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Essays on Remittances and Bribery

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Dissertation

Prague, September 2017

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To my parents

I love you

Acknowledgments

First of all, I would like to thank my supervisors, Randall K. Filer and Jan Hanousek, for their advices, patience and support. I am not sure that I would manage to finish without these two professors standing by my side. I still remember how we were sitting and talking with Randy about my future and the idea of the first paper on Ukraine appeared. I am very grateful to Randy and Honza for their support after every conditional pass. Thank you for allowing me to have you as my supervisors.

I would like to express my gratitude to Barbara Forbes, for her optimism and believe in me and the first mentioning of Ukraine as the idea for my dissertation topic; Anastasiya Shamshur for pushing me towards the defense and tolerating my pessimism and negativity; and Alena Bichakova for being my first internal chair and giving valuable comments for my first paper.

I am grateful to my parents and my whole big family. Without their love, patience, believe and support over these seven years this dissertation defense would not be possible.

I am thankful to my friends and colleagues, who were there with me during these years: Petar Buha, Azamat Valei, Iryna Sabat, Tetyana Kolomieets,

Pavel Ulyanuk, Liyou Borga, Myroslav Pidkyuko, Kyrychenko family, Aliona Kravchenya and Elena Syvachuk for their support, hugs and tolerance. I am happy to have such friends.

My paper would not be presented in time without help and support of Kresimir Zigic, Lenka Pavlikova, Iva Havlickova, and Tereza Kulhankova and members of the CERGE-EI Academic Skills Center. Thank you for hard work and patience towards me.

I dedicate this dissertation to my parents. Bez vas ya bu tyt ne stoyala!
(Without you I would not be here)

Czech Republic, Prague
September, 2017

Yulia

Abstract

This dissertation deals with topics of remittances in Ukraine and corruption in the Czech Republic. Chapter 1 analyzes remittances sent by Ukrainian emigrants to their country of origin. It explores the dependence on remittances of a household's spending on human capital, savings and donations, against the backdrop of the political situation in Ukraine in 2004. The paper also explores the effect of the political instability in Ukraine on how the households receiving remittances used them. The results of a Ukrainian Longitudinal Monitoring Survey (ULMS) are used to explore households' decision to spend on human capital development, save, or donate money; depending on their political views and future expectations. The main hypothesis tested is whether the individuals who supported and/or were involved with the Revolution ("pro-orange"), and who were optimistic about the future of Ukraine after the Orange Revolution, saved/donated more money than those who did not support the Revolution ("pro-blue-white"). In addition, the level of influence of remittances received from relatives or friends outside Ukraine on decisions to save and donate money is analyzed. The results show that the political views of respondents do not have a significant effect on decisions to save and/or donate money. However, respondents' political orientations do have a significant effect on the probability of receiving remittances - those who voted for "pro-orange" have a lower probability of receiving remittances from outside the household.

Chapter 2 deals with remittances sent by Ukrainian emigrants to their country of origin. It explores the main factors influencing the probability of obtaining remittances from abroad as well as the amount of remittances. We investigate how the planned future

usage of remittances affects the likelihood of receiving them. The results of a survey of households in Ukraine were used to investigate the main defining factors for obtaining financial inflows from abroad, in addition to exploring the expenditures financed by remittances. Although the results of our analysis show that few factors have a significant influence on the probability of obtaining remittances and on their size, this topic warrants further investigation. The findings are important for policymakers as the Ukrainian government might design and implement policies that increase the development potential of remittances, while eliminating their negative side effects.

In the Chapter 3 corruption in the Czech Republic was analyzed. Corruption has become a common phenomenon in the CEE (Central and Eastern Europe) countries, including the Czech Republic. Even though corruption in the Czech Republic, especially at the government and enterprise level, is strongly criticized, the results of the following research show that the majority of firms have conducted some sort of corrupt behavior. Taking this into account, the research explores micro- and macro-level variables which might influence firms' decisions to bribe. For the purpose of the research, both BEEPS and Amadeus datasets for the Czech Republic are merged using a cluster methodology. The main question under consideration is why firms bribe and what the main factors are that influence their decisions to bribe. The research also explores the outcome of firms' decision-making processes regarding bribes based on firms' size, the industry in which they operate and the year. Estimated results show that firms' financial performance does not greatly depend on the level of corruption on the local market. In addition, firms' market share and level of bribery are found to have a negative dependence, meaning that a higher market share of the firm leads to a lower level of bribery. This research can be considered as guidance on which policies the Czech government could adopt in order to reduce the level of corruption and occurrences of bribery in the country.

Abstrakt

Tato disertace se zabývá tématem finanční pomoci rodné zemi imigranty z Ukrajiny a korupcí v České Republice. První kapitola analyzuje finanční pomoc poslanou Ukrajinskými emigranty do jejich rodné země. Kapitola zkoumá závislost na finanční pomoci a výdajů domácností na lidský kapitál, spoření a dary charitě, v porovnání s politickou situací na Ukrajině v roce 2004. Disertace též zkoumá efekt politické nestability na úroveň útraty daných domácností, jenž obdržely finanční pomoc ze zahraničí od emigrantů. Výsledky Ukrainian Longitudinal Monitoring Survey (Ukrajinský Dlouhodobý Monitorovací Dotazník, ULMS) jsou využity k analýze rozhodnutí domácností na útratu na vývoj lidských zdrojů, spoření, či darování peněz na charitu, v závislosti na politické orientaci a očekávání budoucnosti dotázaných. Primární prozkoumaná hypotéza jest zda jedinci kteří podporovali či byli přímo zapojeni do Oranžové Revoluce (“pro-orange”), a kteří byli optimističtí ohledně budoucnosti Ukrajiny po Oranžové Revoluci, spořili/darovali více peněz než ti, kteří nepodporovali Oranžovou Revoluci (“pro-blue-white”). Dále je analyzována úroveň vlivu finanční pomoci ze zahraničí od rodiny či známých na rozhodnutí spořit či darovat prostředky na charitu. Výsledky ukazují že politické názory dotazovaných nemají významný vliv na rozhodnutí zda spořit či darovat peníze. Politická orientace dotazovaných nicméně měla vliv na pravděpodobnost získávání finanční pomoci ze zahraničí; ti, jenž volili “pro-orange” měli menší pravděpodobnost získávat finanční pomoc.

Druhá kapitola pojednává o finanční pomoci, poslané Ukrajinskými emigranty, do Ukrajiny. Zkoumá hlavní faktory ovlivňující pravděpodobnost získávání finanční pomoci ze zahraničí, jakožto i sumu této finanční pomoci. Zkoumáme, jak plánované využití finanční

pomoci ovlivňuje pravděpodobnost jejich získávání. Výsledky dotazníku domácností v Ukrajině byly využity pro výzkum hlavních faktorů určujících získávání finanční pomoci ze zahraničí a jejich následného využití. Ačkoliv výsledky naší analýzy ukazují že jen málo faktorů má vliv na pravděpodobnost získání finanční pomoci ze zahraničí, toto téma si zaslouží další výzkum. Výsledky jsou důležité z politických důvodů, protože ukrajinská vláda by na jejich základě mohla vytvořit a implementovat směrnice které by zvýšily rozvojový potenciál finanční pomoci a zároveň eliminovaly negativní dopady této pomoci.

Ve třetí kapitole je analyzována korupce v České Republice. Korupce se stala častým fenoménem v zemích centrální a východní Evropy, Českou Republiku nevyjímaje. I když je korupce v České republice silně kritizována, zvláště na státní a firemní úrovni, výsledky našeho výzkumu ukazují že se většina firem podílela na nějakém typu korupčního chování. Na základě těchto nálezů se zkoumaly, na mikro a makro úrovni, faktory ovlivňující rozhodnutí dávat úplatky. Pro tuto analýzu byly spojeny BEEPS a Amadeus datasey pro Českou Republiku na základě metodologie klastrů. Hlavní otázkou byly důvody pro úplatky firem a hlavní faktory ovlivňující tyto úplatky. Dále jsou zkoumány výsledky rozhodovacích procesů ohledně uplácení na firemní úrovni, na základě velikostí firem, průmyslu ve kterém tyto firmy operují, a rok ve kterém byly dané úplatky provedeny. Došli jsme k závěru že úroveň úplatkářství na místním trhu významně neovlivňuje finanční výsledky firem. Dále, podíl na trhu a úroveň úplatkářství firem mají negativní korelaci, což ukazuje že větší podíl na trhu vede k nižší úrovni úplatkářství. Tento výzkum lze využít k lepšímu rozhodování politiky české vlády ohledně snižování korupce a úrovně úplatkářství v zemi.

Introduction

Political ideology can corrupt the mind, and science.

E. O. Wilson

The dissertation covers two important, although different, topics. The first two chapters consider the question of remittances in Ukraine, looking into two different time periods - during the Orange Revolution and since 2010. The third chapter touches the topic of corruption on the firm level in the Czech Republic. Even though the two topics do not have many reference points in common, it is widely known that Ukraine has a high level of registered corruption on the government and firm levels. This gave us the idea of exploring corruption on the available data and to further extend it to Ukraine.

The first two chapters of the dissertation consider remittances. The first chapter aims to fill a gap by exploring remittance channels and factors which influence the size and probability of remittances being sent. Moreover, the data used allow us to measure the dependence of remittances on political shocks, in this case the Orange Revolution in Ukraine in 2004. Political instability in Ukraine - a country with high levels of corruption, bureaucracy and a significant amount of economic and governmental problems - has a significant influence on financial inflows from the outside. Considering the fairly high level of emigration from Ukraine, resulting in a high amount of financial assistance flowing back into the country in the form of remittances from Ukrainian emigrants, the topic is important. The Ukrainian Longitude Monitoring Survey was used to investigate emigrants' decision to send remittances, and the main variables influencing their decision. Political factors were incorporated into the model by checking people's political

preferences during the election in the period of the Orange Revolution. Results of the estimation show that the political views of household members do indeed have a significant influence on emigrants' decisions to send financial support to their families in Ukraine. Another interesting observation touches on the topic of spending remittance inflows in the country of the emigrants' origin. Savings and donations are not significantly dependent on political views; household political preferences are irrelevant to how remittances are saved or spent.

The second chapter also studies remittances in Ukraine, exploring the main variables influencing emigrants' decisions to send money to Ukraine. The study uses recently collected data from the International Organization of Migration. This data contains information on remittances. A unique feature of the data is that it was collected on Ukrainian households which included emigrants, randomly chosen from the overall population. In addition, the data was collected in 2015, therefore the results reflect the contemporary situation. Our results partially agree with those obtained and described in the first chapter of the dissertation. They show that remittances sent from emigrants to their relatives in Ukraine are, in most cases, sent randomly. There are not many variables with a significant influence on the likelihood of receiving remittances. Even though several of the main hypotheses have not been confirmed, the country of an emigrant's destination and the pattern for remittance spending (investment or saving) have been found to be significant predictors of the likelihood of receiving remittances.

Overall, the first two chapters provide useful input on the topic of remittances in Ukraine. Note that there is currently little research using a data sample from Ukraine. In addition, both data samples used in the dissertation, ULMS and IOM data, can be considered unique, since they cover important economic topics not only from the perspective of the country, but also from the perspective of the household.

The final chapter of the dissertation explores the topic of corruption on the firm level in the Czech Republic. The Czech Republic is considered to have an average level of corruption in relation to other Central and Eastern Europe countries. For the purpose of this research, corruption was measured using a categorical question "Thinking about officials, would you say the following statement is always, usually, frequently, sometimes, seldom or never true? - It is common for firms in my line of business to have to pay some irregular additional payments or gifts". Investigating a large sample of Czech firms, with different sets of characteristics (including size, location, industry, etc.), the work explores a firm's decision to bribe. The main explanatory variables of the firm, including

size, profitability, market segment, and financial performance were incorporated in the estimated model for a firm's decision to bribe. Though the results do not prove that firms' financial performance significantly depend on the level of corruption on the local market, a number of other important predictors, e.g. the firm's market share, have negative influence on the level of bribery on the local market. Further extensions of the research, with a wider and more comprehensive data sample, could have a significant effect on possible changes in related policies implemented by the Czech government.

The three chapters of the dissertation cover important and valuable topics for current society, including remittances, migration and corruption. Though they are not closely correlated, they are connected from the long-run perspective.

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Chapter 1

Remittances, Spending and Political Instability in Ukraine

This paper analyzes remittances sent by Ukrainian emigrants to their country of origin. It explores the dependence on remittances of a household's spending on human capital, savings and donations, against the backdrop of the political situation in Ukraine in 2004. The paper also explores the effect of the political instability in Ukraine on how the households receiving remittances used them. The results of a Ukrainian Longitudinal Monitoring Survey (ULMS) are used to explore households' decision to spend on human capital development, save, or donate money; depending on their political views and future expectations. The main hypothesis tested is whether the individuals who supported and/or were involved with the Revolution ("pro-orange"), and who were optimistic about the future of Ukraine after the Orange Revolution, saved/donated more money than those who did not support the Revolution ("pro-blue-white"). In addition, the level of influence of remittances received from relatives or friends outside Ukraine on decisions to save and donate money is analyzed. The results show that the political views of respondents do not have a significant effect on decisions to save and/or donate money. However respondents' political orientations do have a significant effect on the probability of receiving remittances - those who voted for "pro-orange" have a lower probability of receiving remittances from outside the household.

1.1 Introduction

According to the World Bank Outlook Report 2015, remittances are one of the largest sources of external financing for developing countries. In 2015, remittance inflows to developing countries were over \$ 430 billion, a level that was expected to increase to \$ 516 billion by 2016 (World Bank, 2016). In terms of economic development, one of the main questions, aside from the key determinants of the size of remittances, is: how are remittances spent in the receiving country? Are these cash flows fully spent on consumption, or are they partially saved, spent on the development of human capital or possibly even donated?

Researchers and policymakers tend to have diverse and rather pessimistic views on how remittances are actually spent, as well as their impact on economic development (Ratha, 2013; Adams, Cuecuecha, and Page, 2008). A widespread belief is that migrants do not have a strong desire to invest in productive enterprises in their home country, but instead tend to invest their money in consumption (De Haas, 2005). The European Investment Bank (2006) states that remittances are mainly spent on “daily expenses and therefore do not have large developmental impact” (p. 104). Generally, there are several notions about the expenditure channels and the economic influence of remittances in the receiving country. Firstly, remittances are assumed to be spent at the margin; no difference exists between remittance income and other types of income. A second notion is based on the fact that remittances might cause changes at the household level, which might in turn decrease their development impact at the national level. The third notion holds that remittances have a positive effect on individual investments in human and physical capital. Political instability, internal shocks and social conflict generally create significant uncertainty about the determinants that are crucial to investment decisions. Government turnover can impact investment decision and lead to an unstable incentive and policy framework (Horowitz, Hoff, and Milanovic, 2009; Li, 2009). Also, an unstable political situation can lead to economic environments that decrease remittances (Aydas, Metin-Ozcan, and Neyapti, 2005; Alesina and Perotti, 1996) and, as a result, change household expenditure patterns.

Ukraine is a leader in terms of receiving remittances in the CEE region. In 2015, officially recorded international remittances to households in Ukraine were more than \$ 5 billion (National Bank of Ukraine, 2015). This sum has decreased in comparison with previous years. For example, in 2013, remittances to Ukraine peaked at more than \$ 8.5 billion. Moreover, Ukraine experienced major political changes in relatively recent history. Fraud in the 2004 Presidential Elections led to the Orange Revolution, and, as a result, a major change in political powers, that had a significant influence on Ukrainians’ expectations about the future of their country (Goncharuk, 2007). The Orange Revolution was a turning point not only in the history of Ukraine, but also the most significant political event in Eastern Europe since the fall of the Berlin Wall in 1990. Falsification of results during the

second round of the presidential elections caused a wave of massive protests and started a period of political transformation in Ukraine (D'Anieri, 2005). The Revolution was about political development toward an “open society” and change of political regime in Ukraine (Arel, 2005). Moreover, the economic orientation of Ukraine changed after the results of the 2004 Presidential Election, as did the economic expectations of Ukrainian emigrants. The Orange Revolution and its consequences can be seen as a natural experiment, as it influenced two major parts of Ukraine (Eastern and Western Ukraine, divided by the Dnipro river) in different ways.

According to a poll conducted by the Kiev Institute of Sociology, a week after the final round of the Presidential Elections in 2004, the majority of Ukrainians (67%) expressed either trust or hope towards the newly elected president Yushchenko. However, Western and Central regions of Ukraine showed the largest degree of trust in Ukraine's new leader (86% and 85% respectively), followed by the Southern regions (54%). The only regions which expressed the largest uncertainty and lack of trust in the President's ability (trust Yushchenko - 39%, do not trust 46%) were in the East (DI/KIIS, 2005). The economic expectations of Ukrainian emigrants who were following the events in Ukraine during the elections in 2004 from abroad might also reflect similar patterns. Emigrants from Eastern regions of Ukraine might have been uncertain about the political and economic situation in Ukraine after the Orange Revolution and may have had a larger desire to financially help their relatives in Ukraine. On the other hand, emigrants from Western Ukraine, who might have had more optimistic expectations for Ukraine's future, might have started to send larger sums of money expecting it to be saved, or possibly invested in Ukraine (e.g. opening new businesses, investing into bonds/real estate, etc.).

This paper explores the dependence of an individual's spending on human capital, savings and donations on the remittances, and the probability of receiving remittances, from against the backdrop of the political situation in Ukraine in 2004. The results of the nationally-representative household survey in Ukraine (Ukrainian Longitudinal Monitoring Survey) are used to explore individual's decision to spend on the human capital, save or donate money, depending on their political views and future expectations. The main hypothesis to be explored is whether the individuals who supported/were involved in the Orange Revolution (“pro-orange”) and were optimistic about the future of Ukraine, saved/donated more money than those who did not support the Revolution (“pro-blue-white”). Moreover, the level of influence of remittances received from relatives or friends outside of Ukraine on the individuals' decision to save and donate money is analyzed.

1.2 Literature review

Increases in the size of migrants' remittances led to greater attention to their potential role as an important source of investment and foreign currency (World Bank, 2005; Ratha, and

Mohapatra, 2007; Ratha, 2007). In addition, the dependence of investment and economic growth on remittances has also been given the subject of attention (Djajic, 1986, 1998; Nikas, and King, 2005; Kireyev, 2006; Vargas-Silva, and Huang, 2006). Much of the existing literature on remittances and investments provides analyzes of the dependence of savings, investments, financial development, and economic growth on the remittances received (Adams, 2007).

Spending patterns of remittance earnings has become a lively topic for research over the last decade. McKenzie and Sasin (2007) argue that researchers should try to determine whether remittances are spent mainly on consumption or on investment. Chami, Fullenkamp, and Jahjah (2003) identify three stylized facts of remittances: The first is that “a significant proportion, and often the majority, of remitted funds are spent on consumption” (Chami et al, 2003, p. 8). Secondly “a significant, though generally smaller, part of remittances does go into uses that we can classify as saving or investment”, and thirdly “the household saving and investment that are done using remittances are not necessarily productive in terms of the overall economy” (Chami et al, 2003, p. 9).

The majority of papers on the remittances topic support the first two stylized facts by Chami et al, (2003). For example, Tabuga (2007) uses a household survey in the Philippines and provides mixed evidence of the impact of remittance inflows. The study finds that a large proportion of transfers from abroad is usually spent on everyday consumption, e.g. consumer goods or leisure, but in addition, remittance inflows are spent on education and housing.

In other research, supporting the second stylized fact, Castaldo and Reilly (2007) underline that Albanian households which receive international remittances tend to spend a significant part of the money inflows on durable goods and utilities and less on food consumption, compared to households not receiving remittances. In more detail, a greater amount of household expenditures are spent on investment-type goods. As later found by Taylor and Mora (2006) “investment is higher in households with migrants than in those without migrants, while the proportion of consumption expenditure is lower” (Taylor and Mora, 2006, p. 21).

These results are also confirmed by the findings in a paper by Zarate-Hoyos (2004), who explores data from Mexican households and finds that households spend a significant part of their remittances on investments. Moreover, the author adds that the possible difference in consumption patterns for urban and rural areas might be explained by the basic lack of infrastructure, rather than individual characteristics.

The second stylized fact is also supported by the IMF World Economic Outlook (IMF, 2005), which states that remittances have a positive effect on the level of personal investments in human and physical capital. On the other hand, Clement (2011), in his research on Tajikistan, finds that neither internal nor external remittances have a positive effect on any particular category of investment expenditure. No significant impact of remittances on

human capital investment was found by Cattaneo (2012) in the case of Albania. However, many studies with a different research context find evidence that remittances and migration have a significant positive effect on education expenditure. For example, Kifle (2007) explores data for Eritrea and finds that households receiving remittances from abroad tend to spend more on education compared to households that do not receive remittances.

Political instability, high risks and low levels of law and order and other general risks in a remittance-receiving country create a detrimental environment for investment (IMF, 2005). However, remittances are more needed during crises, so this may increase the amount of remittances. Moreover, investment opportunities in the receiving and sending country might also have an effect on remittances. A higher probability of investment return in the receiving country might increase migrants' willingness to invest in their home country and influence the size of the remittances sent (IMF, 2005). The empirical analysis presented in this paper is in line with the previous studies and is applied to Ukraine, a country with a high level of international remittances.

1.3 Empirical methodology

A major change in political powers in Ukraine in 2005 after the Orange Revolution may have stimulated individuals to support Ukraine's economy by saving and expecting profit opportunities. The main research question considered is whether an individual's (receiver or non-receiver of remittances) political orientation during the transition period in Ukraine in 2004 influenced his/her decision to save, donate and/or spend money on education. I analyse whether the individuals who supported the Orange Revolution and the new government were optimistic about Ukraine's economic environment and therefore saved/donated. Further, I investigate the influence of general characteristics of an individual, including region of origin, education, age, age², language, possible relatives outside of Ukraine etc., on the size of remittance inflows obtained.

In order to interpret the probability of obtaining remittances from abroad, the following equation, similar to Merkle and Zimmermann (1992) is used:

$$\begin{aligned}
 Remit_i = & \alpha_1 Polit_Act_i + \alpha_2 Third_Round_i + \alpha_3 Pers_Attit_i \\
 & + \alpha_4 Paid_for_education_i + \alpha_5 Paid_for_trainclass_i + \alpha_6 Satis_Mon_Inc_i \\
 & + \alpha_7 Moved_Out_HH_i + \alpha_8 Emigrated_before_2004_i \\
 & + \alpha_9 Emigrated_before_2007_i + \alpha_{10} \log(Income_i) + \alpha_{11} Z_i + u_i
 \end{aligned} \tag{1}$$

$$E(u_i | x_1, \dots, x_k) = 0$$

in which i is an individual's index, $Remit$ is a dummy variable showing whether an individual received remittances from abroad, and it equals one if the respondent obtained

some remittances and zero otherwise; *Polit_Act* is a binary variable that equals one if the respondent was involved in political activities; *Third_Round* is a binary variable that equals one if the person voted during the third round of the Presidential Elections (December 26, 2004); *Pers_Attit* is a dummy variable which equals one in the case that the respondent has “more or less agreed with the “pro-orange side” and zero if the responder “more or less agreed with the “pro-blue –white side”. Expenditure on human capital is defined by two dummy variables *Paid_for_education* and *Paid_for_trainclass* - they are equal to one if the respondent spent any money either on education, or on a training class sometime during the 30 days before the interview, respectively, and equal to 0 otherwise; *Satis_Mon_Inc* is a binary variable which equals one if the respondent specified that he is satisfied with his/her monthly disposable personal income, and equals zero otherwise;¹ *Moved_Out_HH* is a dummy variable which equals one if at least one ex-household member moved out of the household to another city inside Ukraine, and 0 otherwise; *Emigrated_before_2004* is a dummy variable which equals one if somebody emigrated from the household before 2004,² and 0 otherwise; *Emigrated_before_2007* is a dummy variable which equals one if somebody emigrated from the household before 2007,³ and 0 otherwise; *Income* is a variable which equals respondents stated income for 12 months, Z is a vector of exogenous individual characteristics which most likely affect the emigrant’s decision to invest, including age, gender, number of children in the household, language.⁴

In addition to *Moved_Out_HH*, another dummy variable was considered – *Moved_Outside_HH*, which equals one if at least one household member moved out of Ukraine since 2004 (previous interview) and 0 otherwise. Moreover, *Emigrated_before_2004* and *Emigrated_before_2007* variables were not estimated in the model together with the *Moved_Out_HH* and *Moved_Outside_HH* dummy variables.

There are two main hypotheses that will be tested. The first is $H_0 : \alpha_3 = 0$. It explores whether a respondent’s views/attitudes towards the political situation in Ukraine have a significant influence on the possibility of him/her obtaining remittances from friends/relatives abroad. It might be the case that relatives/friends and a respondent had different political preferences, thus decreasing the probability of obtaining remittances. The second hypothesis is $H_0 : \alpha_4 = 0$. It checks the dependence of remittances on the respondent’s investments in human capital. The possible dependence might be explained by the fact

¹ Question: “We are interested in what extent you are satisfied with some aspects of your life. Please tell me, to what extent you are satisfied or dissatisfied with the level of your monthly disposable personal income.”

² This information was taken from the second wave survey and the question asked was “Please tell me why is [NAME AND PATRONYMIC] living separately?”, meaning whether somebody emigrated from the household before the Orange Revolution.

³ This information was taken from the third wave survey and the question asked was “Please tell me, why is [NAME AND PATRONYMIC] no longer a member of your household?”, meaning whether there is someone who emigrated from the household after the Orange Revolution but before 2007.

⁴ *Language* is a dummy variable that equals one if the immigrant speaks Ukrainian and zero if the respondent’s language is Russian.

that relatives/friends abroad might send larger sums if there is a child in a household and the sender expects that money will be spent on the child's education. Lastly, respondents "participation" in donations and financial aid to others was checked.

In order to check the household's expenditure structure the following equations, modified from Merkle and Zimmermann (1992) will be estimated:

$$\begin{aligned}
Saved_i &= \gamma_1 Remit_i + \gamma_2 Polit_Act_i + \gamma_3 Third_Round_i \\
&+ \gamma_4 Elect_Satisf_i + \gamma_5 Ukr_Sit_i + \gamma_6 Optimist_i + \gamma_7 Pers_Attit_i \\
&+ \gamma_8 Relatives_Attit_i + \gamma_9 Satisf_Mon_Income_i \\
&+ \gamma_{10} Satisf_Fin_Prosp_i + \gamma_{11} X_i + \varepsilon_i
\end{aligned} \tag{2}$$

$$E(\varepsilon_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Donated_i &= \beta_1 Remit_i + \beta_2 Polit_Act_i + \beta_3 Third_Round_i \\
&+ \beta_4 Elect_Satisf_i + \beta_5 Ukr_Sit_i + \beta_6 Optimist_i + \beta_7 Pers_Attit_i \\
&+ \beta_8 Relatives_Attit_i + \beta_9 Satisf_Mon_Income_i \\
&+ \beta_{10} Fin_Prosp_i + \beta_{11} X_i + \epsilon_i
\end{aligned} \tag{3}$$

$$E(\epsilon_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Paid_for_education_i &= \delta_1 Remit_i + \delta_2 Polit_Act_i + \delta_3 Third_Round_i \\
&+ \delta_4 Elect_Satisf_i + \delta_5 Ukr_Sit_i + \delta_6 Optimist_i + \delta_7 Pers_Attit_i \\
&+ \delta_8 Relatives_Attit_i + \delta_9 Satisf_Mon_Income_i \\
&+ \delta_{10} Satisf_Fin_Prosp_i + \delta_{11} X_i + \omega_i
\end{aligned} \tag{4}$$

$$E(\omega_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Paid_for_training_classes_i &= \eta_1 Remit_i + \eta_2 Polit_Act_i + \eta_3 Third_Round_i \\
&+ \eta_4 Elect_Satisf_i + \eta_5 Ukr_Sit_i + \eta_6 Optimist_i + \eta_7 Pers_Attit_i \\
&+ \eta_8 Relatives_Attit_i + \eta_9 Satisf_Mon_Income_i \\
&+ \eta_{10} Satisf_Fin_Prosp_i + \eta_{11} X_i + \phi_i
\end{aligned} \tag{5}$$

$$E(\phi_i | x_1, , x_k) = 0$$

in which i is an individual's index, *Saved* is a binary variable that equals one if the respondent saved money during the last 12 months; *Donated* is a binary variable that equals one if the respondent made any donations to public foundations/churches/religious or-

ganizations; Education is represented by two dummy variables: *Paid_for_education* and *Paid_for_trainclass* - which equal one if the respondent spent anything on education or training during the 30 days prior to the interview, and zero otherwise; *Elect_Satisf* is a variable which shows the respondent's satisfaction with the final resolution of the political events in 2004;⁵ *Ukr_Sit* is a variable which shows the respondent's attitude towards the general situation in Ukraine after the final stage of the Presidential Elections in 2004; *Optimist* is a dummy variable which equals one if the respondent is optimistic about Ukraine's future and zero if he/she is pessimistic; *Relatives_Attit* is a dummy variable which equals one if the respondent's relatives "more or less agreed with the "pro-orange side" and zero if they "more or less agreed with the "pro-blue-white side"; *Satis_Fin_Prosp* is a binary variable which equals one the respondent specified that he/she is satisfied with his/her financial prospects, and zero otherwise.⁶ X is a vector of exogenous individual characteristics, which most likely affect the emigrant's decision to invest, including age, gender, language, region of current residence,⁷ number of children in the household.

Questions referring to the *Satis_Mon_Inc*, *Ukr_Sit*, *Satis_Fin_Prosp*, *Optimist* and *Elect_Satisf* variables are categorical with answers ranging from 1 to 5 (1 being the worst, and 5 being the best answer). Dummy variables were made in the following way: category 3 is considered the cutoff, answers 1 and 2 formed a dissatisfied/pessimistic group, and answers 4 and 5 are full satisfaction/optimism.

According to the models (2 - 5) there are two main hypotheses to be tested. The first is $H_0 : \beta_6 = 0$ or/and $\gamma_6 = 0$ or/and $\delta_6 = 0$ and/or $\eta_6 = 0$. The research question explored by analysing this hypothesis is whether the respondents who felt optimistic about Ukraine's future after the Orange Revolution and the final stage of the presidential elections saved more money or donated to charitable organisations. In the case of optimistic expectations of the country's future, many people invest in by buying bonds/shares, saving money etc. The second hypothesis tested is $H_0 : \beta_7 = 0$ or/and $\gamma_7 = 0$ or/and $\delta_7 = 0$ and/or $\eta_7 = 0$. The research question examined is whether a respondent's attitude towards the winning "side" has a significant effect on the decision to save/donate. Moreover, the *Remit* coefficient ($H_0 : \beta_1 = 0$ or/and $\gamma_1 = 0$ or/and $\delta_1 = 0$ and/or $\eta_1 = 0$) shows the effect of remittances on the respondent's decision to save/donate money.

⁵ Question: "To what extent were you satisfied with how the political event was resolved by January 2005?"

⁶ Question: "Please tell me to what extent you are satisfied or dissatisfied with your financial prospects for the future."

⁷ *Region* is a dummy variable that equals one if the respondent lives in Western Ukraine and zero if in Eastern.

1.4 Data description

Data source

Data from the Ukrainian Longitudinal Monitoring Survey (ULMS) is used. The data was collected during three waves of a survey in the program “Labor Markets in Emerging and Transition Economies” by the Institute for the Study of Labor (IZA). The ULMS currently consists of data samples for three waves: 2003, 2004 and 2007. The study uses the third wave dataset, due to structure of the survey, explained below.

The main blocks in the household and individual sections of the ULMS is described in Tables 1 and 2 (Lehmann, Muravyev, and Zimmermann, 2012). Table 1 shows the main blocks in the household questionnaire by wave. Table 2 shows the content of the individual section of the survey by wave. In wave 3, two additional topics were added, one on the 2004 Presidential Elections (the Orange Revolution) and the Remittances section. Due to the specification of the research question, only wave 3 is used. In order to create a specific dummy variable (*Emigrated_before_2004*), partial data from wave 2 is also used.

Table 1.1: Main blocks in the household questionnaire by wave

Block of questions	ULMS 2003	ULMS 2004	ULMS 2007
Structure of household	X	X	X
Housing Conditions	X	X	
Household Assets, Income and Expenditures	X		
Household Assets and Income		X	
Household expenditures		X	X
Housing Conditions and Household Assets			X
Land Use and Home Production			X
Household Income			X
Saving and Borrowing			X
Transfers and Remittances			X

As outlined above, the dataset for the third wave (2007) is used, because it includes two new modules in the individual survey: a module on the political attitudes of people in connection with the Orange Revolution as well as a module on risk and time preference attitudes of individuals (Lehmann et al, 2012). Answers to the questions on political attitudes in the survey show the participation of Ukraine’s residents in the Orange Revolution, and they detect information on the motivation of respondents. Respondents were also asked to reveal their political preferences, i.e. whether they supported the Orange Revolution or whether they sympathized with the Blue-White party. Moreover, respondents were asked about their views regarding the future political and economic prospects of Ukraine. The

Table 1.2: Main blocks in the individual questionnaire by wave.

Block of questions	ULMS 2003	ULMS 2004	ULMS 2007
Main job and second jobs in the reference week	X	X	X
Unemployment and job seeking in the reference week	X	X	X
Main jobs in 1986, 1991, 1997, 1998-2003	X		
Non-employment in 1986, 1991, 1997, 1998-2003	X		
Main jobs since the last wave		X	X
Non-employment since the last wave		X	X
Education and skills	X	X	X
Skills			
Studies and skills			
Employment skills			
Changes of residence in 1986-2003	X		
Changes of residence since the last wave		X	X
Attitudes, health, and ecology	X	X	
Attitudes, expectations, health, ecology and the Presidential elections in 2004			X
Attitudes, expectations, health and contact			
Section for women only. Maternity history			X
EST Reading Exercises (STEP module)			

list of political questions regarding the Orange Revolution and Presidential Elections in 2004 was obtained from the Individual Questionnaire and can be found in the Appendix.

The initial ULMS sample (Wave 2003) includes 8,641 working age individuals in 4,055 households. The third wave survey used includes 6,774 individuals in 3,101 households. There were no additions to the sample between the second and third waves, but new households might appear due to household changes (marriages, children enter the survey at the age of 15 etc.).

Individual and household datasets are merged using a household code for 2007 as a corresponding point. Several dummy variables are created, and the data cleaned of empty variables so the size of the data sample, is reduced to 3,084 observations. We examine household expenditures on savings, payment for higher education establishments and probability of donations. The list of questions regarding a household's expenditure in the

ULMS is presented in the Appendix. In order to estimate the model, the section on remittances and other transfers to the household is used. The list of questions from the ULMS Household questionnaire is also presented in the Appendix.

Definition of variables

The dependent variables are *Remit* (whether a household received any financial support or remittances from non-members of the household), *Saved* (whether a respondent saved money in 2007) and *Donated* (whether the respondent saved/donated money in the 30 days prior to the interview). *Education* is defined by two variables: *Paid_for_education* and *Paid_for_trainclass*, meaning whether respondents spent anything on either of these during the 30 days prior to the interview.⁸ Table 3 presents some descriptive statistics for the main outcome variables including respondents' political views and region of residence.

The explanatory variables include the set of Orange Revolution characteristics (political views, participation in political activities, satisfaction with the election results etc.), personal characteristics (gender, age, language, region, number of children in the household etc.) and the household's financial situation (financial prospects, monthly income, etc.). Remittances received are also a binary variable, which shows whether the household received remittances from a non-member of their household in the 12 months prior to the interview. Explanatory variables for Remittances are similar to those from the main regression. Two more explanatory variables for the remittances were added. The first is the *Moved_Out_HH* dummy variable, which equals one if at least one member moved out of the household (inside Ukraine) since the last interview (during the previous 3 years). Alternatively, the second possible explanatory variable is *Moved_Outside_HH*, which equals one if at least one member moved out of the household outside Ukraine in the previous 3 years. In addition to these two dummy variables, an explanatory variable showing whether someone emigrated from the household before 2004 or before 2007 is added.

The region variable was created in the following way: the Autonomous Republic of Crimea with Dnipropetrovsk, Donetsk, Kherson, Kharkiv, Luhansk, Odessa, Mykolaiv, and Zaporizhzhia oblasts constitutes the Eastern region, whereas Cherkasy, Chernihiv, Chernivtsi, Ivano-Frankivsk, Khmelnytskyi, Kiev, Kirovohrad, Lviv, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattia and Zhytomyr oblasts are considered to be the Western region (Figure 1 in Appendix).

Birch (2000) states that residents of the industrialized and heavily Russian east of Ukraine have been found to be more left-wing and pro-Russian in their political orientations and voting proclivities, whereas those of the more agricultural and ethnic Ukrainian west tend to favor market reforms and closer ties with the [European] West (Birch, 2000, p. 1017). The difference in political orientations of Eastern and Western Ukraine led to

⁸ The respondent's decision to buy bonds/securities in 2007 was planned to be an outcome variable, but after the data was obtained it was dropped due to lack of observations.

Ukraine's division during the Orange Revolution. Ukrainian emigrants from these regions had different expectations before and after the Revolution and this might have led to differences in remittance patterns.

The total Ukrainian population in 2001, according to the All-Ukrainian Population Census, was 48 457 000. According to the results of the census the male population was 22 441 000 thousand (46.3%) and the female population was 26 016 000 (53.7%). The ukrainian language was considered a mother tongue by 67.5% of the Ukrainian population, which is 2.8 percentage points higher than in 1989. Russian was recognized as their mother-tongue by 29.6% of the population, and this is 3.2 percentage points fewer than in previous census.

Table 1.3: Selected summary statistics of the data sample

	Remittances		Donated money		Saved money		Bonds/securities purchased		Total population (million people)
	no	yes	no	yes	no	yes	no	yes	
Region									
Eastern region	1227	117	1283	61	1122	222	1344	0	23,120
<i>Percentage share</i>	<i>39.8</i>	<i>3.8</i>	<i>41.6</i>	<i>2</i>	<i>36.4</i>	<i>7.2</i>	<i>43.6</i>	<i>0</i>	
Western region	1545	195	1344	396	1487	253	1739	1	25,336
<i>Percentage share</i>	<i>50.1</i>	<i>6.3</i>	<i>43.6</i>	<i>12.8</i>	<i>48.2</i>	<i>8.2</i>	<i>56.4</i>	<i>0</i>	
Language									
Ukrainian	1330	131	1395	66	1234	227	1461	0	32,708
<i>Percentage share</i>	<i>43.1</i>	<i>4.2</i>	<i>45.2</i>	<i>2.1</i>	<i>40</i>	<i>7.4</i>	<i>47.4</i>	<i>0</i>	
Russian	1442	181	1232	391	1375	248	1622	1	14,343
<i>Percentage share</i>	<i>46.8</i>	<i>5.9</i>	<i>39.9</i>	<i>12.7</i>	<i>44.6</i>	<i>8</i>	<i>52.6</i>	<i>0</i>	
Gender									
Female	1611	193	1533	271	1530	274	1804	0	26,016
<i>Percentage share</i>	<i>52.2</i>	<i>6.3</i>	<i>49.7</i>	<i>8.8</i>	<i>49.6</i>	<i>8.9</i>	<i>58.5</i>	<i>0</i>	
Male	1161	119	1094	186	1079	201	1279	1	22,441
<i>Percentage share</i>	<i>37.6</i>	<i>3.9</i>	<i>35.5</i>	<i>6</i>	<i>35</i>	<i>6.5</i>	<i>41.5</i>	<i>0</i>	
Political views									
“pro-orange“ - Yushenko	1534	192	1342	384	1472	254	1725	1	-
<i>Percentage share</i>	<i>49.7</i>	<i>6.2</i>	<i>43.5</i>	<i>12.5</i>	<i>47.7</i>	<i>8.2</i>	<i>55.9</i>	<i>0</i>	
“pro-blue-white“ - Yanukovich	1238	120	1285	73	1137	221	1358	0	-
<i>Percentage share</i>	<i>40.1</i>	<i>3.9</i>	<i>41.7</i>	<i>2.4</i>	<i>36.9</i>	<i>7.2</i>	<i>44</i>	<i>0</i>	
Total	2772	312	2627	457	2609	475	3083	1	-
Overall sample size	3084		3084		3084		3084		48,457

1.5 Results

Table 1.b in the Appendix reports the results of the estimation specification (marginal effects) for Remittances. All models (1)- (5) were estimated sequentially, using probit. Both variables –*Moved out of the household* and *Moved outside Ukraine* are found to be significant (at 10% significance level and positive (a one unit increase in these variables led to almost 3.7 percentage points increase in the probability of receiving remittances). This shows that respondents have a higher probability of obtaining financial help from outside the household if there is at least one member who moved to another country or another city inside Ukraine. Moreover, the variable that shows whether at least one household member emigrated before 2004 was found to be insignificant. On the other hand, the variable that shows that at least one member emigrated after 2004 but before 2007, meaning before the Orange Revolution, was found to be highly significant and positive. This demonstrates that Ukrainians who emigrated just before the Orange Revolution were sending remittances to their families.

There are no concrete results for the dependence of human capital investment on the probability of obtaining remittances. Even though *Paying for education* and *Payment for training classes* were significant in all models, *Paying for education* was negative (around -12 percentage points) and *Payment for training classes* was positive (15 percentage points). What can be stated is that remittances do have a significant effect on human capital, in line with previous results (Bansak and Chezum, 2009; Acosta, Fajnzylber, and Lopez, 2007; Calero, Bedi, and Sparrow, 2009).

The probability of receiving remittances has a negative and significant correlation with *Personal political views* - around 7 percentage points decrease in the probability of receiving remittances. Individuals have a higher probability of receiving remittances if they supported the “Blue-White” side and Yanukovich for president. Emigrants may have been less confident in candidate Yushenko and his political program, so Yanukovich may have attracted more votes from them.

Another interesting result concerns the *language* variable, which was significant and negative, at around -5 percentage points. This partially supports the results of the *Personal political views* variable, since Ukrainian speaking individuals have a lower probability of receiving remittances than Russian speakers. Ukrainian statistics show that more emigrants come from the Eastern regions of Ukraine. The *language* results shows who sends remittances in Ukraine, since it is not possible to track the countries from which remittances were sent.

Tables 2.a and 2.b present the results of Remittance estimations separately for the Ukrainian and Russian speaking populations. According to the marginal effects results, the Ukrainian speaking population has a lower probability of receiving remittances if they supported the “Orange” side. In addition, the probability of remittances depends positively on the existence of at least one household member who emigrated (17 percentage points

increase). Regarding Russian speaking respondents, the only important significant variable was the dummy showing that the existence of a household member who emigrated increases the probability of receiving remittances by 19 percentage points.

Estimations of the other four benchmark models for *Savings*, *Donations* and *Investment into Human capital* are presented in Tables 3.a - 4.b. Results suggest that the probability of obtaining remittances has a significant effect on all dependent variables. In case of savings and paying for education remittances have a negative effect (9.7 and 7.6 percentage points respectively). On the other hand probability of making donations and paying for training classes do have a positive correlation with remittances (5.6 and 1.67 percentage points respectively). This shows that individuals spend money on both human and personal capital investments and help others, in order to support their own future and shows their altruistic character.

Regional and *language* variables were found to be significant for different models. For example, Ukrainian speakers are more likely to make donations, but less likely to pay for training classes, compared to Russian speakers. On the other hand, respondents from Western regions of Ukraine have a lower probability of saving or investment in human capital.

One of the main hypotheses regarding *Optimistic views* of respondents was not confirmed: for almost all dependent variables, except spending on education, *Optimistic views* were found to be negative and significant. I do not have a definite explanation for such results, but it is possible that with the change in the political orientation of Ukraine after the Orange Revolution, pro-blue-white individuals might have become less optimistic about the future of Ukraine and therefore started to save money. On the other hand, those individuals who were pessimistic about Ukraine's future after 2004 might have invested more in their or their children's human capital (university education, different courses and training for some specialization).

Estimating models separately for Ukrainian and Russian speakers does not significantly change the results. Ukrainian speaking respondents have a higher probability of donations compared to future savings, if their household received remittances (9 vs. -7.13 percentage points). The regional variable was found to be negative and significant for all estimated models. For Russian speaking respondents, the results show that not many factors influence the respondent's decision to save/donate or invest in human capital. Remittances seem to have a significant influence only on the probability of savings, similarly to the regional variable.

1.6 Concluding remarks

This paper explores the dependence of individual expenditures and the probability of remittances received from abroad over the period of the political situation in Ukraine in

2004 (Orange Revolution and 2004 Presidential Elections). The results of the Ukrainian national household survey were used to compare individuals' decisions to invest, depending on their political views and future expectations. The main hypothesis under consideration was whether individuals who supported/were involved with the Orange Revolution and were afterwards optimistic about the future of Ukraine invested money in long-term assets more than those who did not support the Revolution.

The probability of receiving remittances from outside the household does have a highly significant but negative effect on respondent's decisions to donate money in future. In general, it can be stated that political instability does not have a significant effect on individual decisions to save/donate money. However, in some cases, the political views of a respondent do have a significant effect on the probability of obtaining remittances from outside the household. This can be explained in two ways. First, family ties matter when a person decides to send money to his/her family members living in a different location. Secondly, people are less likely to send money to individuals who supported the winning party. It should also be added that the probability of future expenditures on human capital has an ambiguous effect on the probability of receiving remittances. Paying for education was found to have a negative effect, contrary to payment for training classes that had a positive effect on remittances.

Migrant remittances in general have a significant influence on probability of savings and donations in the receiving country and might stimulate accumulation of capital in labor-exporting countries. Policymakers worldwide have shown an increasing interest in the topic of the dependence of international migration and remittances on savings in the country of emigrants' origin. So the question is whether remittances have an influence on economic development in the place of origin? The findings of this paper suggest that remittances are likely to contribute to economic development by encouraging savings and donations for capital accumulation in the country of origin. Overall, the impact of remittances in the receiving country will depend on the final usage of remittance flows.

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Appendix

Figure 1: Division of Ukrainian oblasts into Eastern and Western regions



Tables of results

Table 1.a Benchmark Probit Model for Remittances

	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances
Voted in the third round - 26th December (voted=1, not=0)	-0.422*** (0.0979)	-0.429*** (0.0986)	-0.428*** (0.0986)	-0.423*** (0.0979)	-0.425*** (0.0979)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.376*** (0.0814)	-0.397*** (0.0821)	-0.397*** (0.0820)	-0.390*** (0.0815)	-0.388*** (0.0815)
Political activities (involved in political activities =1, not=0)	0.0434 (0.110)	0.0349 (0.111)	0.0359 (0.111)	0.0351 (0.110)	0.0371 (0.110)
Language (Ukrainian=1; Russian=0)	-0.299*** (0.0759)	-0.326*** (0.0764)	-0.323*** (0.0763)	-0.307*** (0.0759)	-0.306*** (0.0759)
Gender (male=1; female=0)	-0.207** (0.0675)	-0.190** (0.0680)	-0.190** (0.0680)	-0.205** (0.0676)	-0.206** (0.0676)
Age	-0.0118*** (0.00242)	-0.0113*** (0.00244)	-0.0113*** (0.00243)	-0.0117*** (0.00242)	-0.0117*** (0.00242)
Paid for education (yes=1; not=0)	-0.690*** (0.172)	-0.686*** (0.175)	-0.688*** (0.175)	-0.681*** (0.172)	-0.682*** (0.172)
Paid for training classes (yes=1; not=0)	0.830** (0.274)	0.862** (0.274)	0.859** (0.274)	0.822** (0.273)	0.821** (0.273)
Log of total personal income	-0.00564 (0.0149)	-0.00929 (0.0150)	-0.00942 (0.0150)	-0.00756 (0.0148)	-0.00712 (0.0148)
Satisfaction of monthly income (yes=1; not=0)	-0.0614 (0.0903)	-0.0588 (0.0911)	-0.0590 (0.0910)	-0.0670 (0.0904)	-0.0683 (0.0904)
Number of children in the HH	0.0616 (0.0377)	0.0580 (0.0382)	0.0586 (0.0382)	0.0559 (0.0379)	0.0559 (0.0379)
Someone emigrated from HH before 2004 (yes=1; not=0)	0.316 (0.191)	0.136 (0.201)			
Someone emigrated from HH before 2007 (yes=1; not=0)		1.042*** (0.184)	1.064*** (0.181)		
Moved out of the HH (yes=1; not=0)				0.211* (0.0876)	
Moved outside Ukraine (yes=1; not=0)					0.210* (0.0888)
N	2755	2755	2755	2755	2755

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 1.b Marginal Effects for Benchmark Probit Remittances Model

	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances
Voted in the third round - 26th December (voted=1, not=0)	-0.0749*** (0.0173)	-0.0749*** (0.0171)	-0.0747*** (0.0171)	-0.0751*** (0.0172)	-0.0754*** (0.0173)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.0669*** (0.0144)	-0.0692*** (0.0142)	-0.0693*** (0.0142)	-0.0692*** (0.0144)	-0.0688*** (0.0144)
Political activities (involved in political activities =1, not=0)	0.00771 (0.0195)	0.00608 (0.0193)	0.00627 (0.0193)	0.00623 (0.0194)	0.00659 (0.0194)
Language (Ukrainian=1; Russian=0)	-0.0531*** (0.0134)	-0.0568*** (0.0133)	-0.0563*** (0.0132)	-0.0544*** (0.0134)	-0.0543*** (0.0134)
Gender (male=1; female=0)	-0.0368** (0.0120)	-0.0331** (0.0119)	-0.0331** (0.0119)	-0.0364** (0.0120)	-0.0365** (0.0120)
Age	-0.00210*** (0.000428)	-0.00198*** (0.000424)	-0.00198*** (0.000424)	-0.00207*** (0.000429)	-0.00207*** (0.000429)
Paid for education (yes=1; not=0)	-0.123*** (0.0306)	-0.120*** (0.0305)	-0.120*** (0.0305)	-0.121*** (0.0306)	-0.121*** (0.0306)
Paid for training classes (yes=1; not=0)	0.147** (0.0486)	0.150** (0.0477)	0.150** (0.0477)	0.146** (0.0484)	0.146** (0.0484)
Log of total personal income	-0.00100 (0.00264)	-0.00162 (0.00261)	-0.00164 (0.00261)	-0.00134 (0.00263)	-0.00126 (0.00263)
Satisfaction of monthly income (yes=1; not=0)	-0.0109 (0.0160)	-0.0103 (0.0159)	-0.0103 (0.0159)	-0.0119 (0.0160)	-0.0121 (0.0160)
Number of children in the HH	0.0109 (0.00669)	0.0101 (0.00666)	0.0102 (0.00666)	0.00991 (0.00672)	0.00992 (0.00672)
Someone emigrated from HH before 2004 (yes=1; not=0)	0.0561 (0.0339)	0.0237 (0.0350)			
Someone emigrated from HH before 2007 (yes=1; not=0)		0.182*** (0.0319)	0.186*** (0.0314)		
Moved out of the HH (yes=1; not=0)				0.0375* (0.0155)	
Moved outside Ukraine (yes=1; not=0)					0.0373* (0.0157)
N	2755	2755	2755	2755	2755

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.a Benchmark Remittances Probit Model Depending on the Language Spoken

	Ukrainian speaking respondents					Russian speaking respondent				
	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances
Voted in the third round - 26th December (votes=1, not=0)	-0.431*** (0.127)	-0.441*** (0.127)	-0.442*** (0.127)	-0.434*** (0.127)	-0.434*** (0.127)	-0.510*** (0.147)	-0.524*** (0.148)	-0.518*** (0.148)	-0.507*** (0.147)	-0.513*** (0.147)
Personal political views (pro-Orange=1; pro- Blue/White=0)	-0.321* (0.152)	-0.328* (0.153)	-0.326* (0.153)	-0.325* (0.152)	-0.325* (0.152)	-0.184 (0.108)	-0.200 (0.109)	-0.194 (0.109)	-0.195 (0.108)	-0.190 (0.108)
Gender (male=1; female=0)	-0.220* (0.0881)	-0.217* (0.0887)	-0.218* (0.0886)	-0.220* (0.0881)	-0.220* (0.0882)	-0.259* (0.105)	-0.224* (0.106)	-0.228* (0.105)	-0.257* (0.105)	-0.259* (0.105)
Age	-0.0150*** (0.00301)	-0.0145*** (0.00303)	-0.0145*** (0.00303)	-0.0150*** (0.00301)	-0.0150*** (0.00302)	-0.0136*** (0.00381)	-0.0139*** (0.00385)	-0.0137*** (0.00383)	-0.0134*** (0.00381)	-0.0134*** (0.00381)
Paid for education (yes=1; not=0)	-0.961*** (0.249)	-0.937*** (0.249)	-0.937*** (0.249)	-0.945*** (0.249)	-0.944*** (0.249)	-0.455 (0.244)	-0.484 (0.252)	-0.495* (0.252)	-0.475 (0.246)	-0.476 (0.246)
Paid for training classes (yes=1; not=0)	1.223*** (0.354)	1.253*** (0.354)	1.255*** (0.354)	1.219*** (0.353)	1.219*** (0.353)	-0.0169 (0.576)	0.0268 (0.577)	0.0127 (0.577)	-0.0249 (0.574)	-0.0256 (0.573)
Log of total personal income	-0.00933 (0.0186)	-0.0142 (0.0187)	-0.0142 (0.0187)	-0.0106 (0.0186)	-0.0108 (0.0186)	-0.0215 (0.0235)	-0.0241 (0.0236)	-0.0250 (0.0235)	-0.0246 (0.0234)	-0.0232 (0.0234)
Someone emigrated from HH before 2004 (yes=1; not=0)	0.141 (0.221)	-0.0898 (0.239)				0.691 (0.387)	0.734 (0.387)			
Someone emigrated from HH before 2007 (yes=1; not=0)		0.934*** (0.234)	0.911*** (0.225)				1.204*** (0.306)	1.188*** (0.306)		
Moved out of the HH (yes=1; not=0)				0.137 (0.115)					0.230 (0.137)	
Moved outside Ukraine (yes=1; not=0)					0.147 (0.115)					0.212 (0.141)
Other Controls included	yes									
N	1494	1494	1494	1494	1494	1261	1261	1261	1261	1261

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.b Marginal effects for Benchmark Remittances probit model depending on the language spoken

	Ukrainian speaking respondents					Russian speaking respondents				
	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances	(1) Received remittances	(2) Received remittances	(3) Received remittances	(4) Received remittances	(5) Received remittances
Voted in the third round - 26th December (votes=1, not=0)	-0.0822*** (0.0239)	-0.0827*** (0.0236)	-0.0829*** (0.0236)	-0.0827*** (0.0239)	-0.0845*** (0.0241)	-0.0840*** (0.0241)	-0.0845*** (0.0238)	-0.0839*** (0.0238)	-0.0835*** (0.0240)	-0.0845*** (0.0241)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.0612* (0.0290)	-0.0616* (0.0288)	-0.0611* (0.0288)	-0.0619* (0.0290)	-0.0313 (0.0178)	-0.0303 (0.0178)	-0.0322 (0.0175)	-0.0315 (0.0176)	-0.0321 (0.0178)	-0.0313 (0.0178)
Gender (male=1; female=0)	-0.0418* (0.0167)	-0.0408* (0.0166)	-0.0409* (0.0166)	-0.0419* (0.0167)	-0.0427* (0.0172)	-0.0426* (0.0172)	-0.0361* (0.0171)	-0.0369* (0.0171)	-0.0423* (0.0172)	-0.0427* (0.0172)
Age	-0.00286*** (0.000568)	-0.00272*** (0.000564)	-0.00272*** (0.000564)	-0.00285*** (0.000569)	-0.00221*** (0.000628)	-0.00225*** (0.000627)	-0.00225*** (0.000621)	-0.00223*** (0.000621)	-0.00220*** (0.000628)	-0.00221*** (0.000628)
Paid for education	-0.183*** (0.0474)	-0.176*** (0.0467)	-0.176*** (0.0467)	-0.180*** (0.0474)	-0.0785 (0.0406)	-0.0749 (0.0403)	-0.0781 (0.0406)	-0.0802* (0.0408)	-0.0782 (0.0405)	-0.0785 (0.0406)
Paid for training classes	0.233*** (0.0669)	0.235*** (0.0658)	0.236*** (0.0658)	0.232*** (0.0666)	-0.00422 (0.0945)	-0.00279 (0.0948)	0.00432 (0.0930)	0.00206 (0.0935)	-0.00410 (0.0944)	-0.00422 (0.0945)
Log of total personal income	-0.00178 (0.00354)	-0.00267 (0.00351)	-0.00267 (0.00351)	-0.00202 (0.00354)	-0.00382 (0.00384)	-0.00354 (0.00385)	-0.00389 (0.00380)	-0.00405 (0.00381)	-0.00405 (0.00384)	-0.00382 (0.00384)
Someone emigrated from HH before 2004	0.0269 (0.0420)	-0.0168 (0.0449)				0.114 (0.0637)	0.118 (0.0625)			
Someone emigrated from HH before 2007		0.175*** (0.0434)	0.171*** (0.0419)				0.194*** (0.0491)	0.193*** (0.0493)		
Moved out of the HH				0.0260 (0.0218)					0.0379 (0.0225)	
Moved outside Ukraine					0.0350 (0.0232)					0.0350 (0.0232)
Other Controls included	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	1494	1494	1494	1494	1261	1261	1261	1261	1261	1261

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.a Benchmark Probit Model for Various LHS Variables

	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes
Received remittances (yes=1, not=0)	-0.395*** (0.110)	0.257** (0.0929)	-0.583*** (0.166)	0.484** (0.172)
Political activities (involved in political activities =1, not=0)	0.0778 (0.101)	0.0419 (0.0982)	0.201 (0.120)	0.251 (0.206)
Voted in the third round - 26th December (voted=1, not=0)	-0.265** (0.0893)	-0.378*** (0.0924)	-0.273* (0.107)	-0.246 (0.182)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.226 (0.184)	-0.316 (0.193)	0.0531 (0.219)	-0.588 (0.501)
Relatives' political views (pro-Orange=1; pro-Blue/White=0)	-0.249 (0.190)	-0.452* (0.204)	-0.566* (0.230)	-0.505 (0.508)
Language (Ukrainian=1; Russian=0)	-0.0961 (0.0870)	0.205* (0.0955)	-0.0900 (0.111)	-0.489** (0.187)
Region (Western region =1; Eastern region= 0)	-0.462*** (0.0905)	-0.0783 (0.101)	-0.299* (0.119)	-0.589** (0.200)
Gender (male=1; female=0)	-0.137* (0.0570)	-0.0990 (0.0609)	-0.0886 (0.0739)	-0.349* (0.142)
Age	0.000276 (0.00204)	-0.0138*** (0.00221)	-0.0191*** (0.00289)	-0.0224*** (0.00527)
Satisfaction with results of the elections (yes=1; not=0)	-0.118 (0.0746)	0.268*** (0.0717)	-0.149 (0.0934)	-0.351* (0.175)
Satisfaction with general situation in Ukraine (yes=1; not=0)	-0.268* (0.121)	-0.292** (0.112)	0.0366 (0.139)	0.0681 (0.261)
Satisfaction of monthly income (yes=1; not=0)	0.126 (0.0833)	-0.0686 (0.0948)	0.0363 (0.112)	-0.231 (0.245)
Satisfaction with financial prospects (yes=1; not=0)	0.180* (0.0818)	-0.0564 (0.0904)	-0.0472 (0.108)	-0.0435 (0.200)
Optimistic/pessimistic about Ukraine's future (yes=1; not=0)	-0.189** (0.0586)	-0.179** (0.0624)	-0.105 (0.0761)	-0.302* (0.141)
Number of children in the HH	-0.0368 (0.0340)	0.0884** (0.0338)	0.108* (0.0434)	0.127 (0.0810)
N	2801	2801	2801	2801

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.b Marginal Effects for Benchmark Probit Model for Various LHS Variables

	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes
Received remittances (yes=1, not=0)	-0.0973*** (0.0269)	0.0558** (0.0202)	-0.0762*** (0.0218)	0.0167** (0.00621)
Political activities (involved in political activities =1, not=0)	0.0192 (0.0249)	0.00912 (0.0214)	0.0263 (0.0157)	0.00869 (0.00721)
Voted in the third round - 26th December (voted=1, not=0)	-0.0653** (0.0219)	-0.0823*** (0.0199)	-0.0356* (0.0140)	-0.00852 (0.00632)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.0557 (0.0453)	-0.0687 (0.0420)	0.00694 (0.0286)	-0.0204 (0.0174)
Relatives' political views (pro-Orange=1; pro-Blue/White=0)	-0.0613 (0.0468)	-0.0984* (0.0444)	-0.0739* (0.0300)	-0.0175 (0.0176)
Language (Ukrainian=1; Russian=0)	-0.0237 (0.0214)	0.0446* (0.0208)	-0.0118 (0.0145)	-0.0169* (0.00662)
Region (Western region =1; Eastern region= 0)	-0.114*** (0.0221)	-0.0170 (0.0221)	-0.0391* (0.0155)	-0.0204** (0.00710)
Gender (male=1; female=0)	-0.0337* (0.0140)	-0.0215 (0.0132)	-0.0116 (0.00966)	-0.0121* (0.00504)
Age	0.0000679 (0.000503)	-0.00300*** (0.000475)	-0.00250*** (0.000381)	-0.000775*** (0.000194)
Satisfaction with results of the elections (yes=1; not=0)	-0.0290 (0.0184)	0.0583*** (0.0155)	-0.0195 (0.0122)	-0.0122* (0.00617)
Satisfaction with general situation in Ukraine (yes=1; not=0)	-0.0659* (0.0298)	-0.0636** (0.0244)	0.00478 (0.0182)	0.00236 (0.00905)
Satisfaction of monthly income (yes=1; not=0)	0.0311 (0.0205)	-0.0149 (0.0206)	0.00475 (0.0146)	-0.00800 (0.00853)
Satisfaction with financial prospects (yes=1; not=0)	0.0443* (0.0201)	-0.0123 (0.0197)	-0.00618 (0.0141)	-0.00151 (0.00693)
Optimistic/pessimistic about Ukraine's future (yes=1; not=0)	-0.0465** (0.0144)	-0.0390** (0.0135)	-0.0138 (0.00994)	-0.0105* (0.00497)
Number of children in the HH	-0.00907 (0.00836)	0.0192** (0.00735)	0.0141* (0.00568)	0.00440 (0.00283)
N	2801	2801	2801	2801

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.a Benchmark Probit Model for Various LHS Variables Depending on the Language Spoken

	Ukrainian speaking respondents				Russian speaking respondents			
	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes
Received remittances (yes=1, not=0)	-0.301*	0.302**	-0.729**	0.924***	-0.536**	0.185	-0.405	-0.527
	(0.141)	(0.110)	(0.240)	(0.220)	(0.183)	(0.185)	(0.234)	(0.474)
Voted in the third round - 26th December (voted=1, not=0)	-0.110	-0.195	-0.171	-0.183	-0.377**	-0.602***	-0.363*	-0.352*
	(0.126)	(0.115)	(0.148)	(0.265)	(0.133)	(0.165)	(0.160)	(0.158)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.330	-0.283	0.0190	-1.200	-0.141	-0.494	0.161	-0.731
	(0.246)	(0.223)	(0.263)	(1.798)	(0.319)	(0.411)	(0.418)	(0.730)
Relatives' political views (pro-Orange=1; pro-Blue/White=0)	0.0877	-0.586*	-0.471	0.126	-0.332	-0.0182	-0.570	-0.255
	(0.269)	(0.279)	(0.317)	(1.805)	(0.319)	(0.410)	(0.413)	(0.733)
Region (Western region =1; Eastern region= 0)	-0.876***	-0.228*	-0.543***	-1.282***	-0.294*	0.0758	-0.198	-0.271
	(0.109)	(0.109)	(0.133)	(0.221)	(0.123)	(0.159)	(0.162)	(0.282)
Gender (male=1; female=0)	-0.0568	-0.0284	-0.0420	-0.323	-0.168*	-0.140	-0.117	-0.369
	(0.0787)	(0.0727)	(0.0986)	(0.206)	(0.0852)	(0.119)	(0.113)	(0.209)
Age	-0.000392	-0.0115***	-0.0158***	-0.0216**	0.00371	-0.0126**	-0.0240***	-0.0315***
	(0.00277)	(0.00261)	(0.00376)	(0.00724)	(0.00309)	(0.00451)	(0.00468)	(0.00711)
Satisfaction with results of the elections (yes=1; not=0)	0.00935	0.345***	-0.138	-0.158	-0.661***	-0.169	-0.182	-1.134**
	(0.0861)	(0.0793)	(0.107)	(0.216)	(0.175)	(0.198)	(0.201)	(0.419)
Optimistic/pessimistic about Ukraine's future (yes=1; not=0)	0.0383	-0.0921	-0.0570	-0.196	-0.417***	-0.320**	-0.145	-0.444*
	(0.0815)	(0.0754)	(0.104)	(0.207)	(0.0879)	(0.121)	(0.114)	(0.212)
Number of children in the HH	-0.0240	0.0824*	0.0355	0.0828	-0.0716	0.0541	0.225**	0.162
	(0.0437)	(0.0387)	(0.0559)	(0.113)	(0.0556)	(0.0771)	(0.0712)	(0.125)
Other Controls included	yes	yes	yes	yes	yes	yes	yes	yes
N	1525	1525	1525	1525	1276	1210	1276	1276

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.b Marginal Effects for Benchmark Probit Model for Various LHS Variables Depending on the Language Spoken

	Ukrainian speaking respondents				Russian speaking respondents			
	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes	(1) Saved money	(2) Donated money	(3) Paid for education	(4) Paid for training classes
Received remittances (yes=1, not=0)	-0.0713* (0.0334)	0.0901** (0.0325)	-0.100** (0.0333)	0.0287*** (0.00786)	-0.130** (0.0442)	0.0214 (0.0214)	-0.0485 (0.0281)	-0.0188 (0.0172)
Voted in the third round - 26th December (voted=1, not=0)	-0.0261 (0.0299)	-0.0581 (0.0343)	-0.0235 (0.0202)		-0.0918** (0.0321)	-0.0696*** (0.0190)	-0.0435* (0.0192)	-0.0421* (0.0187)
Personal political views (pro-Orange=1; pro-Blue/White=0)	-0.0782 (0.0582)	-0.0844 (0.0664)	0.00261 (0.0361)	-0.0402 (0.0602)	-0.0343 (0.0777)	-0.0571 (0.0475)	0.0193 (0.0501)	-0.0264 (0.0264)
Relatives' political views (pro-Orange=1; pro-Blue/White=0)	0.0208 (0.0639)	-0.174* (0.0830)	-0.0646 (0.0434)	0.00575 (0.0603)	-0.0809 (0.0776)	-0.00210 (0.0474)	-0.0682 (0.0496)	-0.00882 (0.0264)
Region (Western region =1; Eastern region= 0)	-0.208*** (0.0244)	-0.0680* (0.0323)	-0.0745*** (0.0180)	-0.0404*** (0.00802)	-0.0715* (0.0299)	0.00876 (0.0183)	-0.0238 (0.0194)	-0.00988 (0.0102)
Gender (male=1; female=0)	-0.0135 (0.0187)	-0.00845 (0.0217)	-0.00576 (0.0135)	-0.00991 (0.00646)	-0.0408* (0.0207)	-0.0162 (0.0137)	-0.0141 (0.0136)	-0.0132 (0.00768)
Age	-0.0000930 (0.000657)	-0.00344*** (0.000764)	-0.00217*** (0.000519)	-0.000732*** (0.000218)	0.000902 (0.000751)	-0.00146** (0.000526)	-0.00288*** (0.000570)	-0.00113*** (0.000287)
Satisfaction with results of the elections (yes=1; not=0)	0.00222 (0.0204)	0.103*** (0.0233)	-0.0189 (0.0146)	-0.00562 (0.00659)	-0.161*** (0.0420)	-0.0196 (0.0229)	-0.0218 (0.0240)	-0.0408* (0.0159)
Optimistic/pessimistic about Ukraine's future (yes=1; not=0)	0.00907 (0.0193)	-0.0274 (0.0224)	-0.00782 (0.0142)	-0.00631 (0.00640)	-0.101*** (0.0210)	-0.0370** (0.0141)	-0.0174 (0.0137)	-0.0159* (0.00787)
Number of children in the HH	-0.00570 (0.0103)	0.0246* (0.0115)	0.00487 (0.00766)	0.00213 (0.00348)	-0.0174 (0.0135)	0.00625 (0.00892)	0.0269** (0.00858)	0.00579 (0.00455)
Other Controls included	yes	yes	yes	yes	yes	yes	yes	yes
N	1525	1525	1525	1525	1276	1210	1276	1276

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

1 Yes	1369
2 No	→ FILL IN SECTION A AND GO TO THE INDIVIDUAL QUESTIONNAIRE
DS...7	→ FILL IN SECTION A AND GO TO THE INDIVIDUAL QUESTIONNAIRE
RA...9	→ FILL IN SECTION A AND GO TO THE INDIVIDUAL QUESTIONNAIRE

[INTERVIEWER! USE TABLE H07-H16 TO RECORD THE ANSWERS TO QUESTIONS H07-H16.]

H07	Could you please name each of the persons who sent or brought money, goods, food or made some other kind of contribution to the household in the last 12 months? [INTERVIEWER: RECORD NAMES IN THE ROW H07 OF TABLE H07-H16.]
H08	Has [NAME OF THE PERSON] been a member of your household in any year between 2003 and 2007? [INTERVIEWER: REMIND THE RESPONDENT OF THE DEFINITION OF HOUSEHOLD MEMBER IF NECESSARY!]
1 Yes	
2 No	→ SKIP TO H09
DS...7	→ SKIP TO H09
RA...9	→ SKIP TO H09

[INTERVIEWER! IF THE PERSON HAS BEEN AMONG THE MEMBERS OF THE HOUSEHOLD BETWEEN 2003 AND 2007, TRY TO FIND HIM/HER IN THE TABLE BX THAT DESCRIBES THE STRUCTURE OF THE HOUSEHOLD. IF THE PERSON IS NOTED IN THE TABLE BX, COPY HIS CODE FROM TABLE BX (LINE BX) TO LINE H08X IN TABLE H07-H16 AND → SKIP TO H13. IF THE PERSON IS NOT NOTED IN THE TABLE BX, WRITE "97" IN LINE H08X AND PROCEED WITH QUESTION H09 BELOW.

H09	Tell me please, what is the relationship of [NAME] to you (the reference person)? [CHART H09]
1	spouse or ex-spouse
2	parent, step parent
3	child, step child
4	sibling
5	other relative
6	non-relative
DS...7	RA...9
H10	What age group does [NAME] belong to?
1	up to 24 years old
2	25-39 years old
3	40-54 years old
4	55 years and older
DS...7	RA...9
H11	What sex is [NAME]?
1	male
2	female
DS...7	RA...9
H12	From where did the transfers made by [NAME] originate? In other words, where did [NAME] live? [CHART H04]
DS...97	RA...99
H13	How much money in hryvnias did your household receive from [NAME] during the last 12 months? If you received all or part of these transfers in foreign currency, please convert that to hryvnias and report the total amount.
DS...997	RA...999 NOT APPLICABLE...998
H14	How did [NAME] deliver the money to your household? [INTERVIEWER! MULTIPLE ANSWERS POSSIBLE. RECORD ALL ANSWERS IN ONE ROW, ONE AFTER ANOTHER.]
1	by (international) bank transfer
2	by an envoy
3	by bringing personally
4	other [SPECIFY].....
DS...7	RA...9 NOT APPLICABLE...8
H15	What is the value of contributions in kind that your household received from [NAME] in the last 12 months? Please, estimate the total amount in hryvnias.
DS...997	RA...999 NOT APPLICABLE...998
H16	In general, how frequently did you receive such contributions (both pecuniary and in-kind) from [NAME]?
1	Every month or more frequently
2	Several times per year
3	About once a year
4	Less frequently than once a year
5	OTHER [RECORD]
DS...7	RA...9

Expenditure questions, including savings and purchase of bonds/shares/securities, from the Individual's Questionnaire of the ULMS

TABLE F21-F22

SERVICES EXPENDITURES IN LAST 30 DAYS			
	SERVICES	F21 Did you pay for...? DS...7 RA...9	F22 How much did you pay for it in hryvnias? DS...997 RA...999
1	Municipal or local transportation, taxi services	1 Yes → 2 No 1232 ---	1233 -----
2	Interurban and international transportation	1 Yes → 2 No 1234 ---	1235 -----
3	Personal vehicles repair and services (incl. parking)	1 Yes → 2 No 1236 ---	1237 -----
4	Flat/house or other buildings repair/construction	1 Yes → 2 No 1238 ---	1239 -----
5	Radio, TV, electric goods, watches, house equipment repair	1 Yes → 2 No 1240 ---	1241 -----
6	Barber's shop, manicure, photo studio services, tailor's, shoemaker's services, laundry	1 Yes → 2 No 1242 ---	1243 -----
7	Communications services (post-office, telegraph, long-distance telephone calls), satellite or cable TV services	1 Yes → 2 No 1244 ---	1245 -----
8	Cinema, theater, museums, concerts, discos, etc.	1 Yes → 2 No 1246 ---	1247 -----
9	Children's allowance at kindergartens and crèches, school classes, interest circles, sections pay; private lessons, tutors pay, textbooks	1 Yes → 2 No 1248 ---	1249 -----
10	Child care other than kindergarten, e.g. baby-sitting, private nannies	1 Yes → 2 No 1250 ---	1251 -----
11	Care for elderly, sick or disabled people by non-household members	1 Yes → 2 No 1252 ---	1253 -----
12	Pay for education at higher educational establishments (colleges, institutes, universities, etc)	1 Yes → 2 No 1254 ---	1255 -----
13	Pay for classes in interest circles, sections, training courses and tutors for adult family members	1 Yes → 2 No 1256 ---	1257 -----
14	Accommodation in sanatoriums, children camps, tourist tours, etc.; excl. transportation services, restaurants, cafés	1 Yes → 2 No 1258 ---	1259 -----
15	Medical treatment, examination, excl. purchase of medicine (doctor fees, hospital charges, etc.)	1 Yes → 2 No 1260 ---	1261 -----
16	Medical treatment of pets, excl. purchase of medicine	1 Yes → 2 No 1262 ---	1263 -----
17	Ritual services (registry office, undertakers' etc.)	1 Yes → 2 No 1264 ---	1265 -----
18	Membership fees, admission charges to recreation or sport facilities (gym, skating ring, bath-house, swimming pool)	1 Yes → 2 No 1266 ---	1267 -----
19	Garage rent	1 Yes → 2 No 1268 ---	1269 -----
20	Payments for guarding/to concierge in multiple-storey buildings; payments for staircase and lift maintenance	1 Yes → 2 No 1270 ---	1271 -----
21	Other services [RECORD]:	1 Yes → 2 No 1272 ---	1273 -----

INTERVIEWER: USE TABLE F23-F24 TO RECORD THE ANSWERS TO QUESTIONS F23-F24!

F23	During the last 30 days, did your family have the following expenditures? [INTERVIEWER! READ OUT THE ITEMS IN TABLE F23-F24 AND FILL IN THE CORRESPONDING ANSWERS FOR EACH ITEM.] 1 Yes 2 No →SKIP TO NEXT ITEM DS...7 →SKIP TO NEXT ITEM RA...9 →SKIP TO NEXT ITEM
F24	How much has been spent on that then in hryvnias during the last 30 days, altogether? DS...997 RA...999

TABLE F23-F24

OTHER EXPENDITURES IN LAST 30 DAYS

	EXPENDITURES	F23 Did you spend money on...? DS...7 RA...9	F24 How much did you spend on it in hryvnias? DS...997 RA...999
1	Purchase of bonds, shares and other securities	1 Yes → 2 No 1274 — ..	1275 —..... —
2	Insurance payments: life, health, vehicles, dwellings, etc.	1 Yes → 2 No 1276 — ..	1277 —..... —
3	Repayment of credit, loans, debt	1 Yes → 2 No 1278 — ..	1279 —..... —
4	Alimonies	1 Yes → 2 No 1280 — ..	1281 —..... —
5	Documents registration, patent tax, activity allowance	1 Yes → 2 No 1282 — ..	1283 —..... —
6	Vehicles tax, technical examination	1 Yes → 2 No 1284 — ..	1285 —..... —
7	To lend somebody	1 Yes → 2 No 1286 — ..	1287 —..... —
8	For pecuniary aid to a relative who lives separately	1 Yes → 2 No 1288 — ..	1289 —..... —
9	Pecuniary aid to other people (not members of your family)	1 Yes → 2 No 1290 — ..	1291 —..... —
10	Gifts to other people (on birthdays, wedding, etc.)	1 Yes → 2 No 1292 — ..	1293 —..... —
11	Donations to public foundations or churches, religious organizations	1 Yes → 2 No 1294 — ..	1295 —..... —

G01	Did your household in the last 30 days save any money? 1 Yes 2 No → SKIP TO G03 DS...7 → SKIP TO G03 RA...9 → SKIP TO G03	1308 —.. —
G02	How many hryvnias worth did your household save in the last 30 days? DS...997 RA...999	1309 —..... — hryvnias

Chapter 2

Remittances in Ukraine using Household data

This paper analyzes remittances sent by Ukrainian emigrants to their country of origin. It explores the main factors influencing the probability of obtaining remittances from abroad as well as the amount of remittances. We investigate how the planned future usage of remittances affects the likelihood of receiving them. The results of a survey of households in Ukraine were used to investigate the main defining factors for obtaining financial inflows from abroad, in addition to exploring the expenditure's financed by remittances. Although the results of our analysis show that few factors have a significant influence on the probability of obtaining remittances and on their size, this topic warrants further investigation. The findings are important for policymakers as the Ukrainian government might design and implement policies that increase the development potential of remittances, while eliminating their negative side effects.

2.1 Introduction

Globalization and integration processes in the modern economy are constantly increasing the level of international migration. Income inequalities between countries encourage people to leave their country of origin in search of higher living standards. Money earned abroad is often sent by foreign workers back to their home country in the form of remittances or other transfers. This enhances the country's opportunities for the development of the national economy and financial markets, and affects the formation of effective demand in the host countries. Recently labor migration has become an important source of remittances and other transfers to the home country of a migrant.

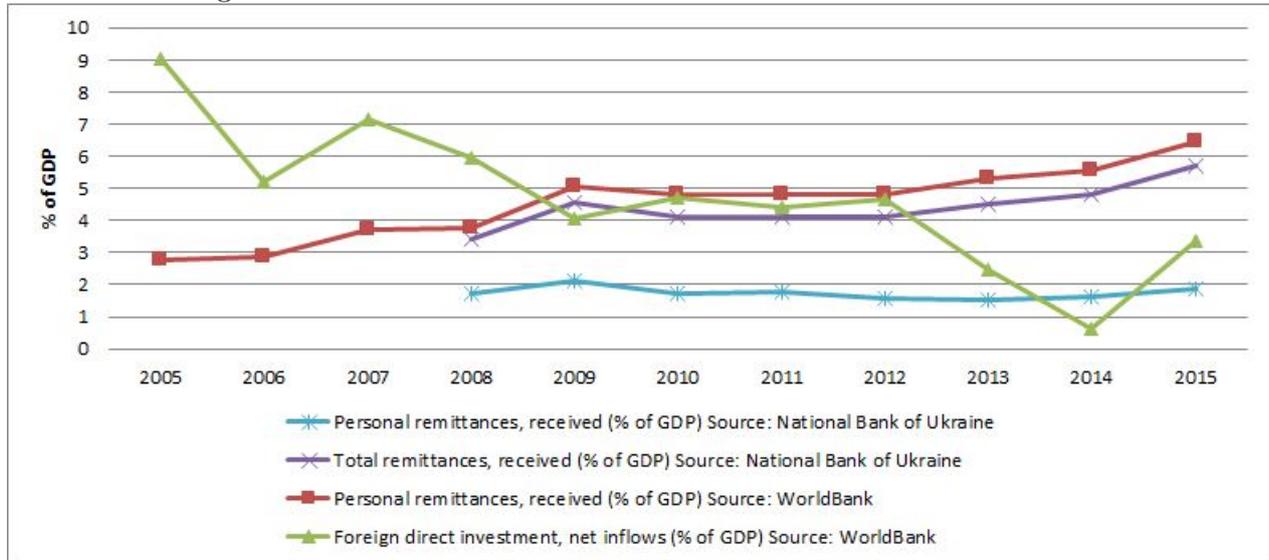
Private remittances play a significant role in the financial system of developing countries, since they can stabilize the balance of payments and minimize exchange rate risk, thus reducing dependence on international organizations. However, the question as to what influences a migrant's decision to send remittances is still open. Using the example of Ukraine, our research analyzes the main defining factors that can influence a migrant's decision to send remittances, and the sum of remittances. In addition, because financial transfers improve migrants' wealth, significantly reduce the poverty rate in the country, and encourage citizens to save and establish savings accounts, the results of our research could assist the Ukrainian government in shaping the country's future foreign policies more effectively.

Due to the considerable gap in wages between Ukraine and other developing (and developed) countries, Ukraine is considered one of the largest country-donors of labor in Europe (Malinovskaya, 2013). Low wages in different sectors of the economy, high levels of unemployment, widespread poverty, and stratification of the population into rich and poor are the main factors causing large outflows of the labor force. According to experts and statistical information, the total number of Ukrainian migrant workers living and working abroad for a significant period, including those who stay abroad only for seasonal work, is more than 5 million (Ratha, Eigen-Zucchi, and Plaza, 2016; Malinovskaya, 2013). Earnings sent to Ukraine are a significant source of income for domestic households. Since 2013, personal remittances have become a larger factor in Ukraine's GDP than FDI (see Figure 1). However, contrary to the literature on remittances, which states that financial transfers should be countercyclical with respect to social and economic shocks, Figure 1 below shows that during the recent political and economic crisis in Ukraine, remittances remained relatively stable (National Bank of Ukraine, 2015).

Depending on the source, the total volume of international remittances received in Ukraine in 2015 varies from USD 5 to 6 billion (National Bank of Ukraine, 2015; World Bank, 2015). This variation can be explained by methodological differences in estimations and difficulties in determining actual sizes of transfers through formal and, particularly, informal channels.

According to both Ukrainian studies (Vatamanyuk, 2011; Libanova, Malinovskaya, and

Figure 1: Share of remittances and FDI in the GDP of Ukraine



Pozniak, 2002) and foreign studies (Ratha, 2005; Chami, Fullenkamp, and Jahjah, 2003), around 90% of remittances from workers are spent on daily durable goods, real estate, education and medical treatment, in addition on investments into bonds and/or shares. Only approximately 10% of money transfers are saved. Researchers find that working migrants usually spend earned capital on fast-moving consumer goods (FMCG) and real estate or in the shadow economy (Vatamanyuk, 2011). Moreover, investments funded by remittances are usually focused on real estate, bank deposits and private business. They are rarely, if ever, used for purchasing shares and bonds (Ratha, 2005; Vatamanyuk, 2011). More specifically, Ratha (2005) identifies a worldwide trend in remittance spending, showing that the majority of remittances are spent on consumables (food and clothing), with the remainder being spent on education (23%), housing (20%) or vehicles (5.7%) or on establishing businesses (6.5%). Spending patterns of remittances from Ukrainian working migrants coincide with global trends; only 29.1% of remittances are spent on investments in housing, 12.4% on human capital (e.g., tuition fees and tutoring), while only 3.3% of total remittance sums are spent to set up a business (National Bank of Ukraine, 2015). In addition, returning migrants are more likely to work abroad for the purpose of accumulating capital in order to start their own business in Ukraine. According to the Ukrainian Statistical Bureau, a higher share of labor migrants are self-employed workers; approximately 1.5 times higher than those who do not have experience working abroad. In this respect, migrants contribute to the development of entrepreneurship, and thus create jobs not only for themselves but also for other citizens (Libanova, Malinovskaya, and Pozniak, 2010).

2.2 Literature review

During the last decade, the size of migrants' remittances has increased significantly worldwide. As a result, greater attention has been placed on the role of remittances in the economy, as remittances are becoming an important source of funding for investments and foreign exchange (World Bank, 2005; Ratha and Mohapatra, 2007; Ratha, 2007; Raggl, 2017). In addition, the dependence of investments in the home country on remittances is a widely discussed topic (Lubambu, 2014). The household financial situation of dependents has also received a great deal of attention in recent years (Djajic, 1986, 1998; Nikas and King, 2005; Kireyev, 2006; Vargas-Silva and Huang, 2006). For example, Raggl (2017) explores data from Central, Eastern and Southeastern European (CESEE) countries and finds that using OeNB Euro Survey data, there exist a positive correlation between income of the household and the probability of receiving remittances. Moreover, high-income households have higher chances of receiving remittances from abroad and as a result their income increases further. On the contrary, low-income households have smaller changes of obtaining remittances, causing a wide dispersion of income between households. Unfortunately, the majority of the existing literature on savings and investments and dependence on received remittances explores either the regional level (such as Central/Eastern Europe) or country-pair-specific channels (Adams, 2007). Our research helps to fill this gap by focusing on Ukraine, a country in Eastern Europe, and exploring remittances received depend on the possibility of their further investment.

The spending pattern of received remittances has been studied during the last decades. Chami et al. (2003) identify three stylized facts of remittances: First, "a significant proportion, and often the majority, of remitted funds are spent on consumption." (Chami et al., 2003, p. 8). Second, "a significant, though generally smaller, part of remittances does go into uses that we can classify as saving or investment." (Chami et al., 2003, p. 9). Third, "the household saving and investment that are done using remittances are not necessarily productive in terms of the overall economy." (Chami et al., 2003, p. 9). Later, McKenzie and Sasin (2007) state that researchers need, most importantly, to determine whether remittances are mainly spent on consumption or investment/savings and to investigate this topic more precisely.

The majority of papers discussing remittances support the first two stylized facts from Chami et al. (2003). For example, using a household survey in the Philippines, Tabuga (2007) provides mixed evidence for the impact of remittances. The author finds a significant proportion of financial inflows are usually spent on everyday consumption, e.g. consumer goods or leisure. Furthermore, remittance inflows increase expenditures on education and housing. Other research by Castaldo and Reilly (2007), supporting the second stylized fact of Chami et al. (2003), shows that Albanian households usually spend a significant part of remittances on durable goods and utilities and less on food consumption (when compared with households without financial inflows from abroad). To be more pre-

cise, a larger share of household expenditure is spent on investment-type goods. These results are also confirmed by Zarate-Hoyos (2004) on data from Mexican households, finding that remittance-receiving households spend a significant part of their expenditure on investments.

The IMF World Economic Outlook (IMF, 2005) also confirms the second stylized fact of Chami et al. (2003), stating that remittances have a positive effect on the level of an individual's investments in human and physical capital. On the other hand, research on Tajikistan by Clement (2011) shows that neither internal nor external remittances have a positive effect on any type of investment expenditure. Moreover, in the case of Albania, no significant impact of remittances on human capital investment was found by Cattaneo (2012). However, many studies with a different research context find evidence that remittances and migration have a significant positive effect on education expenditures. For example, Kifle (2007) explores data for Eritrea and finds that households receiving remittances tend to spend more on education compared with households that did not receive remittances.

Political instability, high risks and a low level of law and order, in addition to other general risks in a remittance-receiving country, create a harmful environment for investment (IMF, 2005). However remittances have a larger influence on a country's economy during a crisis, indicating that a crisis might increase the amount of remittances sent to the home country (Sirkeci, Cohen, and Ratha, 2012). Moreover, investment opportunities in the receiving and sending countries might also have a significant effect on remittances. The higher probability of investment return in the receiving country might increase migrants' willingness to invest in their home country and influence the size of remittances sent. The empirical analysis presented in this paper is in line with the previous studies (Malinovskaya, 2013; National Bank of Ukraine, 2015) and is applied to Ukraine, a country receiving substantial international remittances, and experiencing significant financial and political problems.

2.3 Empirical methodology

Remittances sent by working migrants to Ukraine are an important component of the total household income of Ukrainian households, affecting the well-being of families. Financial transfers improve the financial, material and living conditions of migrant workers' families; they increase the level of education in their families and improve the quality of health services received, among other things. However, the question remains as to what significantly influences a migrant's decision to send remittances. In this research we analyze factors that may influence a migrant's decision to send remittances, and factors on which the sum of remittances depends.

To interpret the probability of sending remittances from abroad and their total sum,

models similar to Merkle and Zimmermann (1992) and Vanwey (2004) were used. Applying linear probability robust estimation¹, the following four models were assessed:

$$\begin{aligned}
Remit_status_i &= \alpha_1 Destination_region_i + \alpha_2 Type_resid_i + \alpha_3 Econ_zone_i \\
&+ \alpha_4 Level_HH_income_i + \alpha_5 Intention_migrate_i + \alpha_6 Years_abroad_i \\
&+ \alpha_7 Intention_invest_i + \alpha_8 Region_i + \alpha_9 HH_size_i + \alpha_{10} Total_HH_income_i \\
&+ \alpha_{11} Total_HH_expend_i + \alpha_{12} HH_save_money_i + \epsilon_i
\end{aligned} \tag{1}$$

$$E(\epsilon_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Inkind_remit_i &= \beta_1 Destination_region_i + \beta_2 Type_resid_i + \beta_3 Econ_zone_i \\
&+ \beta_4 Level_HH_income_i + \beta_5 Intention_migrate_i + \beta_6 Years_abroad_i \\
&+ \beta_7 Intention_invest_i + \beta_8 Region_i + \beta_9 HH_size_i + \beta_{10} Total_HH_income_i \\
&+ \beta_{11} Total_HH_expend_i + \beta_{12} HH_save_money_i + \omega_i
\end{aligned} \tag{2}$$

$$E(\omega_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Total_remit_from_abroad_i &= \gamma_1 Destination_region_i + \gamma_2 Type_resid_i + \gamma_3 Econ_zone_i \\
&+ \gamma_4 Level_HH_income_i + \gamma_5 Intention_migrate_i + \gamma_6 Years_abroad_i \\
&+ \gamma_7 Intention_invest_i + \gamma_8 Region_i + \gamma_9 HH_size_i \\
&+ \gamma_{10} Total_HH_income_i + \gamma_{11} Total_HH_expend_i + \mu_i
\end{aligned} \tag{3}$$

$$E(\mu_i | x_1, , x_k) = 0$$

$$\begin{aligned}
Total_remit_from_abroad_i &= \delta_1 Destination_region_i + \delta_2 Type_resid_i + \delta_3 Econ_zone_i \\
&+ \delta_4 Level_HH_income_i + \delta_5 Intention_migrate_i + \delta_6 Years_abroad_i \\
&+ \delta_7 Intention_invest_i + \delta_8 Region_i + \delta_9 HH_size_i \\
&+ \delta_{10} Total_HH_income_i + \delta_{11} Total_HH_expend_i \\
&+ \delta_{12} HH_save_money_i + \tau_i
\end{aligned} \tag{4}$$

$$E(\tau_i | x_1, , x_k) = 0$$

where i is household's index, *Remit_status* is a dummy variable showing whether a

¹ The first two models were also estimated using probit, but results were not significantly different from OLS estimations, so eventually all four models were estimated using linear probability robust estimation.

household received remittances from abroad during the past 12 months; it equals one if it had obtained remittances and zero otherwise. *Inkind_remit* is a dummy variable which equals one if the household received any in-kind remittances.² *Total_remit_from_abroad* is a variable showing the total sum of remittances that a household received from abroad during the previous 12 months (in UAH). *Destination_region* is a categorical variable showing which region a worker (a member of an interviewed household) migrated to (CIS country=1, EU country=2, other=3, no migrant worker=0). *Type_resid* is a dummy variable which equals one if the household is situated in an urban region and zero if rural. *Econ_zone* is a categorical variable showing in which economic zone of Ukraine the household is situated (North=1, East=2, South=3, Center=4, West=5). *Region* is a categorical variable varying from 1 to 25 and showing the “oblast” - location of a household (alphabetically ordered in accordance with the Cyrillic name of the oblast).³ *Level_HH_income* is a categorical variable showing how a respondent defines the household’s income level (low=1, middle=2, high=3). *Intention_migrate* is a dummy variable which equals one if someone in the household intends to migrate and zero otherwise. *Years_abroad* is a categorical variable that shows how many years abroad a working migrant (member of the household) spent (no one migrated=0; up to 1 year=1; 1-5 years=2; 5-10 years=3; more than 10 years=4).⁴ *Intention_invest* is a dummy variable which equals one if the household intends to invest and zero otherwise. *HH_size* shows how many people live in the interviewed household.⁵ *Total_HH_income* shows what the household’s total income is for the past 12 months (in UAH).⁶ *Total_HH_expend* shows the household’s total expenditure for the past 12 months (in UAH). *HH_save_money* is a dummy variable equal to one if the household saved any money using all of the sources available to it (including remittances). Last three aggregate variables were not standardized with respect to a size of the household, since right-hand side variable expressed in the aggregate values. For example, Merkle and Zimmermann (1992) did not use standardization, they used net monthly income, similarly in this paper both income and expenditure are used.

According to models (1) - (4) there are several hypotheses to be tested. The first hypothesis concerns the regions of the migrant’s location $H_0 : \alpha_1 = 0$ and/or $\beta_1 = 0$ and/or $\gamma_1 = 0$ and/or $\delta_1 = 0$. The research question explored by this hypothesis is whether the

² In-kind remittances are defined as all material transfers of a non-financial nature, for example food supplies, clothing and shoes, audio/video equipment, house cleaning supplies, presents, etc.

³ For example, Vanwey (2004) controls for the location of the migrant in different regions of the country or abroad, using one categorical variable. In the following estimation I controlled for both location of the emigration and region of residence in Ukraine.

⁴ Similarly to Merkle and Zimmermann (1992) and Vanwey (2004) I control for the number of years an emigrant spent abroad. In Merkle and Zimmermann (1992), the authors use number of years spent in Germany, Vanwey (2004) use number of months since migrating, but in this research I use a categorical variable.

⁵ Size of the household is an important variable, e.g. Merkle and Zimmermann (1992) use the number of people currently living in the household as a control for the size of the household.

⁶ In Merkle and Zimmermann (1992), the authors control for the differences in income using a household’s net monthly income.

migrant’s location matters and which migrants from which regions sent more remittances, if any. The next two hypotheses concern a household’s income level; that is, whether the receiving-household’s total income and expenditures have an influence on remittances sent from abroad: $H_0 : \alpha_{10} = 0$ and/or $\beta_{10} = 0$ and/or $\gamma_{10} = 0$ and/or $\delta_{10} = 0$ and $H_0 : \alpha_{11} = 0$ and/or $\beta_{11} = 0$ and/or $\gamma_{11} = 0$ and/or $\delta_{11} = 0$. In addition, a household’s willingness to invest money might have a significant influence on remittances: $H_0 : \alpha_7 = 0$ and/or $\beta_7 = 0$ and/or $\gamma_7 = 0$ and/or $\delta_7 = 0$. Moreover, it would be a mistake not to look at other factors that might influence a migrant’s decision to send money, such as the number of people in the household, the “oblast” of a migrant’s origin and the household’s intentions to invest and to migrate.

2.4 Data

Data source

This paper uses data produced under the Canada-funded project “Research and Policy Dialogue Initiative on Migration and Remittances in Ukraine” implemented by the International Organization for Migration (IOM) Mission in Ukraine, and financed by the Government of Canada during 2014-2016. Access to the data was granted by the International Organization for Migration in Ukraine (IOM, 2016). Under this project, two surveys were introduced: the Nationally Representative Household Survey (further HH Survey) and the Socio-Economic Survey of Long-Term Migrant Workers. However, due to the main research question stated before, our analysis uses only the HH Survey.

The HH survey targeted households where at least one family member engaged in short-term or long-term international labor migration. The control group included households without migrant workers. Data was collected in two waves: Wave 1: June - August 2014 and Wave 2: February - May 2015. The size of the provided data sample was 838 households, which included 209 households with short-term and 330 with long-term migrant workers (excluding households with all family members working abroad) and 299 households without migrant workers (as a control group). After all data files were merged, the final number of observations was 631 households, which we use in our study.⁷ The distribution of households with and without migrants was almost equal - 56.26 % of the data sample included households with migrants and 43.74 % without migrants. Thus there was no oversampling issue as the number of households, included in the IOM sampling, with migrants did not significantly exceed the number of households without working migrants. Another assumption is that IOM run the survey taking in the consideration a proportion of certain types of households in Ukraine. Summary statistics of the data are provided in

⁷ The size of the data sample decreased, since for some households not all variables needed for the estimation, were available. Dropped variables were not significantly different, on average, from those remaining, so did not have any significant effect on the estimations.

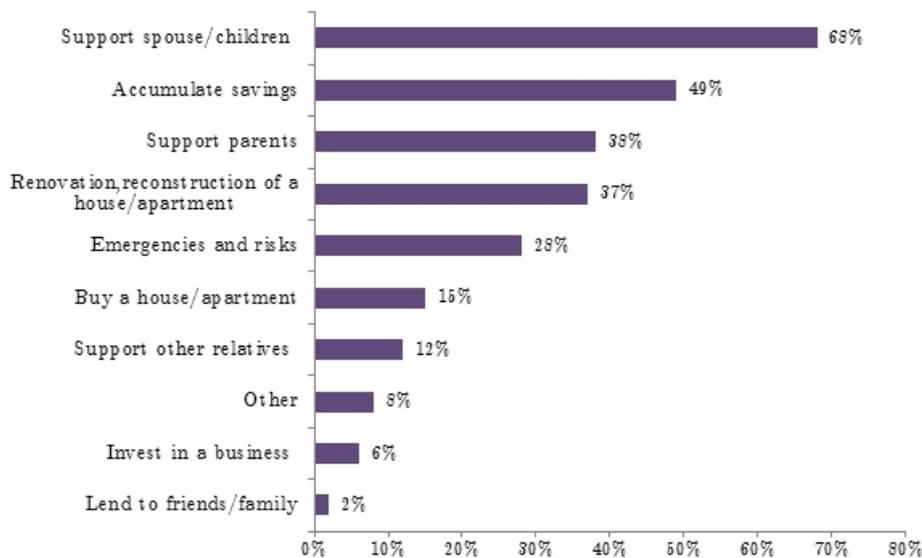
Appendix.

Due to the Russian annexation of the Crimea and occupation and war in the East of Ukraine, the Autonomous Republic of Crimea and cities of Sevastopol, Lugansk and Donetsk oblasts were excluded from the survey by the IOM. Chernobyl-affected areas of the first and second radioactive contamination levels were also excluded.

Data description

As mentioned above, the size of the dataset is 631 households, among which 355 households did not have a working migrant, and 276 had at least one migrant working outside Ukraine. According to the IOM report (2016) and our data analysis, older migrants are more likely to send money back to their country of origin - 42% of migrants aged 18-29 versus 75% of those aged 45-65. Regarding the purpose of remittances, one can see from Figure 2 that migrants usually send money to their close relatives (spouse/children/parents). On average, 39% of remittances are spent on household needs (consumption/daily needs). The second major purpose of remittances is the accumulation of savings (49%), which is in line with the previous research on remittances (Kuntsevych, 2016). The survey results show that households use remittances first for the family's daily needs, and subsequently for investment in real estate and/or home renovation. Interestingly, only 6% of migrants considered investing in business as a good purpose for remittances.

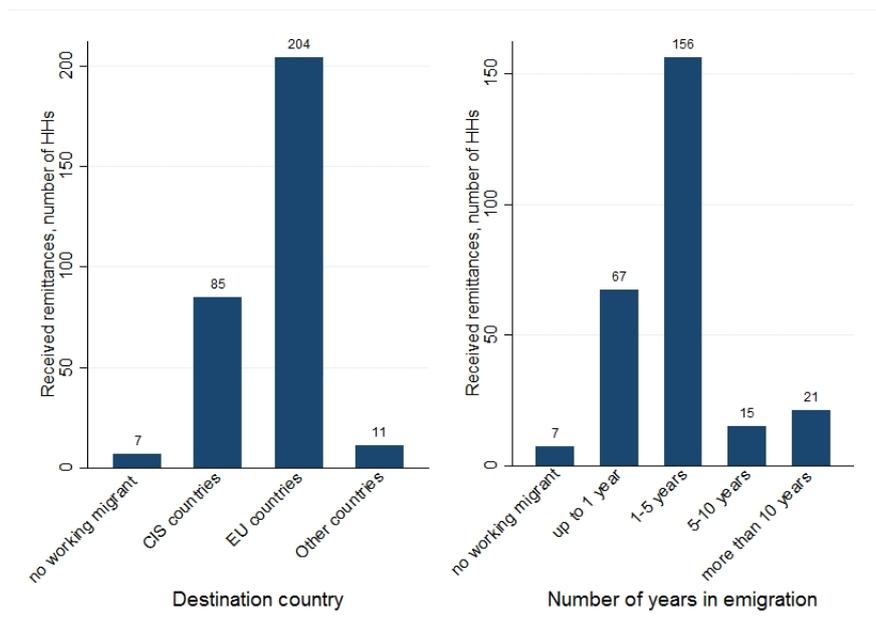
Figure 2: Purposes of sending remittances to Ukraine



Source: IOM (2016)

Figures 3-5 below describe the data with respect to remittances status; whether a household external financial support. Figure 3 compares the remittances status with respect to a migrant's destination country and the number of years the migrant spent outside of Ukraine. It should be noted that only households which received remittances were in-

Figure 3: HH received remittances, with respect to destination country and years in emigration



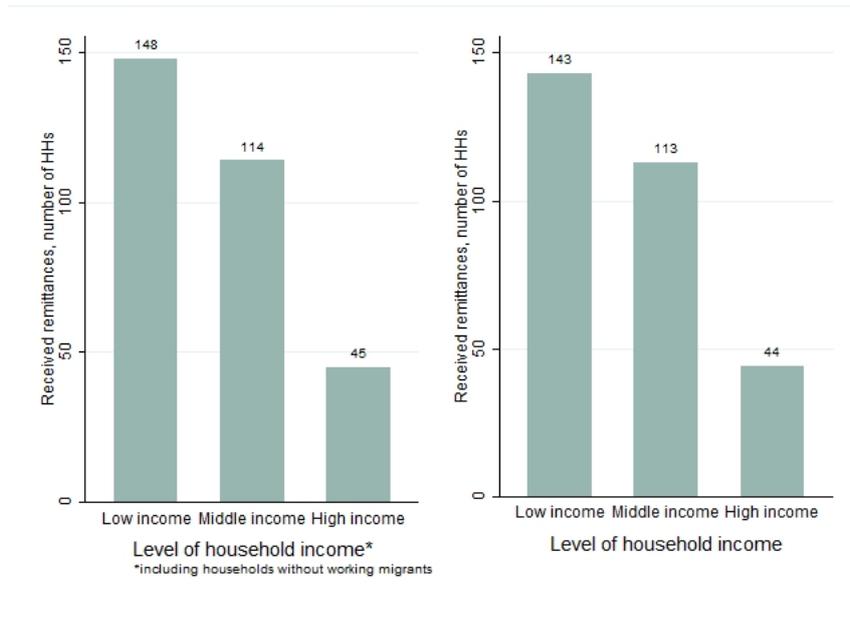
Source: IOM (2016)

cluded in the subsequent descriptive analysis. In Figure 3 the left graph shows that only 7 households without a family member working abroad received remittances. The most popular destination among interviewed households is the European Union; countries with high average wages. CIS countries have almost 3 times fewer working migrants when compared to EU countries (85 households versus 204). Regarding the length of stay abroad, working migrants prefer to leave their household for 1-5 years (156 households) or for a short period (up to 1 year). In general, the pattern shows that migrant workers emigrate to EU countries for up to 5 years.

Figure 4 shows dependence between the remittances status and household income level. The right graph includes only those households that have a member working abroad and received remittances, whereas the left graph includes also those who do not have working migrants but nevertheless receive financial support. The graph shows that households with low income usually obtain some remittances from abroad, whereas the high income group has the lowest probability of obtaining remittances.

Figure 5 presents the dependencies between the remittances status and the size of a household. The right graph includes only those households that have a member working abroad and received remittances, whereas the left graph includes also those who do not have household members as working migrants but still received financial support. On average, working migrants support households that have 2-4 members. It should be noted that migrants tend to support smaller households, with up to 4 members, rather than larger households, including more than 5 members.

Figure 4: HH received remittances, with respect to level of household income



Source: IOM (2016)

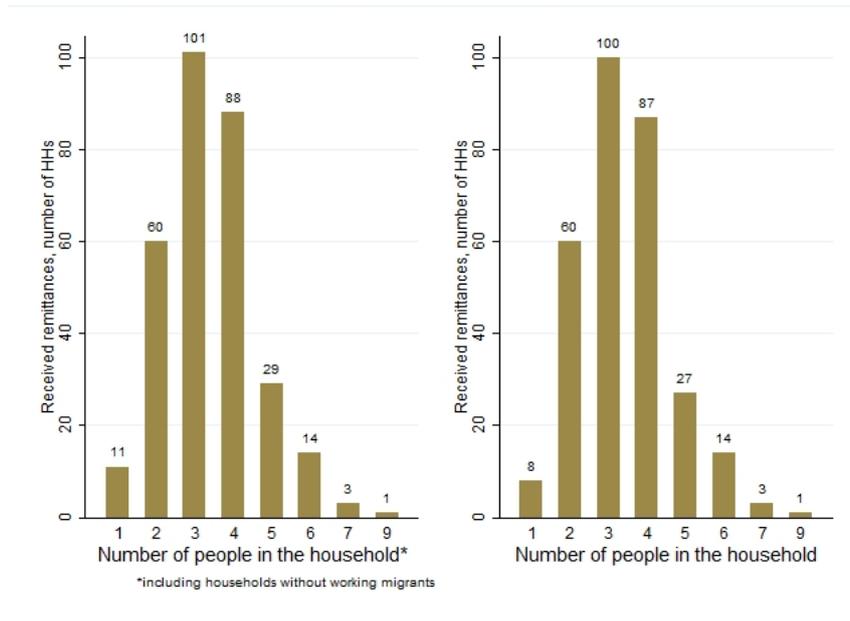
2.5 Results

Table 1 in the Appendix reports the results of the estimation specification for different types of remittance variables. All four models (1), (2), (3) and (4) are estimated sequentially, using a linear probability model. The Appendix also includes correlation tables for dependent and independent variables.

The first column shows results for the *Probability of receiving remittances* (this question includes only monetary remittances) and includes 577 unique households. Generally, the results show that *Destination country*, *Intention to invest* and *Probability to save* in the household are statistically significant. Migrant workers in CIS and EU countries have higher and almost equal probability of sending some remittances to Ukraine (84.9 percentage points for CIS countries and 85.2 percentage points for EU). Other destinations than those listed above also increase the probability of sending remittances to Ukraine. Interestingly, *Investment intentions* have a significant but negative influence on remittances. If a household decides to invest money in Ukraine, the probability of obtaining remittances decreases by 19.3 percentage points. On the other hand, the *Probability to save* has a positive and significant effect with an 11.3 percentage point increase. It should be noted that, according to the results of the correlation matrix, *Intention to invest* and *Probability to save* do not have a high or significant correlation. Another tested hypothesis was *Size of the household*, which is significant and positive (2.1 percentage point increase), meaning that with every additional member of the household the probability of obtaining remittances increases.⁸

⁸ It should be noted that according to statistics analysis working migrants tend to support smaller households rather than larger households, including more than 5 members.

Figure 5: HH received remittances, with respect to the size of the household



Source: IOM (2016)

The second column presents results for the *Probability of receiving in-kind remittances*, estimating the model for 529 unique households. In general, the results show that only a few factors have a significant effect on the probability of obtaining in-kind remittances. The hypothesis regarding *Destination country* was found to be insignificant, as was the household's total monthly income and expenditure. Interestingly, the dummy variable for the *Level of household income* (respondents defined their level of income using a gradation low/middle/high income) was found to be significant in the case of the *Middle income variable* where the probability of receiving in-kind remittances increases by 7.35 percentage points. It should be noted that, according to the results of the correlation matrix, the level of household income, monthly household expenditure and income do not have a high or significant correlation. Similarly to the *Probability of obtaining monetary remittances*, *Investment intentions* and *Probability of saving* in the household are found to be significant but with a different influence. *Investment intentions* have a significant and positive influence on remittances (however, in the case of monetary remittances the influence was negative). If a household decides to invest money in Ukraine, the probability of obtaining in-kind remittances increases by 17.2 percentage points. Similarly, the *Probability of saving* has a positive and significant effect with a 23.4 percentage point increase. The *Size of the household* variable was found to be insignificant, but for this model the *Number of years* an emigrant spent abroad working, i.e. 1-5 years, was found to be positive and significant at the 1% significance level. That is, if a migrant spent up to 5 years working abroad, the probability of sending in-kind remittances increases by 27 percentage points.

Logically, after estimating the *Probability of obtaining remittances* one is interested in the estimation of the model for the *Total sum of received remittances* for those who

actually received financial support. For this estimation only households with a positive amount of remittances were used, since a negative sum of remittances is not possible and we are interested only in those households that in fact received remittances. Results of the estimations are presented in columns 3 and 4 of Table 1. Models with one different dummy variable - *Probability of saving* - were estimated for 254 unique households with very similar results to the previous research (Chami et al, 2003; Cattaneo, 2012). It shows that not many factors have a significant effect on the total sum of received remittances, similar to the results of the previous model on the probability of obtaining in-kind remittances. Three hypotheses of interest, the *Investment intentions*, *Total monthly income* and *Total monthly expenditure* were confirmed and found to be significant. Specifically, *Investment intentions* has a positive effect on the total sum of received remittances; the sum of money received increases by more than 25 thousand hryvnas if a household has investment intentions (the difference in two models is around 2 thousands hryvnas). *Total monthly income* and *Total monthly expenditure* were found to be positive and significant yet not very high, particularly when compared with the *Investment intentions*. *Total monthly income* has a lower than 1 hryvna positive effect on the sum of received remittances. This is in contrast with the *Estimated monthly expenditure*, which has slightly more than 9 hryvnas influence on the dependent variable. In addition, the *Size of the household* has a significant and negative effect on the sum of remittances, with around an 8 thousand hryvnas decrease in the estimated variable. Similarly to the probability of obtaining in-kind remittances, *Middle level of income* was found to be significant but, contrary to previous results, highly negative. If the household has an estimated middle level of income, the sum of remittances received from abroad decreases by more than 13.5 thousand hryvnas.

To sum up the results, the country of a migrant's destination is significant only for the probability of obtaining remittances, whereas the intentions to invest have a significant influence on all dependent variables. The results are only partially in line with the previous research on the topic of received remittances and may indicate that Ukraine does not conform to the standard remittance model. Since there are not many research done on the topic of remittances and financial help, specifically on Ukraine. Moreover, Ukraine cannot be considered as a standard country, due to its political problems, arising quite often during the last 26 years of its independence, diversification in country's population and permanent external destabilization of the country from the east borders of Ukraine. Ukraine is a unique country with long-lasting and complicated history, which obtained its independence not even twice, country that was divided many times and only recently became a united nation, so the standard models for financial help and remittances can not fully be applied to it.

2.6 Concluding remarks

Today money transfers from working migrants are considered one of the most stable flows of foreign capital in Ukraine, exceeding FDI and international assistance. Foreign direct investment is significantly exposed to external and internal factors, as opposed to private money transfers which are more stable and less responsive to the political and economic situation in the country. Remittances decrease financial instability and the deficit of the balance of payments in the country, while they strengthen the Ukrainian currency and positively affect Ukraine's international credit ratings. However, the country's policy aimed at promoting the investment of remittances in the economy (as opposed to spending on consumption) is virtually nonexistent. Therefore, effective tools to enable the development of the financial potential of remittances in the the national economy should be created.

Our research results show that several stated hypotheses were not confirmed and only several factors, such as country of destination or intentions for further investment or savings have a significant influence the probability of obtaining remittances. While these results might not be conclusive, they show that the topic of remittances is complex and warrants further research, possibly using a larger database. Indeed there is still much work to be done on further investigating remittance flows, not only to Ukraine, but to other CEE and/or post-USSR countries.

Remittances sent by migrant workers are an important component of a household's income, which significantly affects the well-being of the population. In general, remittances decrease the level of poverty in the country, partially solve unemployment problems, improve the financial, material and living conditions of migrant workers' families, increase the level of education in the household and improve the quality of health services, leisure and entertainment. However, as there are no adequate programs to attract these funds into the economy, they are mainly directed towards consumption and rather than development and investment. While developing policies that both use the development potential of remittances and decrease the impact of their negative side effects, attention should be given to encouraging remittance inflows and stimulating incentives for their investment. Moreover, engagement in policy debates on the topic of labor mobility between Ukraine and the EU should have an important place in Ukraine's foreign policy.

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Appendix

Tables of results

Table 1: Linear probability estimations for benchmark models

	(1) Received remittances (Yes/No)	(2) Received in-kind remittances (Yes/No)	(3) Total sum of received remittances	(4) Total sum of received remittances
Destination country region Base: did not migrate				
Destination country region	0.849***	-0.0216	15840.8	16076.5
1. CIS countries	(12.41)	(-0.27)	(1.23)	(1.25)
Destination country region	0.852***	0.0858	-285.3	-749.2
2. EU countries	(13.57)	(1.17)	(-0.02)	(-0.06)
Destination country region	0.710***	0.209	1274.1	56.59
3. Other countries	(6.08)	(1.36)	(0.08)	(0.00)
Type of residence (Urban=1; rural=0)	0.00257	-0.00940	1037.8	1649.8
	(0.10)	(-0.31)	(0.29)	(0.45)
Economic zone in Ukraine Base: North region				
Economic zone in Ukraine East region	-0.0295	-0.0189	-10249.2	-9897.2
	(-0.67)	(-0.36)	(-0.86)	(-0.83)
Economic zone in Ukraine South region	-0.0326	-0.0411	-368.5	-761.6
	(-0.62)	(-0.67)	(-0.03)	(-0.06)
Economic zone in Ukraine Center region	0.0715	0.0374	-7877.3	-8515.2
	(1.54)	(0.69)	(-0.67)	(-0.73)
Economic zone in Ukraine West region	0.00333	0.0122	3015.9	1745.0
	(0.08)	(0.25)	(0.26)	(0.15)
Level of household income Base: Low income				
Level of household income Middle income	0.0491	0.0735*	-13569.0**	-13751.4**
	(1.63)	(2.10)	(-3.25)	(-3.30)
Level of household income	0.0742	-0.0410	6585.9	6179.0
High income	(1.31)	(-0.63)	(0.88)	(0.82)

Intention to migrate (Yes=1; No=0)	0.0342	-0.185***	-2506.3	-1700.7
	(0.81)	(-3.79)	(-0.49)	(-0.33)
Number of years abroad Base: no emigrant				
Number of years abroad Up to 1 year	-0.202**	0.0844	2645.1	2291.0
	(-3.10)	(1.08)	(0.41)	(0.36)
Number of years abroad	-0.129*	0.270***	2358.4	1264.3
1-5 years	(-2.09)	(3.73)	(0.40)	(0.21)
Number of years abroad	-0.117	0.230*	3639.4	3063.3
5-10 years	(-1.35)	(2.20)	(0.42)	(0.35)
Intention to invest	-0.193**	0.172*	27146.3**	25760.0**
	(-2.86)	(1.98)	(3.04)	(2.86)
Oblast of living in Ukraine	-0.00101	0.000518	520.0	538.3
	(-0.57)	(0.25)	(1.56)	(1.61)
Size of the household	0.0212*	-0.000998	-8055.3***	-7889.0***
	(1.98)	(-0.08)	(-4.86)	(-4.75)
Total HH monthly income	0.00000407	-0.00000199	0.985***	0.982***
	(1.37)	(-0.59)	(3.41)	(3.40)
Estimated monthly expenditure	0.0000117	0.0000128	9.249***	9.086***
	(1.91)	(1.81)	(11.31)	(10.94)
HH saved money (Yes=1, No=0)	0.113***	0.234***		4550.7
	(3.91)	(6.68)		(1.11)

cons	-0.107* (-2.15)	-0.0792 (-1.36)	-2529.2 (-0.19)	-3794.9 (-0.28)
R^2	0.7228	0.4642	0.6255	0.6275
N	577	529	254	254

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: Summary statistics of variables

	Number of observation	Mean	Standard deviation	Minimum	Maximum
Remittance status (Yes/No)	631	.487	.500	0	1
Type of residence (urban=1; rural=0)	631	.650	.477	0	1
Economic zone (North=1, East=2, South=3, Center=4, West=5)	631	3.664	1.477	1	5
Level of household income (low=1, middle=2, high=3)	625	1.521	.672	1	3
Intention to migrate (Yes/No)	631	.0998	.300	0	1
Intention to invest (Yes/No)	631	.030	.171	0	1
Size of the household	631	2.954	1.417	1	10
Household's average monthly income	631	4931.24	5071.558	800	85000
Household's average monthly expenditure	631	4383.38	3113.118	0	30000
Savings by the household (Yes/No)	631	.417	.493	0	1

Table 3: Correlation matrix for dependent variables and main explanatory variables

	Received remittances (Yes/No)	Received in-kind remittances (Yes/No)	Total value of received remittances	Destination country region	Total HH monthly income	Estimated monthly expenditure	Intention to invest	HH saved money (Yes/No)
Received remittances (Yes/No)	1							
Received in-kind remittances (Yes/No)	0.473***	1						
Total value of received remittances	0.488***	0.283***	1					
Destination country region	0.900***	0.505***	0.442***	1				
Total HH monthly income	0.282***	0.162***	0.508***	0.280***	1			
Estimated monthly expenditure	0.336***	0.248***	0.608***	0.335***	0.548***	1		
Intention to invest	0.0220	0.0800	0.0984*	0.0264	0.121**	0.114**	1	
HH saved money (Yes/No)	0.455***	0.542***	0.334***	0.515***	0.223***	0.321***	0.0548	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Correlation matrix for Received remittances variable and various explanatory variables

	Received remittances (Yes/No)	Type of residence	Economic zone in Ukraine	Level of household income	Intention to migrate	Number of years abroad	Oblast of living in Ukraine	Size of the household
Received remittances (Yes/No)	1							
Type of residence	-0.117**	1						
Economic zone in Ukraine	0.402***	-0.265***	1					
Level of household income	0.196***	0.203***	-0.0324	1				
Intention to migrate	0.111**	0.0645	0.0346	0.0956*	1			
Number of years abroad	0.740***	-0.121**	0.398***	0.0874*	0.0615	1		
Oblast of living in Ukraine	-0.0715	0.100*	-0.105*	-0.0191	-0.0706	-0.0324	1	
Size of the household	0.334***	-0.147***	0.222***	-0.219***	0.0613	0.299***	-0.0665	1

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Table 5: Correlation matrix for Received remittances variable and various explanatory variables

	Received in-kind remittances (Yes/No)	Type of residence	Economic zone in Ukraine	Level of household income	Intention to migrate	Number of years abroad	Oblast of living in Ukraine	Size of the household
Received in-kind remittances (Yes/No)	1							
Type of residence	-0.0926*	1						
Economic zone in Ukraine	0.338***	-0.258***	1					
Level of household income	0.169***	0.212***	-0.0258	1				
Intention to migrate	-0.112**	0.0822	0.0266	0.0942*	1			
Number of years abroad	0.457***	-0.124**	0.426***	0.125**	0.0811	1		
Oblast of living in Ukraine	-0.101*	0.106*	-0.0796	-0.00872	-0.0619	-0.0461	1	
Size of the household	0.179***	-0.154***	0.242***	-0.227***	0.0563	0.322***	-0.0741	1

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Table 6: Correlation matrix for Received remittances variable and various explanatory variables

	Total value of received remittances	Type of residence	Economic zone in Ukraine	Level of household income	Intention to migrate	Number of years abroad	Oblast of living in Ukraine	Size of the household
Total value of received remittances	1							
Type of residence	0.0336	1						
Economic zone in Ukraine	0.218***	-0.265***	1					
Level of household income	0.397***	0.203***	-0.0324	1				
Intention to migrate	0.149***	0.0645	0.0346	0.0956*	1			
Number of years abroad	0.378***	-0.121**	0.398***	0.0874*	0.0615	1		
Oblast of living in Ukraine	-0.0219	0.100*	-0.105*	-0.0191	-0.0706	-0.0324	1	
Size of the household	0.112**	-0.147***	0.222***	-0.219***	0.0613	0.299***	-0.0665	1

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Chapter 3

Why Do Firms Bribe? Evidence from the Czech Republic

Corruption has become a common phenomenon in the CEE (Central and Eastern Europe) countries, including the Czech Republic. Even though corruption in the Czech Republic, especially at the government and enterprise level, is strongly criticized, the results of the following research show that the majority of firms have conducted some sort of corrupt behavior. Taking this into account, the research explores micro- and macro-level variables which might influence firms' decisions to bribe. For the purpose of the research, both BEEPS and Amadeus datasets for the Czech Republic are merged using a cluster methodology. The main question under consideration is why firms bribe and what the main factors are that influence their decisions to bribe. The research also explores the outcome of firms' decision-making processes regarding bribes based on firms' size, the industry in which they operate and the year. Estimated results show that firms' financial performance does not greatly depend on the level of corruption on the local market. In addition, firms' market share and level of bribery are found to have a negative dependence, meaning that a higher market share of the firm leads to a lower level of bribery. This research can be considered as guidance on which policies the Czech government could adopt in order to reduce the level of corruption and occurrences of bribery in the country.

3.1 Introduction

During recent years, corruption has become a widespread phenomenon, especially in the countries experiencing a transition period to a capitalist market structure. The results of the recent “Corruption Perceptions Index 2015” (Transparency International, 2015) report show that poor and developing countries, with weak policies and legal systems, tend to be more corrupt when compared with developed countries. The report shows that the Eastern Europe and Central Asia regions are on the same level of corruption as Sub-Saharan Africa.¹ The European Union and Western European countries are considered as being the least corrupt, with an average rating being 66 points. Furthermore, according to the latest “Transparency International Survey” (Global Corruption Barometer 2013) implemented in 2013, more than one person in four (27 per cent) confirmed paying a bribe at least once in the previous year. People have reported that bribes were made in the major public institutions and services (Transparency International, 2013). Corruption, as well as its symptom, bribery, appear in both public and private spheres and are present in all countries. However, their presence significantly differ across the world.

In previous works, authors argue that countries tend to decrease their levels of, and eventually completely expunge, corruption. This is because it does not stimulate economic growth, it boosts income inequality, it decreases investment size, it reduces the levels of foreign trade, the quality and quantity of human capital, etc. (Mauro, 1995; Murphy, Shleifer, & Vishny, 1993; Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000; Li, Xu, & Zou, 2000; Chen, Yasar, & Rejesus, 2008). We should note the vast majority of studies assume that public officials are always the ones who have requested a bribe (Chen et al, 2008); however, this is not always true. Firms, as well as individuals, might also be initiators of bribery, therefore proper government policies focused on enterprises can reduce the levels of and frequency of corruption. Taking into account previous research on corruption, this paper examines the factors which influence firms’ decisions to attempt bribery using the example country of the Czech Republic. According to several previous studies on the corruption climate in the Czech Republic, for example by Mravec (2010) or the Corruption Perceptions Index (2015), the Czech Republic ranks among the countries with the highest level of corruption in the region, with a score of 56 out of 100.² In addition, in a report conducted by the European Commission in 2014, 20% of Czech citizens³ responded that “they personally know someone who takes or has taken bribes” (European Commission, 2014, p.8).

Therefore, the purpose of the paper is to examine the determinants of corruption on the firm level, more precisely the micro- and macro-level variables that influence firms’

¹ The Eastern Europe and Central Asia region, the same as Sub-Saharan Africa, obtained 33 points out of 100, where 100 means that there is no corruption.

² A higher score means the country has the lowest level of corruption, e.g. 100 means that there is no corruption and 0 means that country is fully corrupt.

³ The EU average number was 12% - around one in eight Europeans.

decisions to bribe. The main variable under consideration is firms' financial performance, and how it influences firms' decisions to provide bribes. This research aims to understand the relationship between bribe payments and firms' financial and growth performance, in addition to other characteristics which may have an influence on the likelihood of bribery. Additional topics explored will be the main categories and final destinations of bribes, and which other factors influence firms' decisions to make bribes.

The most important specification of the research is the dataset used: in order to proceed with the research, two databases will be merged together - firm-level bribery data from BEEPS ⁴ and financial data from the Amadeus ⁵ database. The extract of data for the Czech Republic only will provide us with panel-type data on firms in the country for the period 1999-2014. Moreover, merging BEEPS data with Amadeus will give us more accurate and richer information on firms' financial performance, which is not fully available in BEEPS. The dataset specification will be explained more precisely in the Data Description part of the paper.

3.2 Literature Review

Even though the topic of corruption is quite complex and there are a significant number of papers discussing it, until recently the majority of papers on corruption tried to explain the consequences of bribery. It has even been stated that corruption might have a positive effect on development (Morgan, 1998). Despite the costs of corruption remaining an important topic for consideration, the factors which facilitate corruption have also received a significant amount of attention from researchers: weak governance and politics, imperfect legal systems and general weakness of states, and social and economic institutions create conditions which facilitate corruption (Johnston, 2005). Such obstacles motivate bureaucrats to become involved in corruption and create significant difficulties for the development of a public sector (Olken & Pande, 2011). For example, several researchers have argued that foreign-owned corporations more often than domestic-owned, face corruption on the government level, e.g. the need for bribing officials in order to obtain contracts, permissions or certificates (Kolstad, Fritz, & O'Neil, 2008; Mehlum, Moene, & Torvik, 2006; Menocal & Taxell, 2015).

On the firm level, the topic of corruption was not precisely examined. For example, in a recent paper, Hanousek and Kochanova (2015) investigated the dependence of firms' performance in CEE countries on bureaucratic corruption. The authors find that the higher the mean bribery in the region, the lower a firm's performance; on the other hand, the

⁴ The Business Environment and Enterprise Performance Survey (BEEPS) is a joint initiative of the European Bank for Reconstruction and Development (EBRD) and the World Bank Group (the World Bank). The data are available by request from <http://www.enterprisesurveys.org/> and <http://ebrd-beeps.com/data/>

⁵ Amadeus is created and produced by Bureau van Dijk. Amadeus is a comprehensive database of 14 million companies across Europe. More information can be found on <http://www.bvdinfo.com/>

standard deviation of a firm's level of bribery increases its performance. The results of the paper show that the consequences of corruption might be mainly explained by the local bribery environment and regional characteristics. Furthermore, the majority of researchers have to date explored the dependence of firms' financial performance on bribery payments (Fisman & Svensson, 2007; Svensson, 2003; Hanousek & Kochanova, 2015), and did not pay much attention to the reverse correlation.

According to Harstad and Svensson (2011) it is common knowledge that firms in developing countries (e.g. the ones in the CEE region) are more subject to corruption in order to relax some regulatory constraints. Meanwhile, in developed countries, firms try to lobby the government in order to change the laws/rules. The authors arrived at a result consistent with the previous research, that is "corruption should be more prevalent in poorer countries" (Harstad, & Svensson, 2011, p.47). Other papers on lobbying and bribes (Campos & Giovannoni, 2007; Chong & Gradstein, 2010; Bennedsen, Feldmann, & Lassen, 2011) reached similar conclusions: enterprises which have at least some political influence in their country are less subject to bribery and corruption, and present better results than those that are without any such influence. Such "weaker" firms without influence have a higher probability of giving bribes and attempt to entice corruption in government workers.

Corruption in the Czech Republic, among other countries, has been previously examined e.g. by Schneider, Buehn, and Montenegro (2010), and Buehn and Schneider (2012). The authors found that Eastern European countries, like Bulgaria, Lithuania, and including the Czech Republic, have a higher level of shadow economy as opposed to Western European countries, like Germany, Austria and Italy. Moreover, research in the "EU anti-corruption report" conducted by the European Commission in 2014 states that on the European level "more than 4 out of 10 companies consider corruption to be a problem for doing business" (p. 5). This research finds that the smaller the enterprise, the more often corruption becomes a problem for doing business. In the Czech Republic 71% of respondents replied that corruption is most likely to be considered a problem when doing business by companies.⁶

In terms of research on the firm level in the Czech Republic, Koudelkova, Strielkowski, and Hejlova (2015) employed a questionnaire for SMEs (small and medium enterprises), analyzing responses from 110 questions. The results of the polls confirmed the outcome of the European Commission Report 2014 and found that "almost every firm has encountered some form of corruption and even used corruption to either increase sales, help negotiations, or increase production" (Koudelkova, et al., 2015, p.25). Moreover, respondents have agreed that corruption (bribery in particular) has been quite useful in the day-to-day activities of resolving bureaucratic and "paper" issues. The authors also used a chi-squared test and found that the existence of corruption in a company might actually boost the economic situation in the firm. Another thing that should be acknowledged is that a

⁶ For comparison, other EU respondents showed these results: Portugal (68%), Greece and Slovakia (both 66%)

significant fraction of Czech firms consider corruption and bribery as a “driving engine of the economy and its growth” (Koudelkova, et al., 2015, p.40).

Many empirical papers written on this topic are limited to the exploration of developed countries or focus on lobbying from the firms’ side. Here lobbying means that firms try to create legislation or conduct an activity that will help their enterprise. Lobbying might be considered as the act of attempting to influence the actions, whereas bribery is the act of giving money, goods or other forms of payments. In this research the focus will be on a firms’ characteristics which influence its decision to bribe. The following research contributes to the large amount of papers written on the topic of bribery and corruption in several aspects. First of all, this research focuses on corruption in a post-communist country of the CEE region, the Czech Republic, with a deep study of firm-level data. Secondly, by using an original dataset the research provides additional information on the level of corruption on the firm level in the Czech Republic. Thirdly, the corruption behavior of firms and their decisions to give bribes is explored.

3.3 Empirical Methodology

For this research a modified bribery model is used, introduced by Svensson (2003), adding a cluster methodology presented by Hanousek and Kochanova (2015). More specifically, in the original paper by Svensson (2003), the author explores the effects of *Profit* (a firm’s gross sales - operating costs - interest payments), *Capital stock* (the resale value of plant and equipment) and *Labor force* (total employment) on the firm’s decision to give a bribe (0/1 dummy variable). In this research, a firm’s revenue will be measured as the *Average growth of operating revenue per employee*; capital stock will be present as the *Average sales growth*; and labor force will be measured as the *Average employment growth*.⁷ Average growths were created using cluster methodology, since estimations will be made over waves of years.

In terms of bribery cluster methodology, first used by Hanousek and Kochanova (2015), this research’s dependent variable will be the mean of bribery for a defined cluster. Clusters will be defined in accordance with five characteristics, explained further in the “Data Description” part of this paper. Cluster methodology helps to define the level of bribery over local markets, since firms’ decisions to bribe vary over the size of a country, industry and city. For example, the level of bribery and corruption in Brno for wholesale firms would not be the same as in Prague in the manufacturing industry. Defining local markets (clusters) will allow us to check the dependence of the average level and frequency of bribery on firms’ bargaining positions.

Theoretical framework by Svensson (2003) suggests to use probit model having incidence and level of bribes across firms as dependent variables. In this research a rescaled

⁷ Average growths were calculated over waves, e.g. $(sales_{it} - sales_{i(t-1)})/Average\ of\ Sales\ in\ a\ Wave_i$

categorical variable of corruption is used, with a set of explanatory variables similar to Svensson (2003) specification. For example, Svensson (2003) includes company's size, assuming that smaller firms can more easily avoid bribing of governors, profit per employee, capital stock per employee, alternative return per employee, etc. into estimation.

In this research in order to explore and analyze the effect of firms' performance on the average probability to bribe (in a defined cluster), the following equation estimated using linear probability robust estimation is used:

$$\begin{aligned}
BriberyMean_{ct} = & \alpha_0 + \alpha_1 AverSalesGrowth_{it-1} + \alpha_2 AverEmplGrowth_{it-1} \\
& + \alpha_3 AverGrowthROS_{it-1} + \alpha_4 AverCapitGrowth_{it-1} \\
& + \alpha_5 AverSalesperEmployee_{it-1} \\
& + \gamma X_{it-1} + \tau_t + \phi_i + \varepsilon_{it}
\end{aligned} \tag{1}$$

While the bribery mean provides an average level of corruption in a chosen cluster, bribery standard deviation shows a "frequency" of bribe over a cluster, meaning the level of bribery dispersion displays whether firms in a chosen cluster behave in the same way in terms of giving bribes. Higher standard deviation shows that firms in a set do not behave similarly; some bribe more often while others less so. Lower dispersion shows that the majority of firms behave more similarly in a chosen set - either firms give bribes with the same frequency or do not give them at all. Therefore, in order to explore the frequency/willingness to give bribes, a closer look will be taken at the main factors that might influence firms' bribery dispersions, using the following equation:

$$\begin{aligned}
BriberyDispersion_{ct} = & \beta_0 + \beta_1 AverSalesGrowth_{it-1} + \beta_2 AverEmplGrowth_{it-1} \\
& + \beta_3 AverGrowthROS_{it-1} + \beta_4 AverCapitGrowth_{it-1} \\
& + \beta_5 AverSalesperEmployee_{it-1} \\
& + \lambda X_{it-1} + \tau_t + \phi_i + \varepsilon_{it}
\end{aligned} \tag{2}$$

$BriberyMean_{ct}$ and $BriberyDispersion_{ct}$ are bribery's average and dispersion in clusters c , computed using BEEPS data. Firms' financial performance is represented by *Average sales growth* ($AverSalesGrowth$), *Average employment growth* ($AverEmplGrowth$), *Average growth of return on sales* ($AverGrowthROS$), *Average capital growth* ($AverCapitGrowth$) and *Average Sales per employee* ($AverSalesperEmployee$) variables.⁸

X_{it-1} is a vector of firms' control variables, which includes the following variables: number of employees, squared number of employees, market share, share of foreign/state-ownership, etc. The *Marketshare* variable is defined as a ratio of firms' total sales to

⁸ Average (growth) values were calculated over waves, e.g. $(sales_{it} - sales_{i(t-1)})/AverageofSalesinaWave_i$

industry's total sales. As mentioned in previous studies, firms with a lower market share might have a higher willingness to bribe in order to keep their place on the market (Luo & Han, 2009).

Two terms τ_t and ϕ_i capture time fixed effects that control the correlation between firms' residuals over time (e.g. shocks) and firm-fixed effects which control for cross-time correlation between firms' residuals. ε_{it} and ϵ_{it} are i.i.d. random components.

Firms' performance was lagged one period backwards in order to reduce potential endogeneity (in addition, an endogeneity check will be performed using the Hausman test). This can be easily explained by the fact that firms usually do not immediately (in the current period) obtain a benefit from bribes.⁹

Control variables, intended to reduce omitted variable bias, will also include indicators for firms' profitability. This will be averaged though waves, like liquidity ratio, return on total assets, and growth of return on total sales.¹⁰

One of the main hypotheses under consideration is $H_0 : \alpha_1 = 0$ and/or $\alpha_2 = 0$ and/or $\alpha_3 = 0$ and/or $\alpha_4 = 0$ and/or $\alpha_5 = 0$ which, in the case of its rejection, will indicate that *Firms' financial performance* has an influence on firms' decisions to bribe - a positive sign will mean that with better financial performance firms bribe more (possibly in order to stay on the same level of income and total sales). Models (1) and (2) will be estimated using robust standard errors clustered at the firm level (Petersen, 2009).

The *Marketshare* variable is defined as a ratio of a firms' total sales to industry total sales. As mentioned in previous studies, firms with lower market share might have a higher willingness/probability to bribe, in order to keep their place on the market (Luo & Han, 2009).

Regarding *ownership of the firm*, state or foreign, the previous empirical papers have received somewhat contradictory results. Foreign firms, unaware of the cultural background, may be less likely to know whom they should bribe and how large the bribe should be when compared with domestic enterprises with better information (e.g. Rodriguez, Uhlenbruck, & Eden, 2005). Therefore foreign-owned firms may be motivated to pay higher-than-average bribes, compensating for the lack of knowledge of the power structure of the environment. On the other hand, Herrera and Rodriguez (2003) use data on five broadly defined regions from Business Environment Surveys and find that foreign-owned firms bribe less than local-owned. They explain such results with the fact that foreign-owned firms need less government assistance (which may not be always true). State ownership of the enterprise (or at least partial state ownership) might also have a significant effect on the

⁹ Also considered is the option of estimating a model with one period forwarded firms' performance (lead-lag relationship) - the bribe triggers the desire for a better financial performance in the future or the willingness to stay on the same high level.

¹⁰ Return on assets shows the efficiency of using a company's assets for generating earnings by its management; Return on sales represents a company's operational efficiency. I also planned to add other measures of firms' profitability, like EVA (Economic Value Added), Operating Margin and Return on Equity, but due to lack of data these variables were not used in the analysis.

probability of corruption, since government officials are less likely to ask for bribes from state-owned firms (Lee, Oh, & Eden, 2010). On the other hand, Chong and Gradstein (2010) found that state ownership of a company is associated with a larger influence on the government (lobbying) and as a result the bribery levels are lower. In terms of foreign ownership, the authors claim that the level of lobbying is smaller, therefore the corruption levels from the firms' side are higher.

With such controversial results from previous research, we expect privately owned enterprises to have a higher probability of paying bribes than state-owned firms. Moreover, following Clarke and Xu (2004), sole ownership of a firm may cause an increase in the levels of bribery, since such firms can be considered more efficient and with larger cash flows.

3.4 Data Description

Data sources

An important feature of the proposed research is the merging of two databases: BEEPS and Amadeus. The bribery measure is taken from the Business Environment and Enterprise Performance Survey (BEEPS)¹¹, which has data for over 11,000 firms in 28 countries of Central and Eastern Europe and Central Asia. The sample is quite rich, as it includes four waves of BEEPS surveys covering the years 1999-2013,¹² and covers former communist European and Soviet Union countries, which have experienced institutional transformation and transition to a market economy.

To be more precise, the four waves of BEEPS survey cover the following years: the first wave - 1999-2002; the second wave - 2003-2005; the third wave - 2006-2008; the fourth wave - 2011 - 2013. In each wave of the survey the same question regarding bribery was asked: *“Thinking about officials, would you say the following statement is always, usually, frequently, sometimes, seldom or never true? - It is common for firms in my line of business to have to pay some irregular “additional payments or gifts” to get things done with regard to customs, taxes, licenses, regulations, services, etc”*.¹³ Firms' bribery responses perform in categorical variables, varying from 1 to 6. The bribery measure will be rescaled to fit into 0 - 1 interval, to receive the measure of a bribe's intensity or probability of a bribe. Rescaling was done in the following way: 1 will be subtracted from the original value and divided by 5.

¹¹ The Business Environment and Enterprise Performance Survey (BEEPS) is a joint initiative of the European Bank for Reconstruction and Development (EBRD) and the World Bank Group (the World Bank). The data are available by request from <http://www.enterprisesurveys.org/> and <http://ebrd-beeps.com/data/>

¹² Surveys were released in a way which covers three preceding years.

¹³ In addition, I am planning to explore the “final destinations” of bribes, meaning exactly for which service the bribe was used: *“Thinking now of unofficial payments/gifts that establishments like this one would make in a given year, please tell me how often would they make payments/gifts for the following purposes: To deal with customs/imports; To deal with courts; To deal with taxes and tax collection.”*

Even though the BEEPS anonymous survey has a diverse set of questions about firms' performance, infrastructure, degree of innovation, business and legal environment and corruption, the main disadvantage of BEEPS is endogeneity between level of bribery and firm's performance¹⁴ and missing data for accounting information¹⁵ (Hanousek & Kochanova, 2015), which can cause biased results. In order to solve the problem of missed variables, financial data on firms will be used from the Amadeus database.¹⁶ The Amadeus database contains detailed financial information from companies for both Western and Eastern Europe, balance sheets and income statements, companies' stock prices, etc. Amadeus contains information on around 21 million companies across Europe. CEE countries, and the Czech Republic in particular, vary in their level of corruption. This will allow for the exploration of factors influencing corruption from a wider perspective. For the proposed research BEEPS and Amadeus data for Czech Republic will be used.

It should be noted that previous research (Klapper, Laeven, & Rajan, 2006) using Amadeus and BEEPS data exposed that both datasets tend to under-represent small firms and over-represent large firms - for solving this issue in the proposed research we will explore firms of different sizes and industries.

Combining BEEPS and Amadeus Databases

In order to solve an issue with missing data, the BEEPS and Amadeus datasets will be merged, as stated above. To combine two datasets, the "cluster" method was used (the approach is borrowed from Hanousek and Kochanova (2015)). Intersection cells (clusters) will be defined using the following characteristics:

1. Time period (corresponding to four waves of BEEPS survey: first wave - 1999-2002; second wave - 2003-2005; third wave - 2006-2008; fourth wave - 2011 - 2013)
2. Size of the firm: micro (up to 10 employees); small (less than 20 employees); medium (up to 250 employees) and large (more than 250) are combined as one characteristic.
3. Industry (two-digit ISIC rev 3.1 industry code)
4. Location size (capital, city with a population over 1 million; city with a population of less than 250,000)¹⁷

It is possible to identify clusters in both BEEPS and Amadeus data. For each cluster, using BEEPS data, a mean and standard deviation (dispersion) of bribery is computed. Then these measures are assigned for every firm from the same cluster in the Amadeus data. The mean and dispersion of bribery are considered defining factors describing the "local

¹⁴ Endogeneity problem is eliminated after merging BEEPS and Amadeus, since two datasets are independent and I control for firms' fixed effects.

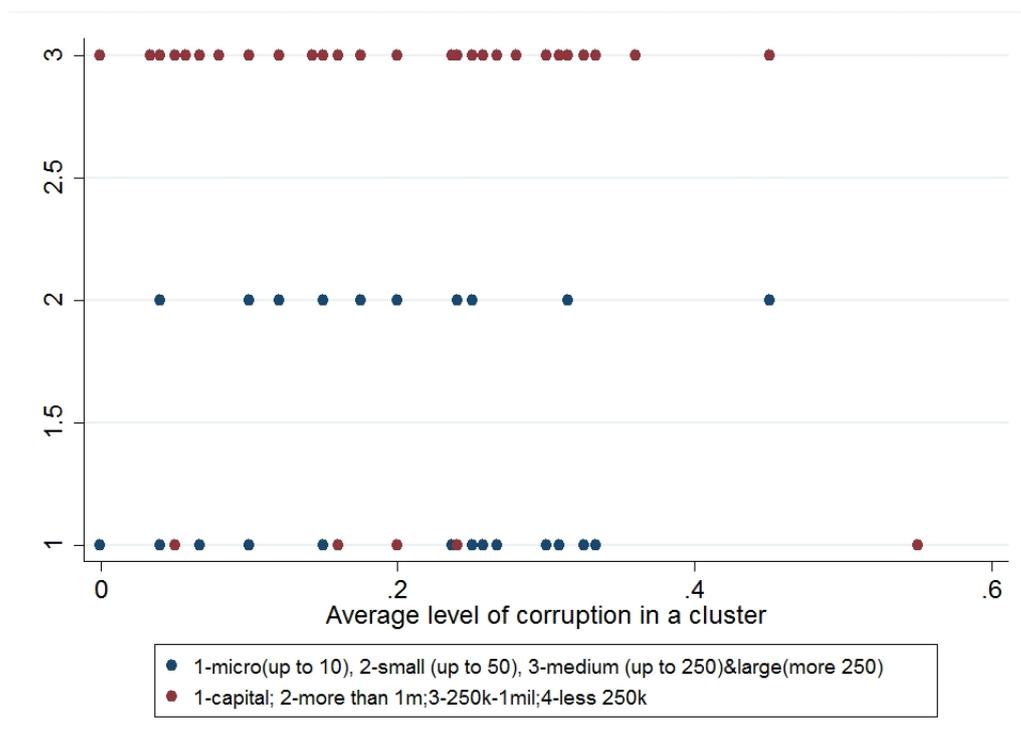
¹⁵ 40-50 per cent of missing data on sales, assets, costs, etc.

¹⁶ Amadeus is created and produced by Bureau van Dijk. Amadeus is a comprehensive database of 14 million companies across Europe. More information can be found on <http://www.bvdinfo.com/>

¹⁷ Originally characteristics for firms' legal status (shareholder, partnership, ownership) were supposed to be included, but additional characteristics cut the number of "useful" clusters to less than 50%, so eventually legal status was excluded.

bribery environment”. As mentioned in Hanousek and Kochanova (2015), the bribery mean can be considered as the average level of corruption in the local market - the equilibrium level between demand from officials and supply from firms. Standard deviation, on the other hand, might be considered as the willingness to bribe (Svensson, 2003). In order to explore the level of corruption more precisely, at least 4 firms need to be assigned to each cluster.

Figure 1: Levels of bribery in a cluster, with respect to size of the firm and size of the city

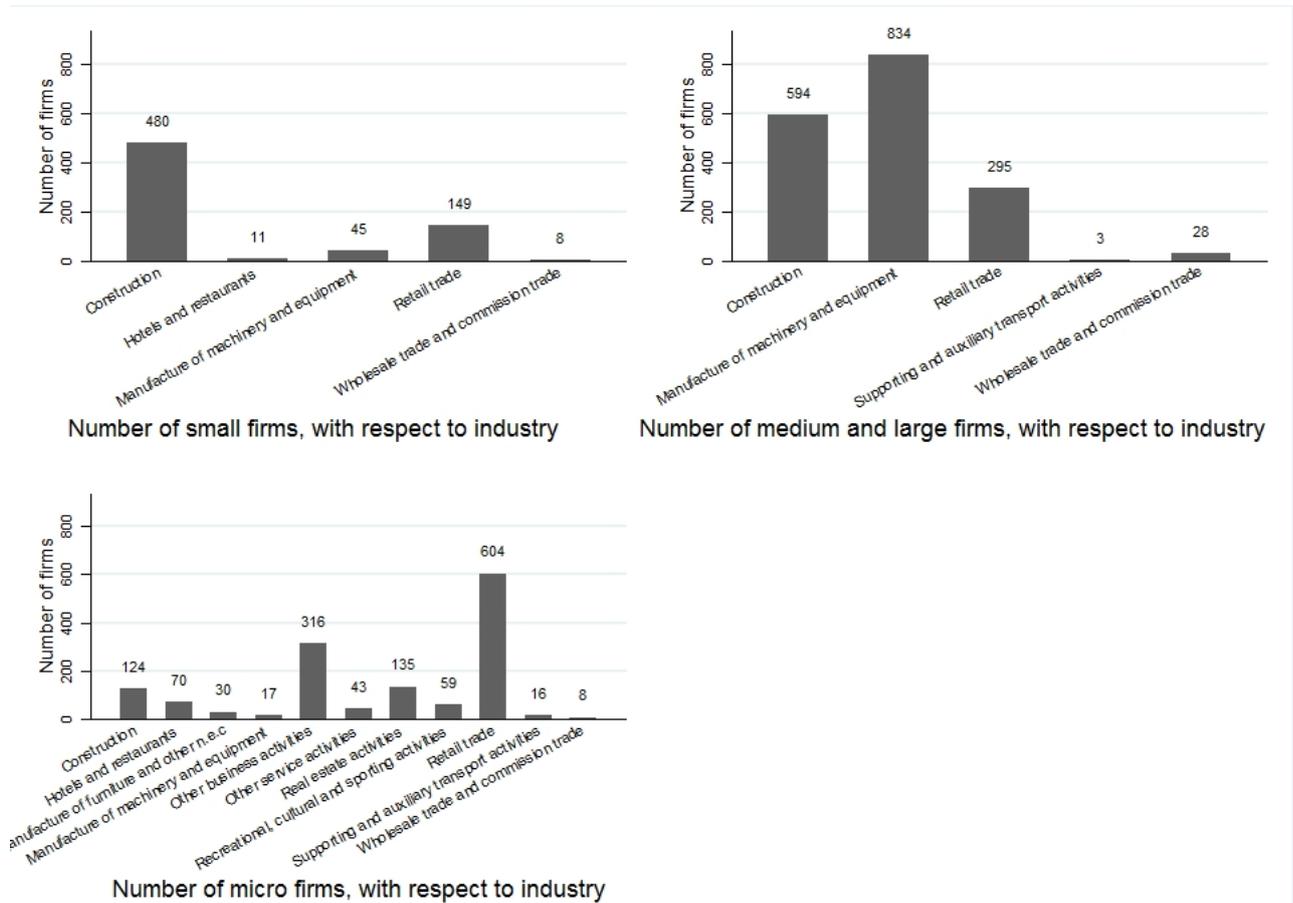


Source: BEEPS and Amadeus databases (2016)

Figure 1 shows an average level of corruption by the size of the firm and the size of the company’s origin (red points present variable *Size of the city*, while blue points present results for the *Size of the firm*). As it can be seen, the most corrupted cluster in terms of size of the city is originated in Prague (value is around 0.55). In addition the most corrupted cluster in terms of the number of hired employees is a small company, with less than 50 workers. Generally it can be concluded that small firms give bribes more often, but in terms of the origin of the company (size of the city) we are not able to conclude much, since the level of bribery is high enough in Prague so as in other cities.

Figure 2 shows a distribution of firms by size, with respect to industry. According to the data majority of small firms (more than 10 but up to 50 workers) is working in construction, while majority of medium and large firms (more than 50 workers) provide manufacturing services. In terms of micro firms (up to 10 workers) the biggest share is taken by retail industry. In general it can be stated that top three industries presented in merged datasample are construction, retail and manufacturing.

Figure 2: Distribution of firms by size, with respect to industry



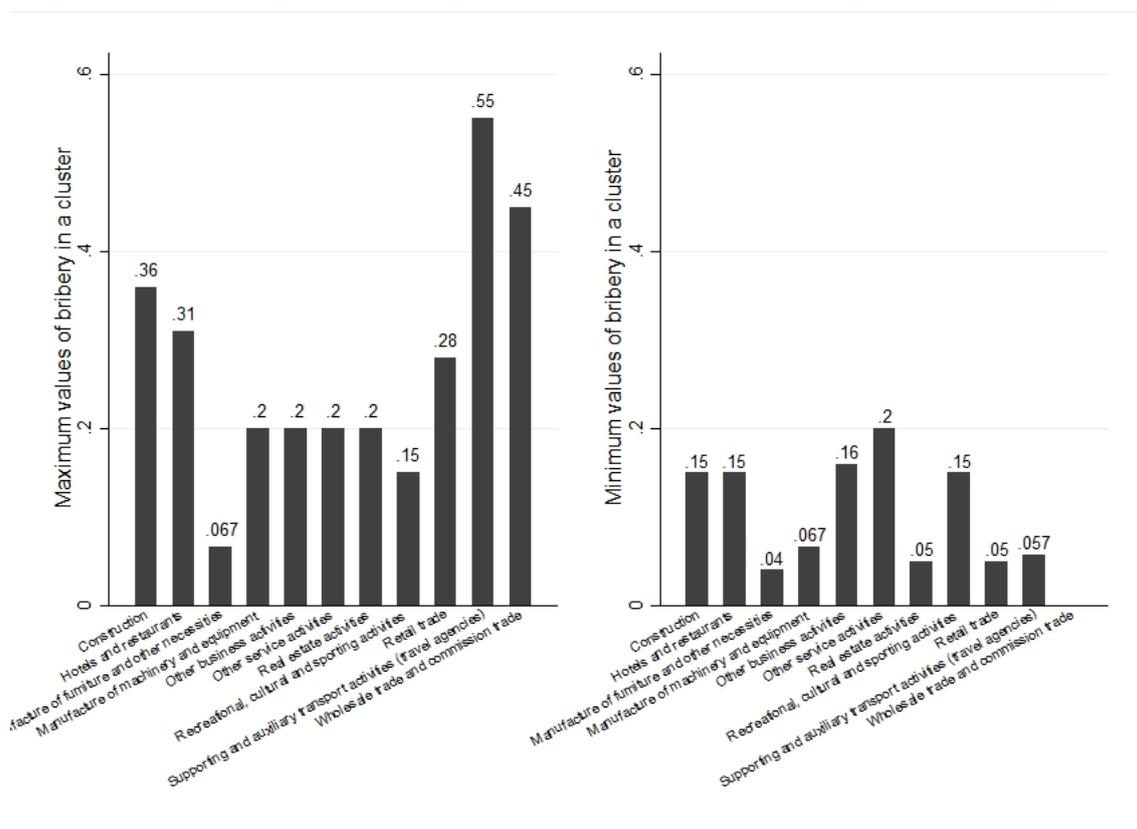
Source: BEEPS and Amadeus databases (2016)

Figure 3 shows maximum and minimum levels of corruption in the cluster in terms of industry. As it is seen from the graph, transport activities have the highest value of corruption in the cluster. And combining these results with Figure 1 we can conclude that it is Prague cluster. The second cluster that holds high value of corruption is a wholesale trade, with a value of 0.45. One of the most represented industries in the datasample - construction - also have a high result in terms of corruption - some firms in the cluster do not see a problem in giving bribes. In terms of minimum levels of corruption, manufacturing industry holds a cluster with the lowest, almost zero, level of corruption - 0.04. As it was mentioned before, manufacturing is also one of the most represented industries in the datasample.

3.5 Results

In this research we explore the dependence of bribery on firms' financial performance. Below are the presented results of the estimations for the Czech Republic. Merged Amadeus and BEEPS data included data for more than 300,000 firms over 14 years (1999-2013),

Figure 3: Minimum and maximum levels of bribery in a cluster, with respect to industry



Source: BEEPS and Amadeus databases (2016)

therefore it included all 4 waves. After merging Amadeus with BEEPS, the sample shrunk as it was impossible to assign bribe ratios for some Czech firms. Therefore not all firms were matched over BEEPS-Amadeus clusters. In the final stage, the data were cleaned from extreme outliers and empty cells, the final sample was reduced to 10 741 observations - Czech firms.¹⁸ The summary statistics of used variables is presented in Table 2.

The baseline results for bribery specification (1) from Empirical Methodology are presented in Table 1 in the Appendix. The results for the *Mean of corruption* show that the main indexes defining firms' financial performance (Average employment growth, Average return sales growth) do not have a significant effect on the level of corruption in a cluster. On the other hand, the *Average growth of sales per employee* has a slightly positive and statistically significant effect on the level of bribery in the local market - the results show that with every additional percentage in growth of sales per employee, bribery in a cluster increases by approximately 0.2 percent (depending on the specification of the model - columns 3-4 in Table 1). Regarding *Market share*, the results stand in line with previous results by Luo and Han (2009) - the higher the market share of the firm, the lower the firms' willingness to give bribes (up to 7 percent decrease, significant on 10% significance

¹⁸ The sample shrunk almost 10 times for several reasons: 1) after the creation of mean values over waves a firm could only be mentioned once in the wave, so the sample was cleaned from duplicates in waves; 2) for estimations, STATA uses only observations where all variables are present, so summary statistics are present only for observations with all available variables.

level). This indicates that firms with some reputation and influence on the market usually bribe less. Large firms do not have the need to bribe as much as smaller ones do, due to their size and market influence. This does not mean, however, that smaller companies have bribed before. Such insignificance in the main variables shows that Czech firms in the cluster might know when and how much they should give in bribes, consider these expenses as predetermined, and add them to the budget. In the clusters where the *Mean of corruption* (the estimate of the average level of corruption) is not equal to zero, even though the above results may show that the main financial estimates of the firm do not have an influence on bribery, we cannot say bribery is nonexistent.

The results for firms' frequency of bribing, presented in Table 2 in the Appendix, show that all variables for firms' financial performance, except *Average return sales growth*, are significant and positive. For example, a one percentage increase in *Average sales growth* increases bribery dispersion by approx. 0.5-0.6 percent. This indicates the bigger the firms' sales growth, the higher the number of similar firms which will attempt to bribe government officials. On the other hand, one percentage point increase in *Average employment growth* increases bribery dispersion by around 0.76 percent. Therefore, the bigger the firm, the higher the number of similar firms which will give bribes to officials. To be more precise, even though the influence of bribery is small, employment growth does matter for the "frequency" of giving bribes in the cluster. Such results show that similar firms behave alike in similar situations, according to the current research of giving bribes. The second important variable is *Market share*. The results are similar to the model of bribery's mean, and show that the larger the share of the company in the industry, the lower the bribery dispersion (around 5-6 percentage points decrease in bribery frequency with every additional percentage of firms' market share in the industry). Firms with a large market share attempt to bribe less often if other firms in their cluster engage in corrupt behavior.

In general, the results show that the level of corruption on the local market does not depend on firms' financial performance, defined as *Sales* and *Employment growths*. On the other hand, financial performance of firms does have some influence on the level of bribery dispersion. Such results partially stand in line with previous research by Svensson (2003) on firms in Uganda. Firms' market share was found to be negative and significant, for both models exploring bribery. These results show that firms with large market share give bribes less often and possibly only small firms consider corruption a "normal situation" for their local market.

Table 3.1: Summary statistics of variables

	Number of observations	Mean	Standard deviation	Minimum	Maximum
Mean of corruption ration in a cluster	10741	.165	.096	0	.550
SD of corruption ration in a cluster	10741	.195	.084	0	.410
Market share in a wave	10741	.010	.048	-7.56e-07	1
Mean of liquidity ratio	10152	1.924	4.178	0	94.780
Mean of profit margin	10077	2.692	10.563	-97.090	98.675
Average sales growth	7798	-.503	-.503	-3599.147	4
Average sales growth, squared	7798	1673.458	146695.500	0	1.30e+07
Average employment growth	8173	-.112	4.825	-415.667	2.250
Average employment growth, squared	8173	23.289	1912.780	0	172778.800
Average capital growth	7986	.030	20.893	-1378.654	1255.690
Average growth of sales per employee	7798	-.116	8.238	-717.429	4
Average growth of profit per employee	7798	-.349	28.394	-1260	1488

3.6 Concluding Remarks

Corruption is often considered as one of the main factors that cause the underdevelopment of many economies in the world. As stated in previous research (Transparency International, 2013, 2015), poor and developing countries are more vulnerable to corruption and to giving bribes to government officials. Management and political researchers have paid relatively little attention to the topic of corruption from the firms' perspective. This research aims to fill that gap by investigating the motives and factors that influence firms' decisions to give bribes. Using firm-level data for 14 years on the Czech Republic allowed us to explore the main factors influencing managers' decisions to attempt to bribe government officials. The results show that the levels of corruption have, to some extent, a significant correlation with firms' financial performance and market share.

The research can be extended to all CEE or EU countries, using firm-level data for the last 15 years, so as the data are available, they can be extended to other hypotheses. For example, partial foreign ownership of a firm may increase its bargaining power and decrease the need for a bribe. The same effect may be explained by a government's involvement in firms' ownership structure. Firms' financial performance can also have a declining effect on the willingness to bribe, the same as firms' share on the market. Possible policy implications of the research might be the creation of policy directions and measures in order to reduce officers' incentives for corruption.

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Appendix

Tables of results

Table 1. Benchmark model for Mean of corruption

	(1) Mean of corruption ration in a cluster	(2) Mean of corruption ration in a cluster	(3) Mean of corruption ration in a cluster	(4) Mean of corruption ration in a cluster
Average sales growth	0.00100 (0.43)	0.00149 (0.59)	0.000229 (0.10)	0.000550 (0.22)
Average employment growth	0.00281 (1.33)	0.00277 (1.30)	0.00353 (1.90)	0.00344 (1.84)
Average sales growth, squared	0.000102 (1.02)	0.000118 (1.10)	0.000127 (1.36)	0.000143 (1.40)
Average employment growth, squared	0.0000493 (1.13)	0.0000488 (1.11)	0.0000624 (1.60)	0.0000606 (1.54)
Market share in a wave	-0.0589* (-2.14)	-0.0591* (-2.15)	-0.0673* (-2.56)	-0.0676* (-2.57)
Average return sales growth		0.00000320 (0.20)		0.000000957 (0.06)
Mean of liquidity ratio	-0.000192 (-0.77)	-0.000173 (-0.67)	-0.0000487 (-0.23)	-0.0000318 (-0.14)
Mean of profit margin	-0.000119 (-0.87)	-0.000146 (-1.05)	-0.0000845 (-0.73)	-0.000108 (-0.87)
Average capital growth	0.00000168 (0.89)	0.00000176 (0.90)	0.00000201 (0.90)	0.00000210 (0.89)
Average growth of total assets per employee	0.00117 (1.74)	0.00117 (1.75)		
Average working capital growth	0.0000154 (0.18)	0.0000167 (0.20)		
Average growth of sales per employee			0.00187* (2.28)	0.00199* (2.41)
Average profit per employee growth	0.000000371 (0.01)	-0.000000524 (-0.02)	0.00000308 (0.09)	0.00000204 (0.06)
Year, city controls included	YES	YES	YES	YES

Size of the city:**Base: Capital city**

Size of the city	0.0955***	0.0965***	0.0892***	0.0900***
Up to 1mil people:	(29.30)	(29.69)	(25.97)	(26.00)

Wave of the survey**Base: First wave****(1999-2002):**

Second wave (2003-2005)	0.127*** (36.49)	0.126*** (36.19)	0.132*** (35.94)	0.132*** (35.34)
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Third wave (2005-2009)	0.0276*** (7.77)	0.0267*** (7.53)	0.0343*** (9.22)	0.0335*** (8.95)
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Fourth wave (2010-2013)	0.155*** (42.27)	0.153*** (42.05)	0.159*** (42.10)	0.158*** (41.58)
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N	7321	7273	7651	7585
r2	0.831	0.830	0.831	0.831

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Benchmark model for Standard deviation of corruption

	(1)	(2)	(3)	(4)
	SD of corruption ration in a cluster			
Average sales growth	0.00564* (2.21)	0.00625* (2.23)	0.00551* (2.16)	0.00653* (2.24)
Average employment growth	0.00760*** (3.37)	0.00752*** (3.32)	0.00766*** (3.55)	0.00752*** (3.48)
Average sales growth, squared	0.000327* (2.01)	0.000348* (2.04)	0.000347* (2.30)	0.000386* (2.35)
Average employment growth, squared	0.000161*** (3.39)	0.000159*** (3.35)	0.000163*** (3.52)	0.000160*** (3.46)
Market share in a wave	-0.0490 (-1.72)	-0.0494 (-1.74)	-0.0570* (-2.11)	-0.0575* (-2.14)
Average return sales growth		0.00000753 (0.67)		0.00000342 (0.31)
Mean of liquidity ratio	-0.000259 (-0.56)	-0.000216 (-0.45)	0.000526 (1.67)	0.000536 (1.59)
Mean of profit margin	0.0000177 (0.14)	-0.0000271 (-0.21)	0.0000342 (0.32)	0.0000100 (0.09)
Average capital growth	0.00000193 (0.24)	0.00000201 (0.24)	0.00000233 (0.22)	0.00000243 (0.22)
Average growth of total assets per employee	0.000532 (1.27)	0.000566 (1.35)		
Average working capital growth	0.0000134 (0.20)	0.0000155 (0.23)		
Average growth of sales per employee			0.00128* (2.13)	0.00136* (2.26)
Average profit per employee growth	0.00000294 (0.14)	0.00000218 (0.10)	0.0000105 (0.45)	0.00000934 (0.40)
Year, city controls included	YES	YES	YES	YES
Size of the city: Base: Capital city				
Size of the city Up to 1mil people:	0.126*** (29.29)	0.128*** (29.51)	0.109*** (23.12)	0.111*** (23.24)

Wave of the survey

Base: First wave

(1999-2002):

Second wave (2003-2005)	0.0886*** (19.90)	0.0869*** (19.48)	0.106*** (22.22)	0.103*** (21.58)
Third wave (2005-2009)	0.0427*** (9.37)	0.0413*** (9.06)	0.0600*** (12.05)	0.0584*** (11.61)
Fourth wave (2010-2013)	0.159*** (34.50)	0.158*** (34.09)	0.171*** (34.44)	0.169*** (33.80)

N	7321	7273	7651	7585
r2	0.874	0.874	0.870	0.870

t statistics in parentheses

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Table 3. Correlation matrix to dependent variables and regressors

	Mean of corruption ration in a cluster	SD of corruption ration in a cluster	Market share in a wave	Mean of liquidity ratio	Mean of profit margin	Average sales growth	Average employment growth	Average capital growth	Average growth of sales per employee	Average growth of profit per employee
Mean of corruption ration in a cluster	1									
SD of corruption ration in a cluster	0.856***	1								
Market share in a wave	-0.000144	-0.0129	1							
Mean of liquidity ratio	0.0211	0.0294*	0.0341**	1						
Mean of profit margin	-0.0310**	-0.0206	0.0493***	0.218***	1					
Average sales growth	-0.0196	-0.0239*	0.0169	-0.0682**	0.0380***	1				
Average employment growth	-0.0200	-0.0172	-0.00358	-0.0907**	0.0201	0.156***	1			
Average capital growth	-0.00142	-0.00144	0.000426	0.000013	0.000044	-0.00195	0.000332	1		
Average growth of sales per employee	0.00611	-0.00626	0.00836	-0.0446**	0.0211	0.612***	-0.0805***	-0.00273	1	
Average growth of profit per employee	-0.00244	-0.000939	0.00437	-0.0258*	0.00234	0.0571***	-0.00171	-0.000588	0.0955***	1

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$