Verme (2017) who studied the economics of forced displacement. In his work, he highlighted that the utility maximization theory of ordinary people and IDPs differs in such moments as the period of time of the utility maximization and information space during the process of making decisions and the assessment of utility. Basically, the author uses two measures – monetary and non-monetary. He emphasizes that non-monetary indicators become to play a relatively higher role in the involuntary displacement migration situation. By non-monetary indicators, he implies security, safety, health and mental factors.

Furthermore, as suggested by the literature, the standard money metrics usually used to measure the utility, have to be rethought because of the forced nature of migration. The relevance of income factor became smaller as IDPs left their jobs. Since in the place of destination displaced persons mostly rely on savings, Verme marked the value of such monetary factor.

The topic of risk and vulnerability of IDPs is considered to be understudied by welfare economists in terms of involuntary migration. But still there are a few studies discussing that. Bradley (2017) writes that there are differences in vulnerability justifying the variation in displacement decisions. Verme (2017) pays special attention to the behavioral patterns of people as well as their personal characteristics. Additionally, he mentions the importance of peer effect, especially in the limited time frame. If all people in the settlement flee it stimulates others copy their behavior and also flee.

The main challenge for the model specification is our dependent variable. It is constructed from the multiple choice question extracted from the Household Survey – “Why did your household choose this current location”? The main complexity is that a respondent can choose simultaneously several options that apply to the whole household. Given that dependent variable in each regression is a 1/0 - we can use logit / probit or LPM. However, the problem - choices are not independent, thus residuals are correlated. One solution for this is using multivariate probit model or seemingly unrelated estimation. We will build three models: multivariate probit, separate probit regressions and seemingly unrelated estimation after OLS models. In the dataset, we have nine motives for the answer to the question about choosing a location. The summary statistics for each motive is presented below in the Figure 1. The most popular motives are family and friends connections. For migrants it is better to relocate to places they are familiar with. The third and the fourth frequent motives are safety and security of environment as well as availability of free or cheap accommodation.



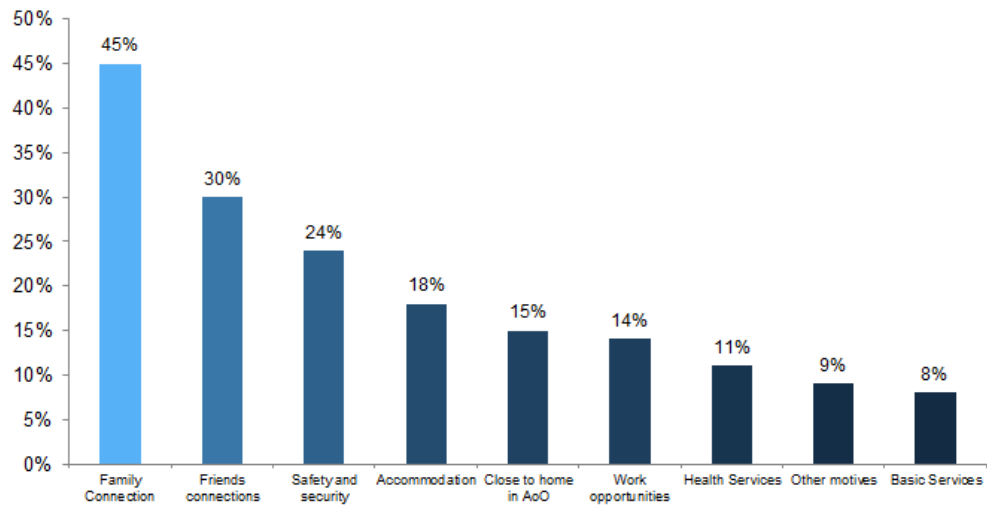


Figure 1. Frequencies of motives for the choice of respondent's current location

Note: AoO - Area of origin

Based on the literature, the list of possible explanations includes security and monetary factors, displacement experience, personal and household characteristics. The set of independent variables used for constructing the model and the expected effects are presented in Table 1 below.

In the research of O. Mikheieva and V. Sereda (2014) the analysis situation of IDPs was performed. The significant motivation for IDPs' relocation is the presence of children in the household. It is normal to expect that family with children is more likely to migrate in order to keep children in safe environment. (Mikheieva and Sereda, 2014). Moreover, in the analysis of IDPs motivations to flee, researchers emphasize that motives of survival and integration to the new community dominate over other motives. Due to these statements, we expect the factor of damage to the people's house in Area of Origin will strongly influence the motives of people to live in safe environment, be closer to their native home and the desire to live in free/cheap accommodation. In the analysis of Syrian migration, authors also use the variable responsible for the damage (Balcilar and Nugent, 2018).

Table 1. Expected effect of independent variables

<b>Description</b>	<b>Expected effect</b>	<b>Motives</b>
HoH age and age squared, years	-	Work opportunities
Female, gender of HoH	-	Work opportunities
HoH has university education (y/n)	Ambiguous	Work opportunities (+) Other motives (ambiguous)
HoH has vocational trainings (y/n)	Ambiguous	Work opportunities (+) Other motives(ambiguous)
Number of HH members	Ambiguous	(+) Access to health services, (-) for all other
Number of children in HH	+	For all motives (+) Access to health
Vulnerable HH members (y/n)	Ambiguous	services, (ambiguous) for all other
House in Area of origin was damaged by conflict (y/n)	+	Safety and security, Access home in AoO, Free or cheap accommodation
HH received humanitarian assistance	Ambiguous	For all motives
Presence of IDP status of all HH members	Ambiguous	For all motives
Some HH members has IDPs status	Ambiguous	For all motives
Have some amount of savings (y/n)	+	For all motives
Luhansk oblast (y/n)	Ambiguous	For all motives

Note: AoO – Area of Origin, HH – Household, HoH – Head of Household

Voluntary migration theory suggest that young and better-educated individuals are more likely to flee for economic reasons, especially for finding a job, while the forced migration context more focused on the idea that educated people are less likely to flee. (Engel and Ibáñez, 2007). Based on that, effect of the variable is ambiguous. It is expected that gender of head of household plays an important role and, since mostly men are breadwinners, it will increase the probability to migrate for job searching. In the research of detecting the economic consequences author get negative sign for this variable responsible for gender, meaning that women are less likely to displace (Fiala 2015). Stand on that, we believe that age, gender and education do

matter for the motive of work opportunities (Ibáñez and Vélez, 2008). As it was discussed above, vulnerability is vital factor in the context of displacement. It is expected that household with vulnerable household members will choose the location with access to health services (Bradley 2017). For other motives it is difficult to predict signs. N. Fiala in her research found that displaced households have less household members in comparison with non-displaced. Still the effect for the most motives is ambiguous. The expected positive sign may have only the motive of access to health services. As a crucial factor the literature considered savings (Verme 2017). It is assumed that if people have savings they are more likely to flee regardless the motive.

Finally, it is interesting to discover the effect of such variables as the initial oblast of displacement, the presence of IDPs status, humanitarian assistance and the presence of household members. The effect of these variables is equivocal and not fully described in the literature. It is interested to investigate it on Ukrainian context, to analyze where the initial area of displacement matters.

From econometric point of view, we construct model in the next way. Following Verme (2017), we model motivation of IDPs as a probability of a household  $i$  being driven by a motive  $j_{1..n}$  in the next way:

$$P_{i,j_{1..n}} = Prob(d_{i,j_{1..n}} = 1, | x_i, u_i, \beta), \quad (1)$$

$$j_{1..n} = 1, \dots, J_{i,n}$$

where

$d_{i,j_{1..n}}$  – households make choices out of the set  $j$

$x_{i,t}$  – includes the set of explanatory variables, such as individual and household characteristics, measures of security and dummies for Luhansk oblast;

$u_{i,t}$  – error term;

$\beta$  – parameters to be estimated.

As discussed previously, the question households were asked about motives of relocation implies the simultaneous choice. To deal with this fact, we construct 2 models – seemingly unrelated models and multivariate probit. Both models are used for classification tasks with 2 or more categories. In our case, we have nine dependent variables. We expect that models will give similar results.

## **3.2. Data**

### **3.2.1 Ukrainian situation with IDPs**

The war conflict in Ukraine has been lasting for 5 years. The beginning of it triggered in the spring 2014 by Russia's annexation of Crimea and further violence in Donetsk and Luhansk oblasts. According to the Internal Displacement Monitoring Center (IDMC), currently there are approximately 800,000 IDPs left their original locations and residing in governmentally controlled territory of Ukraine (IDMC, 2016).

It is important to notice that IDPs from Crimea and Donetsk and Luhansk oblasts find themselves in different situations, considering that IDPs from Donbas are subject to the direct military threat. The confirmation of that can be found in Sereda and Mikheieva (2014) research who stress that Crimean IDPs have different internal drivers and expectations about their future in comparison with other IDPs and they adapt to new life differently. Thus, Crimean IDPs mostly choose Kyiv and Lviv as displacement locations. They are driven by the openness of Lviv people, their religiosity and psychological comfort. In that sense, they are rather similar to Palestinian refugees, as described by Tucker (2018). In contrast, the main displacement drivers for IDPs from the East are the war and a survival

factor, and their choice of destination is rather driven by the family and friends connections (Mikheieva and Sereda, 2014).

Another distinctive feature is the number of IDPs. The war in the East of Ukraine lead to a disproportionately larger number of displaced people relative to the occupation of Crimea. Figure 2 shows that the essential part of IDPs flees to the closest regions, namely Donetsk and Luhansk. It is logical to assume that this flow mostly consist of local IDPs, not the ones from Crimean.

The trend preserved in subsequent years. As evident from the Figure 3, featuring the map with displaced people in Ukraine that was produced by the Internal Displacement Monitoring Center, the Donetsk and Luhansk oblasts are leaders with the highest number of IDPs.

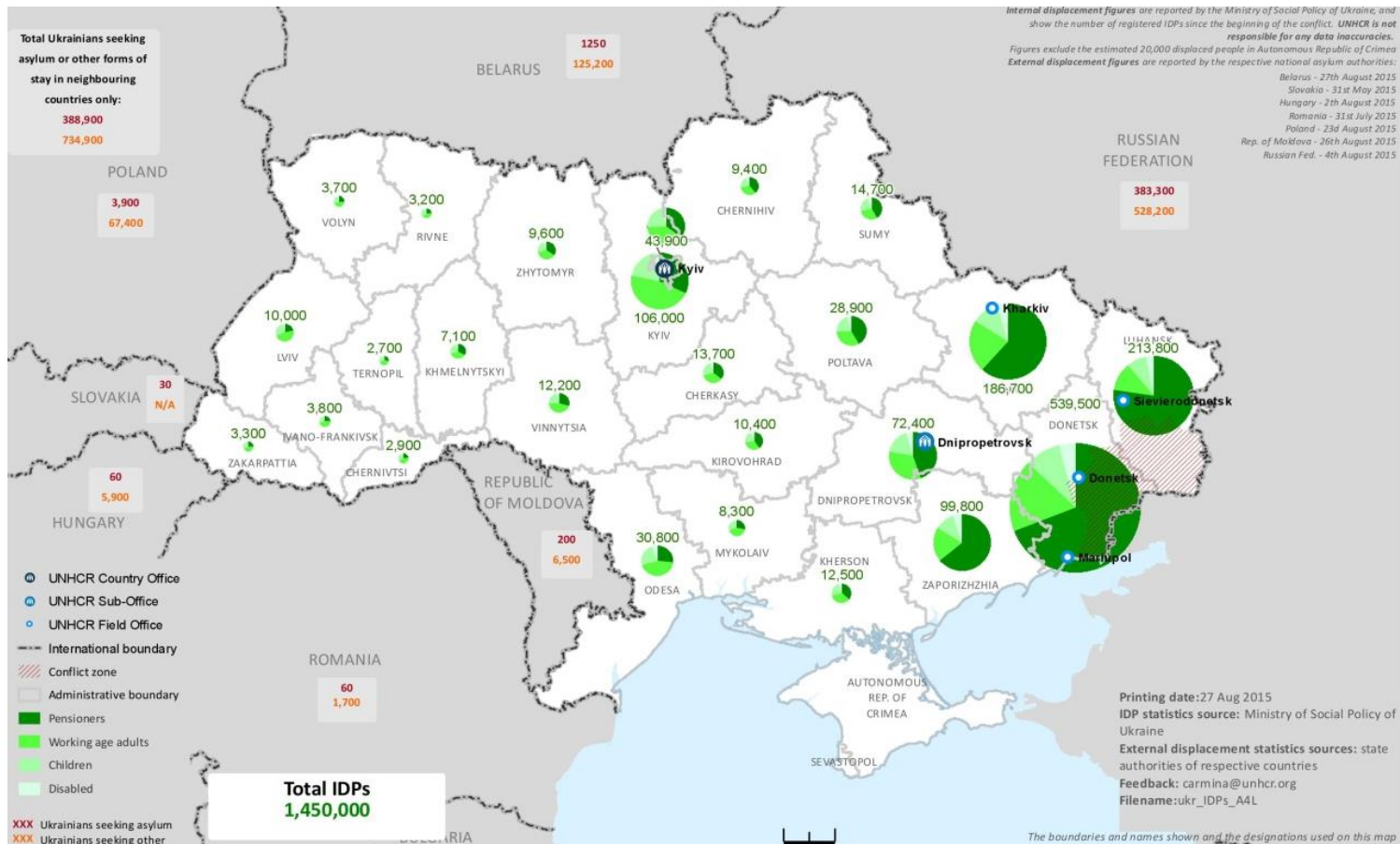


Figure 2. Internally displaced people in Ukraine, as of July 31, 2015. Source: UNCHR, <http://reporting.unhcr.org/sites/default/files/Ukraine%20Internally%20Displaced%20People%20Map%202015AUG15.pdf>

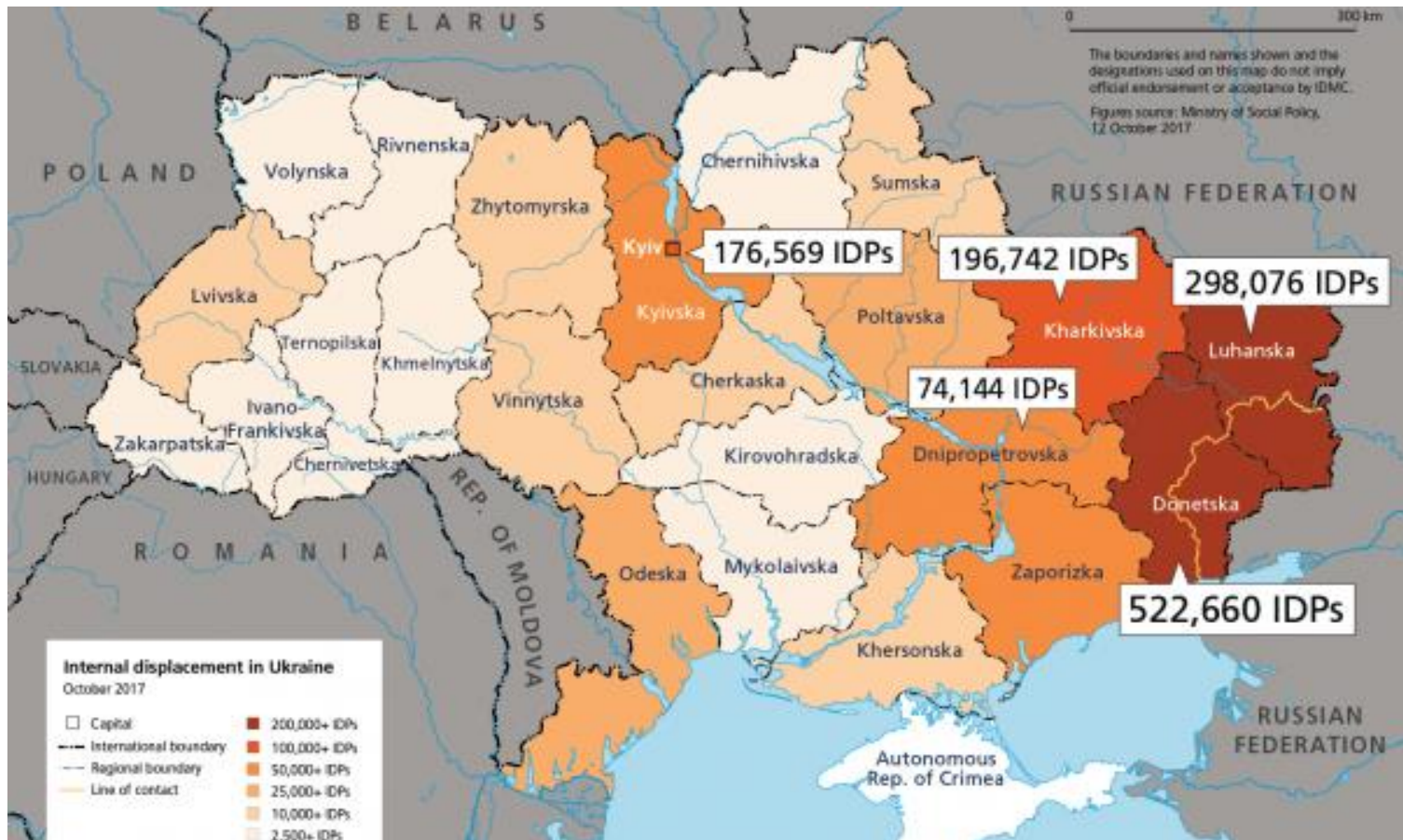


Figure 3. Internal displacement in Ukraine, as of October 2017. Source: IDMC, <http://www.internal-displacement.org/expert-opinion/lives-across-the-frontline-internal-displacement-in-a-divided-ukraine>

The absence of the microdata about the general population of IDPs in Ukraine is the major challenge for the analysis. The data on IDPs are very fragmented and it is difficult to trace the dynamics of their movements from the beginning of the conflict in 2014. The best alternative was the data from non-governmental organization REACH Initiative (2019), who shared the data from their assessments of the humanitarian needs in Donetsk and Luhansk oblasts. For the purpose of further analysis, we will infer our results about IDPs population based on these three-year data sets (2016 – 2018).

### **3.2.2 Data source**

The humanitarian organization REACH Initiative performed their needs assessment for IDPs and non-IDPs in 2014, 2015 and 2016. The dataset derives from three surveys in Luhansk and Donetsk oblasts in the government-controlled territory, in urban and rural areas along LoC (Line of contact). All assessments were conducted in the late spring or summer time. The data consist of a block of questions regarding vulnerabilities, protection, economic security, food security, housing, access to health services and education, income, savings and humanitarian assistance.

REACH samples were constructed with mixed methods, i.e. random stratified clustering (with 90% confidence interval and 7% margin of error for each stratum) and using software QGIS for detecting regions and the population density data (REACH Initiative). Stratas are Donetsk and Luhansk oblast, rural and urban areas. Surveys were held as face-to-face interviews with a person who represents the whole household. Limitations of data are its partial geographic scope and a problem of reporting bias because of using first and second data (government statistics and reports of other nongovernmental organizations).



In total, the dataset includes only displaced households. Altogether, there are 1335 such households: 1149 observations are from the survey 2016, the assessment 2017 included 25 displaced households and 161 displaced households were assessed in 2018. A lower numbers of displaced households in 2017 is connected with the purpose and the scope of the survey in that year - the data was collected at the smaller area with the highest level of persistent humanitarian needs.

### 3.2.3. Descriptive statistics

IDP households vary substantially in size and composition (see Table 2 below).

Table 2. Descriptive statistics for binary variables

<b>Variable</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>St. Dev.</b>
All HH members have IDP status	0	1	0.733	0.443
Some HH members has IDP status	0	1	0.191	0.393
Displaced from Luhansk oblast	0	1	0.6	0.49
Damaged house due to conflict	0	1	0.439	0.496
Humanitarian assistance Savings	0	1	0.515	0.5
HoH University education	0	1	0.09	0.286
HoH Vocational training	0	1	0.352	0.478
Presence of vulnerable HH member	0	1	0.427	0.495
	0	1	0.59	0.492

Note: HH – Household, HoH – Head of household

Many displaced households moved with children. Particularly, 30% of households have one child (30%) and 19% have two or more. At the same

time, most households do not have children (51%). (look at Figure 4 below)

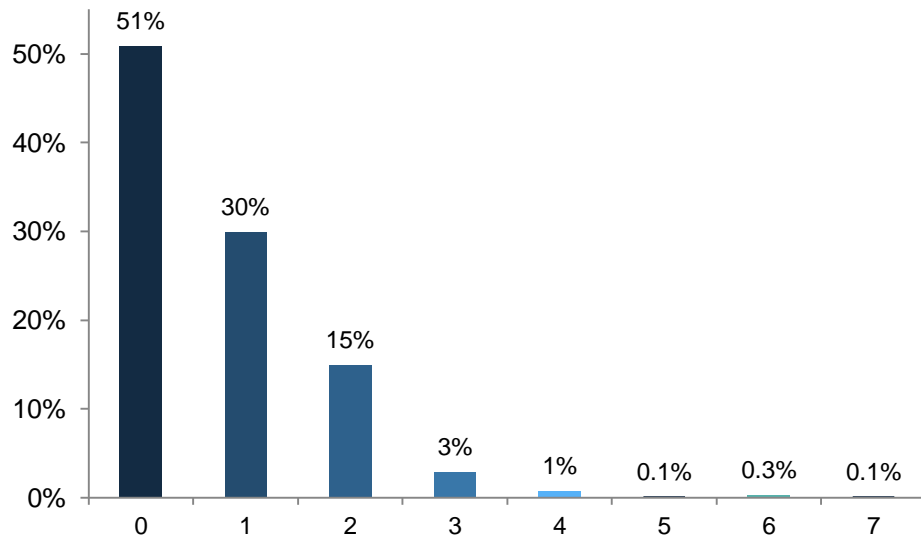


Figure 4. Number of children, % of households

Based on our data we see that the average household size is 3 persons. Households with the size of 4 people are also popular. The range of data is quite big – 10, because there are single-headed households and households with 11 household members.

According to the Table 2, approximately 60% of households have at least 1 vulnerable household member. Vulnerability is assumed if the household includes members from the following categories:

- Pensioners
- Single parents, regardless the official status
- Families with three children or more, regardless the official status
- Families with foster children
- Household members with chronic illnesses
- Lactating or pregnant women

Not all households officially recognized their status with the state. As one can infer from the Table 2, 23% of households have no official IDP status for any household members; and about 7% of households are mixed in that respect (have registered and unregistered household members). All household members that are officially registered as IDPs form 70% of households.

Frequently, the main decision-maker in the family is the head of the household. Data on age and gender distribution of head of households is presented in the table below. The age range is quite big, i.e. 73 years for female-headed households and 75 for male-headed. The mean age is around 50.

Table 3. Age distribution of Head of households by gender

<b>Variable</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>St. Dev.</b>	<b>Freq.</b>
Male	18	91	47.62	16.60	391
Female	18	93	48.61	15.99	944
<b>Total</b>	18	93	47.91	16.42	1335

Households headed by females outnumber households headed by males by almost three times. From the plotted distribution of household age (Figure 4) one can see two peaks among female-headed households, around age 30 and around age 65. Concerning male-headed households, data is distributed smoother, although one can argue that similar peaks are also presented there.

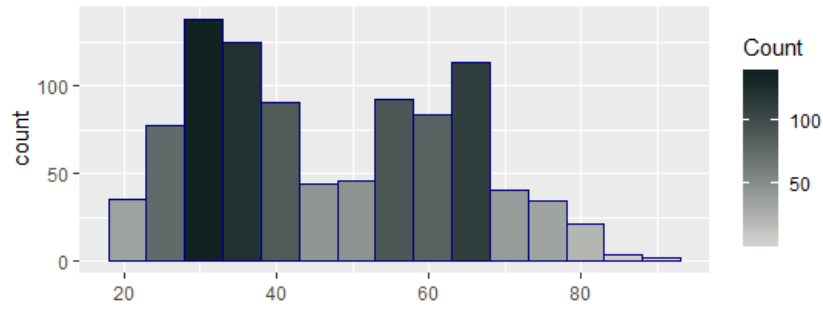


Figure 5. Age distribution for female-headed households

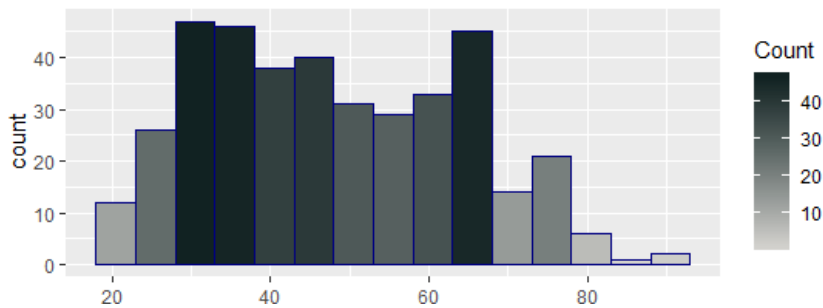


Figure 6. Age distribution for male-headed households

Regarding the education of the household head, 35% of households noted holding a university degree and 42% reported receiving vocational education.

Most households report the absence of savings (89.21%). Only 10.79% of households have some reserves. A half of households obtain humanitarian assistance.

Previous studies highlighted the effect of violence on the destination choices, thereby we include such indicators as the damage of house due to the conflict at area of origin (AoO) to explanatory variables. Approximately 43.8 % of households reported their house in Area of Origin being damaged.

Finally, an indicator for the region of displacement was added to control for potential heterogeneity in terms of geography. Almost 60 % of IDPs in our sample came from Luhansk oblast, other displaced families are from Donetsk oblast. The correlation matrixes for dependent and independent variables are available in Appendix A and B. Based on the results we conclude that the correlation is not too strong and there is no multicollinearity between explanatory variables, as well as among the set of response variables.

## *Chapter 4*

### ESTIMATION RESULTS

We begin this chapter by explaining the choice of the model specifications. Frequently, the literature is focused on using regression with binary response variables. Since our dependent variable set of simultaneous choice of up to nine answers, the multivariate probit model is estimated first. As the second model, we consider seemingly unrelated estimation based on OLS regressions, which are marginal effects that can be interpreted further.

Multivariate probit and OLS coefficients are presented in Table 4 and Appendix C. Seemingly unrelated estimation is presented in below Table 5. All models are estimated using Stata software. Overall, both models show quite close results. They are consistent in terms of signs of explanatory variables and the relative magnitudes of coefficients. It is worth noting that for few variables in the regressions, there is a slight difference in the coefficients significance. But this difference is present only for small number of variables and does not change our results drastically.

The results of likelihoods ratio test for multivariate probit (Appendix D). The Prob.chi.sq.>0.0000, implies that we reject H0: no correlation among residuals probit regressions an alternative model. Based on such results, multivariate probit should be preferred (Institute of Digital Research and Education, 2019). However, there is a problem of getting margins for that model. The only we can analyze the signs and the significance of variables. Moreover, if we review correlation coefficients reported after likelihood-ratio test, there is the large number or equations residuals correlated. Separate probit regressions are not good estimation, because dependent variables are connected.

Table 4. Estimation Results of Multivariate Probit

INDEPENDENT VARIABLES	DEPENDENT VARIABLES				
	Motive 1	Motive 2	Motive 3	Motive 4	Motive 5
Female HoH	0.0279 (0.0795)	-0.0244 (0.0821)	-0.188 (0.116)	-0.103 (0.102)	0.0363 (0.0988)
Age of HoH	-0.0111 (0.0146)	0.0582*** (0.0157)	0.0110 (0.0223)	0.0100 (0.0192)	0.0121 (0.0186)
Squared Age of HoH	0.00017 (0.00015)	-0.00055*** (0.00016)	-0.00021 (0.00022)	-0.00012 (0.00019)	-0.00023 (0.00019)
Number of Household members	0.0766* (0.0428)	-0.0975** (0.0447)	0.156*** (0.0587)	0.0796 (0.0527)	-0.00396 (0.0523)
Displaced from Luhansk oblast	-0.273*** (0.0737)	-0.00491 (0.0757)	-0.0275 (0.109)	0.0135 (0.0938)	0.115 (0.0904)
Number of children	-0.0300 (0.0656)	0.113* (0.0683)	-0.174* (0.0917)	-0.0467 (0.0801)	-0.0564 (0.0793)
Damaged house due to the conflict	-0.137* (0.0724)	0.0588 (0.0743)	0.192* (0.108)	-0.0126 (0.0921)	0.151* (0.0868)
Humanitarian Assistance	-0.0692 (0.0734)	0.0103 (0.0757)	-0.0236 (0.109)	0.0196 (0.0936)	0.156* (0.0898)
Savings of Households	-0.0225 (0.123)	0.128 (0.126)	0.463*** (0.153)	0.279* (0.145)	-0.201 (0.165)
University education of HoH	-0.159 (0.0981)	-0.0503 (0.102)	0.380** (0.155)	0.377*** (0.131)	-0.231* (0.119)
Vocational training of HoH	-0.106 (0.0940)	0.0570 (0.0963)	0.249* (0.151)	0.230* (0.128)	-0.143 (0.111)
Presence of vulnerable HH member	-0.0630 (0.0898)	-0.0864 (0.0929)	0.539*** (0.131)	0.344*** (0.114)	0.0227 (0.108)
All HH members have IDP status	-0.175 (0.133)	0.215 (0.143)	0.256 (0.226)	0.0400 (0.170)	0.0860 (0.164)
Some HH members have IDP status	0.206 (0.152)	0.172 (0.162)	0.353 (0.246)	-0.0915 (0.197)	-0.207 (0.193)
Constant	0.264 (0.375)	-1.882*** (0.402)	-2.580*** (0.599)	-2.022*** (0.495)	-1.142** (0.459)

Note: Standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

For each model 1335 observations

were used. **Source:** author's calculations.

Motive 1 - Family connections

Motive 2 - Friends connections

Motive 3 - Access to water and electricity

Motive 4 - Access to health services

Motive 5 - Access to home in Area of Origin

Hoh – Head of household

HH - household

TABLE 4 - CONTUNIED

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	Motive 6	Motive 7	Motive 8	Motive 9
Female HoH	-0.223** (0.101)	0.0558 (0.0870)	-0.0776 (0.0905)	0.0249 (0.111)
Age of HoH	0.0989*** (0.0262)	0.00043 (0.0158)	-0.00056 (0.0166)	-0.00442 (0.0204)
Squared Age of HoH	-0.00132*** (0.00029)	-1.24e-05 (0.00016)	-2.89e-06 (0.00016)	-3.67e-05 (0.00021)
Number of Household members	0.0106 (0.0571)	-0.00600 (0.0459)	0.0360 (0.0477)	0.0567 (0.0571)
Displaced from Luhansk oblast	-0.255*** (0.0943)	0.0155 (0.0790)	0.0152 (0.0844)	0.154 (0.105)
Number of children	-0.0817 (0.0880)	0.0589 (0.0700)	-0.113 (0.0761)	-0.0794 (0.0885)
Damaged house due to the conflict	-0.203** (0.0953)	0.288*** (0.0772)	0.0919 (0.0827)	0.115 (0.0999)
Humanitarian Assistance	0.163* (0.0957)	0.151* (0.0790)	0.128 (0.0841)	-0.174* (0.102)
Savings of Households	0.0286 (0.156)	0.179 (0.130)	0.0261 (0.141)	0.155 (0.162)
University education of HoH	0.950*** (0.160)	-0.0383 (0.105)	-0.133 (0.111)	0.170 (0.140)
Vocational training of HoH	0.602*** (0.161)	-0.0109 (0.100)	-0.114 (0.104)	0.148 (0.134)
Presence of vulnerable HH member	-0.0174 (0.110)	0.0394 (0.0954)	0.192* (0.103)	0.160 (0.123)
All HH members have IDP status	-0.138 (0.173)	0.282* (0.156)	-0.226 (0.146)	-0.244 (0.169)
Some HH members have IDP status	-0.130 (0.196)	0.253 (0.176)	0.0351 (0.166)	-0.304 (0.198)
Constant	-2.802*** (0.593)	-1.279*** (0.409)	-0.829* (0.428)	-1.234** (0.511)

Note: Standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

For each model 1335 observations were used. Source: author's calculations.

Motive 6 - Work opportunities

Motive 7 - Safety and security reasons

Motive 8 - Free/cheap accommodation

Motive 9 - Other motives

Hoh - Head of household

HH - household



Table 5. Marginal effects of seemingly unrelated estimation (at means)

INDEPENDENT VARIABLES	DEPENDENT VARIABLES				
	Motive 1	Motive 2	Motive 3	Motive 4	Motive 5
Female HoH	0.0118 (0.0303)	-0.0108 (0.0283)	-0.0259 (0.0170)	-0.0166 (0.0194)	0.0109 (0.0214)
Age of HoH	-0.00414 (0.00529)	0.0180*** (0.00481)	0.00102 (0.00318)	-0.00039 (0.00357)	0.00093 (0.00378)
Squared Age of HoH	6.61e-05 (5.20e-05)	-0.0002*** (4.65e-05)	-2.01e-05 (3.30e-05)	1.12e-08 (3.84e-05)	-3.00e-05 (3.53e-05)
Number of Household members	0.0300* (0.0162)	-0.0326** (0.0144)	0.0225** (0.00896)	0.0207* (0.0108)	0.00177 (0.0112)
Displaced from Luhansk oblast	-0.107*** (0.0281)	-0.00182 (0.0262)	-0.0124 (0.0152)	-0.00947 (0.0181)	0.0246 (0.0200)
Number of children	-0.0109 (0.0249)	0.0403* (0.0228)	-0.0161 (0.0151)	-0.00813 (0.0177)	-0.0136 (0.0177)
Damaged house due to the conflict	-0.0592** (0.0276)	0.0242 (0.0260)	0.0228 (0.0149)	0.00309 (0.0172)	0.0340* (0.0206)
Humanitarian Assistance	-0.0318 (0.0279)	0.00062 (0.0259)	-0.0145 (0.0154)	-0.00661 (0.0181)	0.0313 (0.0196)
Savings of Households	-0.00708 (0.0474)	0.0428 (0.0452)	0.0957*** (0.0345)	0.0670* (0.0350)	-0.0411 (0.0297)
University education of HoH	-0.0633* (0.0373)	-0.0233 (0.0345)	0.0652*** (0.0189)	0.0677*** (0.0227)	-0.0529* (0.0274)
Vocational training of HoH	-0.0347 (0.0353)	0.0151 (0.0331)	0.0365** (0.0167)	0.0350* (0.0203)	-0.0351 (0.0265)
Presence of vulnerable HH member	-0.0271 (0.0340)	-0.0297 (0.0314)	0.0772*** (0.0204)	0.0688*** (0.0224)	0.00506 (0.0248)
All HH members have IDP status	-0.0708 (0.0503)	0.0690 (0.0454)	0.0290 (0.0216)	0.0163 (0.0311)	0.0142 (0.0365)
Some HH members have IDP status	0.0778 (0.0573)	0.0520 (0.0512)	0.0511* (0.0281)	-0.00424 (0.0347)	-0.0495 (0.0397)
Constant	0.591*** (0.138)	-0.119 (0.125)	-0.0694 (0.0714)	-0.00292 (0.0845)	0.165 (0.103)

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

For each model 1335 observations were used. Sources: author's calculations

Motive 1 - Family connections

Motive 2 - Friends connections

Motive 3 - Access to water and electricity

Motive 4 - Access to health services

Motive 5 - Access to home in Area of Origin

Hoh – Head of household

HH - household

TABLE 5 - CONTINUED

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	Motive 6	Motive 7	Motive 9	Motive 9
Female HoH	-0.0425*	0.0182	-0.0222	0.00516
	(0.0218)	(0.0257)	(0.0245)	(0.0177)
Age of HoH	0.00517	-0.00210	-0.00127	-0.0006
	(0.00331)	(0.00466)	(0.00409)	(0.00312)
Squared Age of HoH	-8.79e-05***	2.00e-05	1.16e-05	-6.44e-06
	(3.00e-05)	(4.61e-05)	(4.04e-05)	(3.03e-05)
Number of Household members	0.00221	0.000642	0.00938	0.00902
	(0.0104)	(0.0136)	(0.0134)	(0.0103)
Displaced from Luhansk oblast	-0.0599***	-0.00179	-0.00527	0.0185
	(0.0195)	(0.0244)	(0.0224)	(0.0153)
Number of children	-0.00809	0.0202	-0.0243	-0.0101
	(0.0155)	(0.0212)	(0.0191)	(0.0161)
Damaged house due to the conflict	-0.0336*	0.0939***	0.0296	0.0188
	(0.0184)	(0.0244)	(0.0220)	(0.0161)
Humanitarian Assistance	0.0164	0.0396	0.0297	-0.0315**
	(0.0194)	(0.0241)	(0.0219)	(0.0159)
Savings of Households	0.0241	0.0548	0.00812	0.0227
	(0.0338)	(0.0419)	(0.0373)	(0.0292)
University education of HoH	0.173***	-0.0167	-0.0385	0.0268
	(0.0215)	(0.0324)	(0.0304)	(0.0207)
Vocational training of HoH	0.0730***	-0.00483	-0.0325	0.0189
	(0.0168)	(0.0308)	(0.0294)	(0.0195)
Presence of vulnerable HH member	-0.0224	0.00773	0.0493*	0.0265
	(0.0260)	(0.0307)	(0.0271)	(0.0203)
All HH members have IDP status	-0.0347	0.0711*	-0.0602	-0.0410
	(0.0359)	(0.0393)	(0.0438)	(0.0343)
Some HH members have IDP status	-0.0367	0.0562	0.00401	-0.0524
	(0.0403)	(0.0450)	(0.0493)	(0.0382)
Constant	0.145	0.132	0.236**	0.115
	(0.0929)	(0.117)	(0.107)	(0.0838)

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

For each model 1335 observations were used. Sources: author's calculations

Motive 6 - Work opportunities

Motive 7 - Safety and security reasons

Motive 8 - Free/cheap accommodation

Motive 9 - Other motives

Hoh - Head of household

HH - household

Still, for the comparison of results we will review all three models. Our main model will be seemingly unrelated estimation. The Stata output is presented in Table 11, while separate probit regressions are available in Appendix E. For these models, we construct marginal effects.

As expected, different factors matter for different motives.

We begin our discussion with the **work opportunities** motive. The results are consistent with the predictions of economic theory. Women-headed households are less likely to flee for work. Age is a crucial factor in this regards; it increases probability of households to flee until the age 30 (for SUR model) while after that the probability declines and older people are less likely to move for work opportunities in comparison with younger ones. Consistent with economic theory, work motive matters more for household heads with university (15.5% for probit model and 17% for seemingly unrelated estimation) and vocational education (9.7% and 7.3% accordingly) relative to individuals with school certificate or less. Additionally, households from Luhansk region are less likely to move for the work motive.

Second, we look at the **connections**, which are found to be an important factor in many decisions. Regarding such motive as **family connections**, it is slightly more likely to matter for larger families, from Donetsk oblast. In particular, the probability to rely on this motive in their decision to flee is 3% higher for additional household member and by 11% lower for household from Luhansk oblast. Households with damaged house in Area of Origin are 6% less likely to move due to this motive. If the household head holds a university degree they are 6% less likely to choose destination due to family connection (not significant when estimated with multivariate probit).

Concerning the presence of **friends connections**, factors that matter are age of the household head and the presence of household members. Specifically, older people (up 53 years) are more likely to move due to this

motive. Households with more members are 3.3% less likely to move closer to friends and each additional child (but not adult member) increases the probability of relying on friends connections by 4%.

Next, we consider the findings for the motives of **access to basic amenities – water, electricity and health services**. On one hand, these motives matter for families with higher human capital – this finding is very robust. In particular, education is associated with an increasing probability to flee due to these motives (by 6.3-6.7% for heads with university degree and by 3.5%-4% with vocational degree, for SUR and probit respectively). Similarly, households with savings are 5%-9.5% more likely to flee to the places with access to water, electricity and health facilities. On the other hand, these motives are important for vulnerable households. In particular, multivariate probit implies that presence of vulnerable household member has a positive effect on this motivation (and it is even somewhat larger in magnitude than the effect of education). The results of seemingly unrelated estimation supported it, with increasing the probability to flee by 7% approximately. In contrast, probit estimation method suggest that for the motive connected to the access to basic services the probability increases by 5%, while for the access to health services motive the sign is negative and the probability is less than one percent.

Finally, damaged house in AoO and official status at all household members are essential for households to move for **safety and security reasons** (9.4% and 7% for seemingly unrelated estimation respectively). The presence of IDP status at all household members is also significant at multivariate probit model, while it is not significant for probit estimation.

For the motives of **free/cheap accommodation** relatively significant factor is the presence of vulnerable household member, which increase the probability of displacement by 5% (not significant for probit models). For **other motives** there is one significant factor – humanitarian assistance, which decreases the probability of displacement by 3%.

## *Chapter 5*

### CONCLUSIONS

There are many people who are forced to leave their native lands worldwide. This problem is crucial for many countries, so economists always attempt to investigate the process and consequences of involuntary migration. Forced migration is vital humanitarian and economic issue. The better we will know the essence of this issue, the more effective we can deal with it in future. Thereby, it is necessary to understand why do people move and why do they choose certain locations to stay.

Using Ukrainian data for the purpose of the research we estimated three models: multivariate probit, nine probit regressions and seemingly unrelated estimation. The results are consistent. The discussion relies upon the last model - seemingly unrelated estimation.

The obtained results imply that certain motives matter more for particular types of displaced persons and significantly affect their displacement to certain locations.

One of the largest groups which find themselves in a particularly difficult situation consists of those who are driven by the motive of accessing basic and health services. This group includes large families who have vulnerable household members. The policy implication for these people will be better access to available information about health facilities and their specifics. Assistance is needed, but it might have a time limitation in order to motivate people to seek for work. It may be provided not only as cash, but as the provision of needed medicines or temporary accommodation. The importance of work should be stressed for such people. Newsletters about available work opportunities in current region might be provided. To make the adaptation of these people easier common projects with locals and IDPs

might be created. Such projects may be directed to the improvement of city infrastructure or the ecological situation.

Work motive is an important stimulus for some other IDPs. Since younger and more educated population is more likely to flee due to this motive, the focus should be made on people of mature age. Creating newsletters with needed jobs will help those people get employed and find the best match between employer and employee. The responsibility for the creation such newsletters can be taken by local authorities with the help of Ministry of Temporarily Occupied Territories and humanitarian organizations. In addition to such policy implication retraining programs for IDPs can be added, to help some of them adjust their work skills to the demand at the new locations. Particularly, the importance of finding the job should be emphasized for people from Luhansk oblast, because results showed income-generating activity is not their prior motive of displacement. This way, investments in human capital of IDPs will increase the likelihood of being employed.

Among IDPs there are many people who are primarily driven by the safety and security factor. The provision of psychological support, especially for vulnerable categories including children, elder people and pregnant women is a necessary measure. Adaptation of such people should take place via joint initiatives between IDPs and local communities. This will smooth the social stabilization process. Social cohesion projects should focus on two goals: to make people safe and bring them together.

Also, there is a big group of people who are driven by family and friends connections. For these people the focus should be made on the work importance. Provision of work opportunities and retraining programs will help people become employed. Involvement of people into round tables, workshops regarding work, creation of common initiatives is the way for their adoption to new society.

It is important to note the presence of group which motive of displacement is social networks. The community cohesion process for these people will be smoother, because they have already secured support from their families or friends. Stressing the importance of work and the provision of trainings programs for acquiring skills needed for future work will be desired solution. Available information is key factor for these IDPs, having it will increase the chances of people become employed.

Additionally, the important policy implication is an improvement of accountability and transparency of detailed data on IDPs in all Ukrainian regions, both having official and unofficial IDP status.

Finally, we would like to mention the limitations of our research. They are connected to the size of the data. For future research it will be better to expand data for all Ukrainian oblasts in order to get more accurate results. Further research of the topic will be useful to adjust the policy regarding IDPs and will help to create effective strategies to possible changing of the situation with them in Ukraine, as well as to establish decisions assisting to meet the needs of IDPs.



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APPENDIX A

CORRELATION MATRIX OF RESPONSIVE VARIABLES

Table 6. Correlation matrix of displacement motives

	Motive 1	Motive 2	Motive 3	Motive 4	Motive 5	Motive 6	Motive 7	Motive 8	Motive 9
Motive 1	1	-0.3117	-0.0764	-0.1300	-0.2091	-0.2147	-0.1827	-0.1878	-0.1319
Motive 2	-0.3117	1	0.0239	-0.0076	0.0052	-0.0811	-0.0518	-0.0427	-0.0361
Motive 3	-0.0764	0.0239	1	0.5977	-0.0106	0.1596	0.2195	0.0743	0.1064
Motive 4	-0.1300	-0.0076	0.5977	1	0.0346	0.1217	0.2023	0.0465	0.0894
Motive 5	-0.2091	0.0052	-0.0106	0.0346	1	0.0100	0.0962	-0.0196	0.0713
Motive 6	-0.2147	-0.0811	0.1596	0.1217	0.0100	1	0.0731	0.0019	0.1130
Motive 7	-0.1827	-0.0518	0.2195	0.2023	0.0962	0.0731	1	0.1098	0.1122
Motive 8	-0.1878	-0.0427	0.0743	0.0465	-0.0196	0.0019	0.1098	1	0.0185
Motive 9	-0.1319	-0.0361	0.1064	0.0894	0.0713	0.1130	0.1122	0.0185	1

Note: Motive 1 – Family connections, Motive 2 – Friends connections, Motive 3 – Access to water and electricity, Motive 4 – Access to health services, Motive 5 – Access to home in Area of Origin, Motive 6 – Work opportunities, Motive 7 – Safety and security reasons, Motive 8 – Free/cheap accommodation, Motive 9 – Other motives

APPENDIX B

CORRELATION MATRIX OF EXPLANATORY VARIABLES

Table 7. Correlation matrix of explanatory variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Female HoH	1	-0.027	-0.021	0.019	0.072	0.113	0.074	0.106	-0.057	0.009	0.009	0.163	0.072	-0.043
(2) Age of HoH	-0.02	1	0.988	-0.33	0.036	-0.491	0.03	-0.09	-0.015	-0.179	-0.179	0.496	0.054	-0.088
(3) Squared Age of HoH	-0.021	0.988	1	-0.346	0.031	-0.49	0.021	-0.09	-0.008	-0.179	0.079	0.507	0.047	-0.078
(4) Number of household members	0.019	-0.33	-0.346	1	0.055	0.762	0.05	0.162	-0.026	0.041	-0.002	-0.061	-0.162	0.188
(5) Displaced from Luhansk oblast	0.072	0.036	0.031	0.055	1	0.062	0.131	-0.088	-0.090	0.004	-0.03	0.086	-0.028	-0.030
(6) Number of children	0.113	-0.491	-0.49	0.762	0.062	1	0.061	0.17	-0.047	0.043	-0.031	-0.014	-0.048	0.054
(7) Damaged house due to conflict	0.07	0.03	0.021	0.046	0.131	0.061	1	0.1	-0.04	-0.044	0.065	0.067	0.094	-0.095
(8) Humanitarian Assistance	0.11	-0.09	-0.09	0.162	-0.088	0.17	0.1	1	-0.02	-0.037	0.038	0.026	0.138	-0.123
(9) Savings of Households	-0.056	-0.015	-0.008	-0.026	-0.09	-0.05	-0.04	-0.02	1	0.064	-0.038	0.017	-0.017	0.027
(10) University education of HoH	0.009	-0.18	-0.18	0.041	0.004	0.043	-0.044	-0.037	0.064	1	-0.636	-0.18	0.056	-0.031
(11) Vocational training of HoH	-0.057	0.093	0.08	-0.002	-0.03	-0.031	0.065	0.038	-0.038	-0.636	1	0.039	0.012	-0.003
(12) Presence of vulnerable HH member	0.163	0.496	0.51	-0.061	0.086	-0.014	0.067	0.026	0.017	-0.18	0.039	1	0.051	-0.064
(13) All HH members have IDP status	0.072	0.054	0.05	-0.162	-0.028	-0.048	0.094	0.138	-0.017	0.056	0.012	0.051	1	-0.804
(14) Some HH members have IDP status	-0.043	-0.088	-0.078	0.188	-0.03	0.054	-0.095	-0.123	0.027	-0.031	-0.003	-0.064	-0.804	1

Note: AoO - Area of Origin, HoH – head of household, HH - household

APPENDIX C  
OLS ESTIMATION RESULTS

Table 8. OLS estimation of nine displacement motives

INDEPENDENT VARIABLES	Motive 1	Motive 2	Motive 3	Motive 4	Motive 5
Female HoH	0.0118 (0.0305)	-0.0108 (0.0285)	-0.0259 (0.0165)	-0.0166 (0.0191)	0.0109 (0.0221)
Age of HoH	-0.00414 (0.00552)	0.0180*** (0.00516)	0.00102 (0.00297)	-0.000385 (0.00346)	0.000933 (0.00398)
Squared Age of HoH	6.61e-05 (5.46e-05)	-0.000169*** (5.10e-05)	-2.01e-05 (2.94e-05)	1.12e-08 (3.42e-05)	-3.00e-05 (3.94e-05)
Number of Household members	0.0300* (0.0163)	-0.0326** (0.0152)	0.0225** (0.00877)	0.0207** (0.0102)	0.00177 (0.0117)
Displaced from Luhansk oblast	-0.107*** (0.0282)	-0.00182 (0.0263)	-0.0124 (0.0152)	-0.00947 (0.0176)	0.0246 (0.0203)
Number of children	-0.0109 (0.0250)	0.0403* (0.0234)	-0.0161 (0.0135)	-0.00813 (0.0157)	-0.0136 (0.0181)
Damaged house due to the conflict	-0.0592** (0.0276)	0.0242 (0.0258)	0.0228 (0.0149)	0.00309 (0.0173)	0.0340* (0.0200)
Humanitarian Assistance	-0.0318 (0.0280)	0.000623 (0.0262)	-0.0145 (0.0151)	-0.00661 (0.0176)	0.0313 (0.0202)
Savings of Households	-0.00708 (0.0473)	0.0428 (0.0442)	0.0957*** (0.0255)	0.0670** (0.0297)	-0.0411 (0.0342)
University education of HoH	-0.0633* (0.0375)	-0.0233 (0.0351)	0.0652*** (0.0202)	0.0677*** (0.0235)	-0.0529* (0.0271)
Vocational training of HoH	-0.0347 (0.0357)	0.0151 (0.0333)	0.0365* (0.0192)	0.0350 (0.0224)	-0.0351 (0.0257)
Presence of vulnerable HH member	-0.0271 (0.0344)	-0.0297 (0.0321)	0.0772*** (0.0185)	0.0688*** (0.0215)	0.00506 (0.0248)
All HH members have IDP status	-0.0708 (0.0515)	0.0690 (0.0481)	0.0290 (0.0278)	0.0163 (0.0323)	0.0142 (0.0372)
Some HH members have IDP status	0.0778 (0.0584)	0.0520 (0.0546)	0.0511 (0.0315)	-0.00424 (0.0366)	-0.0495 (0.0422)
Constant	0.591*** (0.142)	-0.119 (0.133)	-0.0694 (0.0768)	-0.00292 (0.0893)	0.165 (0.103)
R-squared	0.046	0.017	0.045	0.024	0.022

Note: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

For each model 1335 observations were used.

Source: author's calculations.

Motive 1 - Family connections

Motive 2 - Friends connections

Motive 3 - Access to water and electricity

Motive 4 - Access to health services

Motive 5 - Access to home in Area of Origin

Hoh – Head of household

HH - household

TABLE 8 - CONTINUED

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	Motive 6	Motive 7	Motive 8	Motive 9
Female HoH	-0.0425** (0.0209)	0.0182 (0.0264)	-0.0222 (0.0240)	0.00516 (0.0177)
Age of HoH	0.00517 (0.00377)	-0.00210 (0.00477)	-0.00127 (0.00434)	-0.0006 (0.00320)
Squared Age of HoH	-8.79e-05** (3.73e-05)	2.00e-05 (4.72e-05)	1.16e-05 (4.29e-05)	-6.44e-06 (3.17e-05)
Number of Household members	0.00221 (0.0111)	0.00064 (0.0141)	0.00938 (0.0128)	0.00902 (0.00944)
Displaced from Luhansk oblast	-0.0599*** (0.0192)	-0.00179 (0.0243)	-0.00527 (0.0221)	0.0185 (0.0163)
Number of children	-0.00809 (0.0171)	0.0202 (0.0216)	-0.0243 (0.0197)	-0.0101 (0.0145)
Damaged house due to the conflict	-0.0336* (0.0189)	0.0939*** (0.0239)	0.0296 (0.0217)	0.0188 (0.0161)
Humanitarian Assistance	0.0164 (0.0191)	0.0396 (0.0242)	0.0297 (0.0220)	-0.0315* (0.0163)
Savings of Households	0.0241 (0.0323)	0.0548 (0.0409)	0.00812 (0.0372)	0.0227 (0.0275)
University education of HoH	0.173*** (0.0256)	-0.0167 (0.0324)	-0.0385 (0.0295)	0.0268 (0.0218)
Vocational training of HoH	0.0730*** (0.0243)	-0.00483 (0.0308)	-0.0325 (0.0280)	0.0189 (0.0207)
Presence of vulnerable HH member	-0.0224 (0.0235)	0.00773 (0.0297)	0.0493* (0.0270)	0.0265 (0.0199)
All HH members have IDP status	-0.0347 (0.0351)	0.0711 (0.0445)	-0.0602 (0.0404)	-0.0410 (0.0299)
Some HH members have IDP status	-0.0367 (0.0399)	0.0562 (0.0505)	0.00401 (0.0459)	-0.0524 (0.0339)
Constant	0.145 (0.0972)	0.132 (0.123)	0.236** (0.112)	0.115 (0.0827)
R-squared	0.107	0.024	0.015	0.012

Note: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

For each model 1335 observations were used.

Source: author's calculations.

Motive 6 - Work opportunities

Motive 7 - Safety and security reasons

Motive 8 - Free/cheap accommodation

Motive 9 – Other motives

Hoh – Head of household

HH - household



APPENDIX D

THE LIKELIHOOD TEST FOR MULTIVARIATE PROBIT

Likelihood ratio test of  $\rho_{21} = \rho_{31} = \rho_{41} = \rho_{51} = \rho_{61} = \rho_{71} = \rho_{81} = \rho_{91} = \rho_{32} = \rho_{42} = \rho_{52} = \rho_{62} = \rho_{72} = \rho_{82} = \rho_{92} = \rho_{43} = \rho_{53} = \rho_{63} = \rho_{73} = \rho_{83} = \rho_{93} = \rho_{54} = \rho_{64} = \rho_{74} = \rho_{84} = \rho_{94} = \rho_{65} = \rho_{75} = \rho_{85} = \rho_{95} = \rho_{76} = \rho_{86} = \rho_{96} = \rho_{87} = \rho_{97} = \rho_{98} = 0$ :  
 $\chi^2(36) = 706.83$  Prob >  $\chi^2 = 0.0000$

Table 9. Correlation coefficients between errors

atrho21	-0.4756673	0.046401	-10.25	0	-0.566612	-0.38472
atrho31	-0.25654	0.0668525	-3.84	0	-0.38757	-0.12551
atrho41	-0.30567	0.0568047	-5.38	0	-0.417	-0.19433
atrho51	-0.33531	0.0532614	-6.3	0	-0.4397	-0.23092
atrho61	-0.43828	0.0605758	-7.24	0	-0.55701	-0.31956
atrho21	-0.4756673	0.046401	-10.25	0	0.566612	-0.38472
atrho71	-0.27202	0.0464623	-5.85	0	-0.36308	-0.18095
atrho81	-0.3153	0.0501916	-6.28	0	-0.41368	-0.21693
atrho91	-0.26582	0.0606263	-4.38	0	-0.38465	-0.14699
atrho32	0.058546	0.061186	0.96	0.339	-0.06138	0.178468
atrho42	0.07218	0.0531801	1.36	0.175	-0.03205	0.176411
atrho52	0.07722	0.0511354	1.51	0.131	-0.023	0.177444
atrho62	-0.08476	0.0562503	-1.51	0.132	-0.19501	0.025486
atrho72	-0.0694	0.0454027	-1.53	0.126	-0.15839	0.019585
atrho82	-0.03491	0.0489836	-0.71	0.476	-0.13092	0.061093
atrho92	-0.01931	0.0575272	-0.34	0.737	-0.13206	0.093444
atrho43	0.96558	0.072041	13.4	0	0.824382	1.106777
atrho53	0.016756	0.0629889	0.27	0.79	-0.1067	0.140212
atrho63	0.332641	0.0707562	4.7	0	0.193961	0.47132
atrho73	0.442605	0.062486	7.08	0	0.320135	0.565076
atrho83	0.230128	0.0599202	3.84	0	0.112687	0.34757
atrho93	0.20656	0.066978	3.08	0.002	0.075286	0.337835
atrho54	0.057411	0.059452	0.97	0.334	-0.05911	0.173935
atrho64	0.314572	0.0636073	4.95	0	0.189904	0.43924
atrho74	0.324684	0.05508	5.89	0	0.216729	0.432639
atrho84	0.18033	0.0569156	3.17	0.002	0.068777	0.291882
atrho94	0.26845	0.0659608	4.07	0	0.139169	0.397731
atrho65	0.131812	0.0623191	2.12	0.034	0.009669	0.253955
atrho75	0.183444	0.0514377	3.57	0	0.082628	0.28426
atrho85	-0.01073	0.0550077	-0.2	0.845	-0.11855	0.09708
atrho95	0.210979	0.0644622	3.27	0.001	0.084636	0.337323
atrho76	0.252735	0.0557293	4.54	0	0.143508	0.361963
atrho86	0.17928	0.0569805	3.15	0.002	0.067601	0.29096

TABLE 9 - Continued

atrho96	0.292944	0.0678766	4.32	0	0.159908	0.425979
atrho87	0.197225	0.0517147	3.81	0	0.095866	0.298584
atrho97	0.259782	0.0617392	4.21	0	0.138776	0.380789
atrho98	0.063314	0.0623878	1.01	0.31	-0.05896	0.185592
rho21	-0.44277	0.0373044	-11.87	0	-0.51287	-0.3668
rho31	-0.25105	0.0626389	-4.01	0	-0.36926	-0.12485
rho41	-0.29649	0.0518112	-5.72	0	-0.3944	-0.19192
rho51	-0.32328	0.0476949	-6.78	0	-0.4134	-0.2269
rho61	-0.41222	0.0502825	-8.2	0	-0.50575	-0.30911
rho71	-0.2655	0.0431871	-6.15	0	-0.34793	-0.179
rho81	-0.30525	0.0455148	-6.71	0	-0.39159	-0.21359
rho91	-0.25973	0.0565365	-4.59	0	-0.36674	-0.14595
rho32	0.058479	0.0609768	0.96	0.338	-0.0613	0.176597
rho42	0.072055	0.052904	1.36	0.173	-0.03204	0.174603
rho52	0.077067	0.0508317	1.52	0.129	-0.023	0.175605
rho62	-0.08456	0.0558481	-1.51	0.13	-0.19258	0.02548
rho72	-0.06929	0.0451847	-1.53	0.125	-0.15708	0.019583
rho82	-0.0349	0.048924	-0.71	0.476	-0.13018	0.061017
rho92	-0.0193	0.0575058	-0.34	0.737	-0.1313	0.093173
rho43	0.746755	0.0318678	23.43	0	0.677448	0.80292
rho53	0.016754	0.0629712	0.27	0.79	-0.1063	0.1393
rho63	0.320891	0.0634703	5.06	0	0.191565	0.439265
rho73	0.415802	0.0516828	8.05	0	0.309629	0.511734
rho83	0.22615	0.0568557	3.98	0	0.112212	0.334219
rho93	0.203672	0.0641996	3.17	0.002	0.075144	0.325543
rho54	0.057348	0.0592565	0.97	0.333	-0.05904	0.172202
rho64	0.304591	0.0577061	5.28	0	0.187654	0.413015
rho74	0.313736	0.0496585	6.32	0	0.213398	0.407524
rho84	0.1784	0.0551042	3.24	0.001	0.068669	0.283866
rho94	0.262182	0.0614267	4.27	0	0.138277	0.378005
rho65	0.131054	0.0612488	2.14	0.032	0.009669	0.248633
rho75	0.181414	0.0497448	3.65	0	0.082441	0.276844
rho85	-0.01073	0.0550014	-0.2	0.845	-0.11799	0.096776
rho95	0.207904	0.0616759	3.37	0.001	0.084434	0.325085
rho76	0.247488	0.0523158	4.73	0	0.142531	0.346942
rho86	0.177384	0.0551876	3.21	0.001	0.067498	0.283018
rho96	0.284842	0.0623694	4.57	0	0.158559	0.401956
rho87	0.194707	0.0497542	3.91	0	0.095574	0.290016
rho97	0.254092	0.0577531	4.4	0	0.137892	0.363392
rho98	0.06323	0.0621383	1.02	0.309	-0.0589	0.18349

Note: Likelihood ratio test of multivariate probit against 9 independent univariate probits showed that the multivariate probit is preferred in case. rho - corresponding correlation coefficient between; intraclass correlation

APPENDIX E

MARGINAL EFFECTS OF NINE PROBIT REGRESSIONS

Table 10. Marginal effects of nine probit regressions

INDEPENDENT VARIABLES	DEPENDENT VARIABLES				
	Motive 1	Motive 2	Motive 3	Motive 4	Motive 5
Female HoH	.012801 (.031515)	-.009934 (.02866)	-.02308 (.01469)	-.016367 (.0185)	.0081 (.02217)
Age of HoH	-.004488 (.005758)	.019217*** (.005415)	.00088 (.0028)	-.00073 (.0034)	.0027 (.00416)
Squared Age of HoH	.00007 (.00006)	-.000181*** (.00005)	-.000018 (.000027)	3.22e-06 (.000033)	-.000048 (.000043)
Number of Household members	.031439* (.016795)	-.034756** (.015648)	.01908** (.007456)	.018522* (.0095)	-.00074 (.01175)
Displaced from Luhansk oblast	-.1101*** (.028993)	-.001605 (.026415)	-.00764 (.01396)	-.00564 (.0172)	.02391 (.020235)
Number of children	-.010959 (.025823)	.04234* (.023783)	-.01563 (.011548)	-.0086 (.0145)	-.0121 (.017867)
Damaged house due to the conflict	-.060983** (.028492)	.025194* (.025834)	.0246* (.0136)	.00412 (.01695)	.03419* (.01943)
Humanitarian Assistance	-.03387 (.028902)	-.000488 (.026327)	-.01108 (.01379)	-.00492 (.01704)	.0301 (.02009)
Savings of Households	-.006901 (.048707)	.0438 (.043805)	.06282*** (.0192)	.05135** (.0261)	-.04489 (.03684)
University education of HoH	-.065419* (.03873)	-.02208 (.035512)	.06323*** (.01996)	.0675*** (.0238)	-.05336** (.02644)
Vocational training of HoH	-.035748 (.036798)	.0157126 (.0335)	.04113** (.01975)	.03857* (.02334)	-.03573 (.02483)
Presence of vulnerable HH member	.079577 (.060194)	.05582 (.056588)	.0519 (.0329)	-.00635*** (.03727)	-.0536 (.04312)
All HH members have IDP status	.012801 (.031515)	-.00993 (.02866)	-.02309 (.01469)	-.016367 (.0185)	.0081 (.02217)
Some HH members have IDP status	-.004489 (.00579)	.01922*** (.00542)	.00088 (.0028)	-.00073 (.00341)	.0026 (.00416)

Note: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: author's calculations

For each model 1335 observations were used.

Motive 1 - Family connections,

Motive 2 - Friends connections,

Motive 3 - Access to water and electricity,

Motive 4 - Access to health services,

Motive 5 - Access to home in Area of Origin

Hoh - head of household

HH - household

TABLE 10 – CONTINUED

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	Motive 6	Motive 7	Motive 8	Motive 9
Female HoH	-.0332** (.0165)	.019046 (.02688)	-.021 (.0237)	.00535 (.01747)
Age of HoH	.01615*** (.004)	-.00181 (.0048)	-.00122 (.00432)	-.0005 (.00323)
Squared Age of HoH	-.00021*** (.000044)	.0000167 (.000048)	-.00001 (.000043)	-7.39e-06 (.000032)
Number of Household members	.002589 (.00926)	.000035 (.01415)	.00944 (.01244)	.00848 (.00893)
Displaced from Luhansk oblast	-.043789*** (.01548)	-.00147 (.0244)	-.00211 (.02199)	.01796 (.01637)
Number of children	-.014178 (.01419)	.01993 (.02155)	-.025089 (.01979)	-.01004 (.01368)
Damaged house due to the conflict	-.0275* (.01549)	.0945*** (.02371)	.030082 (.02152)	.01954 (.0156)
Humanitarian Assistance	.016017 (.0154)	.041* (.0243)	.02937 (.02197)	-.0304* (.01595)
Savings of Households	.0154 (.0253)	.0533 (.040)	.00927 (.036623)	.02117 (.02552)
University education of HoH	.15557*** (.0267)	-.0165 (.03258)	-.03667 (.02884)	.02764 (.02189)
Vocational training of HoH	.097342*** (.0263)	-.00494 (.0309)	-.0307 (.02708)	.02175 (.02109)
Presence of vulnerable HH member	.028481 (.03223)	.07013 (.05424)	.005084 (.0435)	-.0483 (.03088)
All HH members have IDP status	-.033211** (.01654)	.01905 (.02688)	-.0213 (.0237)	.00535 (.01747)
Some HH members have IDP status	.01615*** (.004)	-.00181 (.0048)	-.00122 (.00432)	-.0005 (.00323)

Note: Standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: author's calculations

For each model 1335 observations were used.

Motive 6 - Work opportunities

Motive 7 - Safety and security reasons

Motive 8 - Free/cheap accommodation

Motive 9 - Other motives

Hoh - head of household

HH - household