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MIGRATION AND REMITTANCES NEXUS: ECONOMIC IMPLICATIONS AND ANALYSIS

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Abstract

The main goal of our paper was to apply our research methodology on the specific case of the Ukrainian migration and remittances in the Czech Republic. In contrast to previous studies, we provide a more detailed insight into the specifications of remittance behaviour and test assumptions in the Ukraine-Czech Republic country models. A range of testing is defined by the hypotheses capturing determinants of probability to send money transfers, their volume, spending behaviour and probability of having skilled position.

Our results demonstrate that reverse economic effects of remittances on the source country might be simply combination of regular and occasional form with different weight. Therefore, we conclude that the development of migration policy should not neglect microeconomic effects that have potential to solve aggregate level problems.

Keywords: migration, remittances, labour market, Ukraine, Poland, United Kingdom, European Union

JEL Classification: C31, E27, F24, F22, J15, Y10

Introduction

The fall of the Berlin Wall along with the follow-up in the form of the Eastern Enlargements of the European Union (EU) in 2004 and 2007 were accompanied by the intensification of migration flows to and within Europe. This fact initiates renaissance in the area of economic and social impacts of migration on further development of (not only) EU economies. Various theoretical (Kancs, 2011; Krugman, 1991; Glazar and Strielkowski, 2010) approaches highlighted especially impacts on origin and destination country markets

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(labour market and welfare effect) along with determination of migrant's behaviour characteristics and remitting behaviour.

Remittances represent monetary dimension of international migration. They can be characterised as financial flows to the country of origin. Nevertheless, definition itself includes more than pure money transfers or employee compensations. To the most common form of remittances belongs personal cash transfer of other form of donation realized by either formal or informal channels.

As a part of Foreign Direct Investment (FDI), remittances represent a quantitative phenomenon accompanying migration and contributing in non-negligible way to economic growth of source (usually developing) countries. Therefore, they belong, together with economic growth, real wages and unemployment, to the problems of interest accompanying international migration flows.

Further extensions of rather short statement might consider them as a financial flow to relatives in the domestic country or eventually as a form of donation or investment. In 2014 global remittance flows reach 435 billion USD, 3.4% increase compared to the previous year with projections to grow in 2015 above level of 450 billion USD. Since 2013 remittance flow almost three times exceeded level of Official Development Aid (ODA) which has made them a major financial channel for developing countries. Stojanov et al. (2011) studied effectiveness of remittance in developing countries. Comparative analysis and empirical model studying of net effect on GDP per capita growth supported positive impact of remittances as stronger and more stable form of support. Moreover, remittances showed higher absorption ability which is not decreased by administrative costs (in the case of ODA).

Also, this form of stable financial flow for source countries contributes to current account and brings foreign currency which might stabilize balance of payments. As the result, increasing impact and magnitude of remittances have made them one of the factors of interest which might influence development within migrants' country of origin.

1. Review of scientific literature

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Remittance transfers flow into the country via two channels: formal and informal. Official channel included in the international statistical datasets hides underestimated and very difficult to capture informal stream which could significantly change final value. Ambiguous dimension mirrors also into micro and macro level approach, resembling problem of data reliability. Macro researches or large panel data analysis usually concentrates on formal channels and their influence on economic growth and other relevant variables (Rapoport and Docquier, 2005; Abrhám et al., 2015; Čábelková et al. 2015; or Strielkowski and Čábelková, 2015).

One has to note that migration considerably impacts on current account balances and moreover yields the remarkable features of sustainability and excessiveness (see Aristovnik 2007, 2008). Goschin (2014) estimates effect of remittances on economic growth of source country in the CEE region using panel data. The author differentiates spending of remittances on the investments as a productive type of spending having direct impact on the macroeconomic variables and consumption spending which is usually categorized as non-



productive channel with limited or no impact on economic growth (Strielkowski and Weyskrabova, 2014; Strielkowski and Šperková, 2016).

In general, Ukrainian migration attracts attention of researchers from various fields and generates many interesting research papers (Čajka et al., 2014; Strielkowski and Weyskrabova, 2014; Andrijasevic and Sacchetto, 2016; Górny and Kindler, 2016; or Górny, 2017). Furthermore, Goshin (2014) contradicts approach with introducing consumption as another productive spending factor which has "indirect multiplication" effect on the economic growth. The results indicate positive impact in both aggregate and country specific terms which implies that remittances have potential to offset deficiencies of labour outflow. Lim and Simons (2014) investigated dual nature of spending within Caribbean region and confirmed consumption spending as a dominant choice. Nevertheless, there has been found no evidence of growth enhancing impact. Alternative conclusion was found within the Latin America on the Mexican dataset (Hanson and Woodgruff, 2003) where low income groups tend to spend remittance into education which is considered to be form of long term investment. Growth enhancing nature of remittances was found in Eastern Europe (León-Ledesma and Matloob, 2001; Streimikiene et al., 2016; Grenčíková and Španková, 2016) but also in Ghana (Cuecuecha and Adams, 2013). Inequality can be seen as a field of interest compared to aggregation which might be unsatisfactory on contemplating influence of rural/urban areas along with social network facilities within destination country. Therefore, here one can differentiate effect back to destination and source country impacts. The earliest studies (Stark et al. 1986) take into account the Gini coefficient and lack remittance income (Rapoport and Docquier, 2005). Mckenzie and Rapoport (2006) analysed the problem in rural areas in Mexico adopting approach including migration networks. They found a positive evidence of migration impact on inequality (remittances included), strictly "U-shaped relationship between emigration and inequality". Other evidence of growth enhancing and poverty reduction impact of remittances is provided by other authors (Imai, 2014 and Rao and Hassan, 2011; Azam et al., 2016). Nevertheless, they also refer to adverse effects of volatility of financial channels, especially FDI. In the case of direct and indirect effects magnitude aggregate results are inconclusive and diverge both in direction and size.

In contrast to macro level approach, there are micro level studies determining migrants' characteristics and their influence on the level of remittances and general distinction between migration and remittances. Among empirical studies a pattern emerged within which Lucas and Stark (1985) described in their theory of remittance motives which until 1980s did not stand in interest of researches. Interconnection between migrant and relative (family) pre-determines one of the key motives to send financial transfers (pure altruism or in another words interest in own family and intention to provide financial help). Awareness of this relation, as well as other factors which might interfere was searched. Lucas and Stark (1985) add other motives - "pure self-interest", "tempered altruism" and "enlightened self-interest". Further division encompass intentions to inherit, form of insurance, loan repayment or exchange motive. Massey et al. (2011) extended existing pool with considering remittances and opportunity to diversify risk and provide an alternative financial channel for family. Support of altruistic motive can be found in Agarwal and Horowitz (2002) exploring also difference between remitted amount of single and multiple migrants. Destination country, gender and household compositions resulted to main factors affecting remitted amount. Similarly, Niimi and Özden (2006) found adverse effect of educational level (relative to other family members) on the amount send to the home

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country. People from less wealthy background tend to remit more than their better educated relatives. Opposed to modest studies covering only smaller country specific samples stay LAMP and MMP projects and Study by Massey et al. (2011) covering more than 28,000 households from eight Latin America countries assessing determinants of remittance flows from the USA. Binary dependent variable model applied on the panel data investigated impact of age, education, gender, household composition, wage, legal status, trip characteristics etc., controlling effects specific for the country. The results exposed that probability to remitted amount increases with age, number of minor children, experience (prior emigration), ownership of house or land, and the level of wages. Opposite effect was found among women, in the case of the legal status and education level. These results are supported by other evidences in the following paragraphs, especially regarding legal status and education.

Altruistic motives and intention to help family member might generate relationship of remittance flows to economic cycle - to be countercyclical. In the situation of economic contraction or crisis altruism might motivate migrants to send higher amount of remittances in order to provide financial help. Relationship towards business and economic cycles (nature of remittances and FDI) aims to enlighten Vargas-Silva (2008). Despite lower robustness of the results, remittances (in altruistic meaning) have pointed out to partly smooth cyclical fluctuation within economy, especially in the case of economic downturn. On the other side, in regard of remittance as the form of foreign direct investment, the nature of the pro cyclical behaviour as an investment opportunity in the source country might change. Referring back to Lucas and Stark (1985), we identify both altruistic and insurance motive within example.

Length of the stay and legal status in destination country influences significantly transfer flows into the source country. Immigrant who work illegally or do not possess perspective of residence status might feel more insecure both financially and personally and might see remittances as a form of insurance. Dustmann and Mestres (2008) analysed distinction between temporary and permanent migration and decision to change plans for length of the stay. Longitudinal study showed there that change towards permanent migration has negative impact on the amount of remittances. Oser (1996) confirms findings in behavioural study of both types of migration but adds that despite decrease in magnitude of remittance flows immigrants continuously send money back to source country which speaks in favour of altruistic motives.

Together with micro approach in remittance behaviour assessment of macro factors emerge as another stream influencing financial flows into source country. Bettin et al. (2012) evaluated impact of financial development of the country on remitted amount. IMF (2005) published report confirming positive relationship between level of remittances and economic situation in the destination country. Reversely et al. (2007) explored significant impact of remittances on real exchange rate appreciation. However, linking between two economic levels appears to be very elusive even in the case of remittances. Multilateral dimension of remittances can be found in motives of immigrants to remit. Transfer of money is carried out between family members and relative (irrespective of the formality or informality of transfer) who makes them extremely prone to uniqueness of human behaviour and its rationality and irrationality. Final welfare effect of the remittances is not uniform and differs within literature stream depending on the series of factors.

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In the view of uncertainty about possible remittances determinants and effects there remains space for further investigation of the problem. Therefore, the aim of our paper is to discover all determinants shaping the amount of remittances that generates theoretical and empirical background for efficient policy development and application which might intensify growth enhancing impact on developing countries.

2. Methodology

The majority of current studies on international migration is based upon official data collections collected by official authorities. Despite advantages in the width of coverage and complexity of the datasets, questions of undocumented and illegal migration prevail unresolved or are estimated by models. Furthermore, the nature of official migration statistics is deficient "in the amount of details they provide about the characteristics and behaviour of immigrants" (Massey and Pren, 2008). In order to provide the most accurate description of migration and remitting behaviour, a microeconomic approach has been adopted as an alternative to macroeconomic perspective. As opposed to macro level approach, this attitude facilitates obtaining more personal and specific characteristics of migrants which increases probability to detect and cover unofficial and undocumented channels or remittances along with concrete determinants of their behaviour.

One of the alternative methods striving to overcome drawbacks of conventional (official) data is represented by the ethno-survey. Multi-method data gathering enables to complementary combine advantages of quantitative and qualitative procedures. Quantitative part provides sufficiently reliable source for further statistical analysis which is deficient in historical and geographical context. Qualitative part afterwards gives deep insight into individuals' specifics and provides necessary behavioural context. Existence of attitudes generates space for compensation of weaknesses of one part by another and mutual compensation of drawbacks. The presence of qualitative questions generates additional requirements on the questioners, especially on informality and trust within the interview. According to Massey and Caporeffero (2004), final data set yield a standard set of reliable information that carries greater validity than that obtained using normal survey methods.

The methods that were initially developed by Douglas Massey and his team in order to analyse migration behaviour in Mexico have been successfully applied on both theoretical and practical studies. Wider application of method was used in the set of migration projects in Mexico, Latin America, Poland and Ukraine under the leadership of Professor Douglas Massey. Our study was based on the own survey that was collected in Ukraine and conducted with migrants and their families in 2014-2015 in predominantly Transcarpathia Region with the help of the specially trained and selected interviewers and that comprised a comprehensive pool of data for testing our research hypotheses that follow in the next section.

3. Research hypotheses

Current stream of research literature follows the most significant migration flows in the North-Atlantic region comprising especially migration into the USA and West-East stream in the Europe. Consideration of design of either realized or future survey therefore offers, beside the stream choice, form of approach by stating scope of interest: destination or the source country. Massey et al. (2013) provided wide international analysis of multiple

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source country with singular destination country, USA. The purpose of this survey is to reverse this approach by putting stress on the source country. Based on the literature review presented above we can define research hypothesis and put them into the context of contemporary stream of research. In addition to this, we can present methodology concept for testing the stated hypotheses. In total, we have formulated three research hypotheses which we can outline and present in the following form:

Hypothesis #1: Remittance behaviour is significantly influenced by demographic factors (age, social status, family status etc.)

Hypothesis statement is based on the LAMP and MMP projects and Massey et al. (2013) comparing results from eight Latin America countries. The purpose of this study is to adopt similar approach which would determine applicability of results on the Ukrainian migration into EU countries. Design of the model will also aim to extend validity of this hypothesis already tested on migration between Ukraine and Czech Republic (Strielkowski et al. 2012).

Hypothesis #2: Remittances channelled to the source country are invested into productive forms of consumption.

Remittances have shown to play important role in the economic growth of the source (home) country. Various studies have therefore focused on the description of extent (Iradian, 2007) or determinants of this effect (Strielkowski et al., 2012). Remittances do not have sufficient power to influence economic growth directly. However, if we consider intermediary in the form of investment or consumption logical chain may emerge. Opposed to investments generally acknowledged as the accelerator of economic growth consumption can be divided into two parts leading to contradictory results: productive and unproductive consumption (spending). Scope of this paper is to focus on the productive consumption. Steger (2000) defines productive consumption as consumption that: "...enables the satisfaction of current needs and, at the same time, increases the productive potential of labour."

Steger also highlights importance of this form of consumption for low income and developing countries which can be applied on Ukraine as one the European developing countries. However, our analysis needs more particular definition. Massey et al. (2013) mentions groups of spending which are considered to be productive as spending into human capital and family enterprises. Number of observation within our survey does not allow us to distinguish between these two categories. We will, therefore, merge them into single unit which helps us find major determinants.

Hypothesis #3: There is positive effect of education and associated human capital factors (knowledge of foreign language etc.) on the probability of getting skilled position.

In 2011 Massey, Durand and Conor presented comparative study of migrants in Spain and United States which strived to describe possible similarities in migration behaviour on the international level (Massey et al., 2011). One of the models investigated influence of variables on the probability of getting a skilled position. Arrangement of any form of employment during migration is perceived as the positive step in integration process in the destination country. Short term migration might not see integration as the primary aim of interest. Nevertheless, procurement of skilled position has impact on the labour market in the area of wages (investigation of adverse effect) and level of unemployment. Generally, skilled position can be defined as "employment that requires specialist, technical or management expertise".

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4. Empirical model

Prior research in the field of migration and remittances (Massev et al., 2013) suggests that determinants of remittance behaviour are uniform but differs with respect to personal, demographic and human capital characteristics and macroeconomic conditions. In order to provide exhaustive results of the problem, two phases of tests are adopted. Initially, we focus on the general propensity to remit. For this purpose, binary dependent variable is included, where outcome equals to 1 if person migrates and remits money back at the same time (either monthly or occasionally at return journey) and 0 otherwise. Dichotomous dependent variable predetermines range of models consistent for this analysis. Therefore, binary response models are applied, in particular linear probability model (LPM), Probit and Logit models. Despite the fact, that we have cross-section data, application of OLS methods (in particular LPM) might lead to heteroscedasticity, non-normality of errors or violation of linearity resulting in invalid inference or general misestimating of results. However, consideration of LMP might, in the case that all assumptions are met, provide measure for robustness of each of the model. Also, acknowledging drawbacks of each of the proposed models, especially in the case of LPM, and uncertainty about distribution of all three possibilities comparison of results followed by discussion is provided. Afterwards, statistical inference is tested in order to obtain consistent and efficient results of estimation model.

In the second stage, we focus on the amount remitted and factor influencing its magnitude. Initially, we have to define the dependent variable - remitted amounts of money by migrants ("migradollars"). Broadly speaking, two possibilities arise concerning inclusion of amount of remittances. Firstly, there is existence of regular money transfers send to the source country. On the other hand, we should be aware that money (savings) is being brought occasionally at return journey. Division of both types is important with respect to magnitude of each of them that might generate significantly different estimation outcomes. Literature, focusing on this topic, tends to choose either of patterns as a benchmark of definition of remittances. Strielkowski et al (2012) considers remittances as general amount of money brought back to the home country. Reverse approach is observed in Massey et al. (2013) who operate with both definitions of remittances: amount remitted and saved during the migration period. Third possibility based on the design of the survey is to consider only monthly transfer payments. In order to avoid drawbacks of separation of both categories, we will test both monthly and singular money transfers and observe consistency of result which might lead to higher robustness of conclusions. In the view of cross-section nature of the data OLS model is considered, providing discussion of assumptions validity in the next section. Last but not least, additional tests are applied to achieve consistency and robustness of the model and validity of statistical inference.

Second hypothesis strives to test channelling of remittance into the productive/unproductive forms of spending. Complicated nature of remittances definitions described in the previous paragraph does not reach to this model. However, range of generalization might, again, influence explanatory power of model. It is crucial to state how detailed results are to be obtained. Low number of observation obtained from migration survey predetermines usage of both groups as one variable that describes channelling any form of remittances into productive consumption. Model comprises of binary dependent variable model as LMP, Logit and Probit. Again, consideration of all results is crucial for level of robustness of model without violation of initial model assumptions. Post-estimation methodology provides series of test for heteroscedasticity and general statistical reliability of results. Final output of model estimation can be discussed with perceptual summary from section 7.

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Third hypothesis revolves around factors influencing probability to obtain skilled positions. Dependent variable is equal to one in the case of position satisfying EU classification of skilled position and 0 otherwise. Again, binary response model are applied as the main approach. The choice of the factor (independent variables) is similar as in the previous paragraphs. Hypothesis stems from the study by Massey, Durand and Connor from 2011 which presents very similar independent variables that are adjusted for purposes of this study. Post estimation methods present the most statistically consistent model with inclusion of alternative result and their subsequent discussion. Following results of deep statistical summary, we have pre-selected potentially interesting factors that might influence dependent variables in each hypothesis. The overview of these variables is presented in Table 1 that follows.

The table presents summary of the major factors of interest which have been considered as the independent variables for econometric model. Their final selection revolves around previous researches made by Strielkowski et al. (2012) and Massey et al. (2013). The first group of variables within Table no. 1 represents dependent variable used in our models. Independent variables descriptions situated in the subsequent rows are divided into the area of interest as demographic and human capital characteristics, legal status, trip characteristics and material background. Demographic and human capital characteristics are considered to be the basis for the initial model and subsequent calibration. Along with age and its squared form we have also number of family member within single household, logarithm of family income prior the migration, knowledge of foreign language (in our study English language) and level of education. Along with general impact of years of school we can also consider deeper insight into the effects of secondary and tertiary school. Questionnaire design was originally constructed in the USA for purposes of Northern and Latin America migration.

Variable	Description		
Remittances			
Remit monthly	Dummy variable; 1= money transferred monthly		
Remit occasionally	Dummy variable; 1= singular money transfer act		
Remit	Dummy variable; 1= money transferred either singularly or monthly		
Monthly remittances	Logarithm of amount of money remitted monthly (in USD)		
Money brought back	Logarithm of amount of money brought back to the home country (in USD)		
Savings	Logarithm of monthly savings during migration period (in USD)		
De	mographic and human capital characteristics		
Age	Years of age		
Female	Dummy variable, 1=women, 0=men		
Household size	Number of family members		
Education	Number of years spend in school		
Knowledge of English language	Dummy variable, 1= if migrant understand and speak Engligh,0 otherwise		
Secondary education	Dummy variable, 1= finished secondary education, 0=otherwise		
Tertiary education	Dummy variable, 1= finished tertiary education, 0=otherwise		

Table no. 1: Variables used in the empirical model

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Variable Description			
Legal status			
Undocumented	Dummy variable		
Legal form of residence	Dummy variable		
	Trip characteristics		
Duration of the stay	Duration of the migration trip (months)		
Accompanied by family	Dummy variable, 1= migrant was accompanied by family member; 0=otherwise		
Wage	Migrant's income (in USD)		
Wage paid in cash	Dummy variable; 1= wage paid in cash; 0=wage paid by check		
Tax	Dummy variable; 1= migrant paid income tax; 0=otherwise		
	Material background		
Land ownership	Dummy variable; 1=ownership of land		
Business ownership	Dummy variable; 1=ownership of business		
Economic activity			
Skilled position	Dummy variable		

Therefore, there is disparity in understanding of definitions as secondary and tertiary school. As the result, secondary school is adjusted as 13 years of education (which corresponds with European definition of term consisting of 9 years of elementary school and 2-4 of secondary school). Tertiary education consists of education above 16 years of schooling. Second group describes legal status of Ukrainian migrants with emphasis on the undocumented status. Trip characteristics majority of trip features as duration of stay, level of income but also presence of family members and participation on the social security system and income tax payments which might have impact on the dependent variables of interest. Finally, material background might play an important role in remittance behaviour, especially in the case of business or land ownership and subventions in the form of remittances. Last group represent dependent variable of the third hypothesis focusing on the probability to obtain the skilled position.

5. Main results and discussions

We employed the binary response models are used for purposes hypothesis testing. The uncertainty concerning cumulative distribution function with respect to the data sample implied that that both Logit and Probit model are considered. Decision between them can be provided by post estimation methods (LR ratio, information criteria, McFadden's R² etc.) (Wooldridge, 2002).

The survey design, especially its particularity, allowed us to observe whether person sends remittances regularly as monthly transfers or if it was merely occasional money transport. Previous chapter described possibility to distinguish these two types to obtain more specific results. Nevertheless, because of limited number of observation of this study we merged both types into singular variable. This dependent binomial variable is equal to 1 if person migrated and sent remittances either regularly during return journey and 0 in the reverse case. Independent variable choice stems from the previous statistical summary which offered inspiration for main variable candidates described in the Table no. 2.

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In order to obtain consistent estimates of the results, the selection of independent variables was carried out gradually and tested (in each stage) with Likelihood-Ratio test which substitutes test for multiple restriction of parameters within limited dependent variables model. Information criteria parameters offers supporting technique for model evaluation enabling comparison of two model and helping in final determination of variable count and selection. Resulting model with finalized variable selection is presented in the Table no. 3. Brief visual comparison between Logit, Probit and LPM model show very little differences and speak in favour of model stability. However, signs of LPM differ in few variables but they are not used in the results interpretation and provide only information about extent of results robustness and universality.

The first model results describe probability of migrant to send remittance regularly (in our study monthly) to the country of origin. Low P-value of Wald statistic suggests that we reject null hypothesis of join insignificance of variables. Maximum Likelihood Estimation method (MLE) is applied as the result of existence of binary dependent variable. Therefore, we cannot interpret conventional tools for "goodness of fit" common for OLS estimation. Alternative to the R² provides Pseudo or McFadden's R². Value of 0.47 or 47% represents sufficiently strong power of the model Wooldridge (2001). Tests for presence of multicollinearity are provided by analysis of tolerance and Variance Inflation Factor (VIF). Low values of VIF and sufficiently high values of tolerance close to 1 indicate that there is no multicollinearity present among variables of interest. Interpretation of result in binary response model is not straightforward as the sign determination. Logit model provides advantage in simplicity of calculations. By taking exponential value of the coefficient we obtain odd ration of the real effect that can be ceteris paribus presented.

Probability to remit regularly	(1)	(2)	(3)	
	Logit	Probit	LPM	
Demographic characteristics				
Age	0.450	0.280	0.0774**	
	(0.213)	(0.170)	(0.069)	
Age2	-0.00305	-0.00198	-0.000651	
	(0.446)	(0.380)	(0.166)	
Female	0.291	0.145	0.00254	
	(0.854)	(0.879)	(0.989)	
Household size	0.163	0.0749	-0.000677	
	(0.722)	(0.787)	(0.991)	
Married	2.388**	1.391**	0.280**	
	(0.071)	(0.063)	(0.071)	
Human capital characteristics				
Secondary education	-2.907	-1.696	-0.262	
-	(0.444)	(0.412)	(0.343)	
Tertiary education	-0.112	-0.0384	-0.0302	
	(0.906)	(0.945)	(0.829)	
Trip characteristics				
Length of the trip	-0.150	-0.0890	-0.0133	
	(0.259)	(0.252)	(0.378)	
Log of the monthly wage	-3.407**	-1.983**	-0.417**	
	(0.006)	(0.004)	(0.003)	
Wage paid in cash	0.567	0.336	0.0697	
	(0.630)	(0.626)	(0.683)	

Table no. 2: Probability of person to remit regularly

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Probability to remit regularly	(1)	(2)	(3)
	Logit	Probit	LPM
Legal status			
Legal residence	4.050**	2.364**	0.486**
	(0.019)	(0.014)	(0.010)
Social security	-1.442	-0.868	-0.118
	(0.381)	(0.334)	(0.578)
Income tax	1.071	0.624	0.136
	(0.537)	(0.515)	(0.561)
Ownership			
Agriculture land	-1.952*	-1.096*	-0.192
	(0.144)	(0.132)	(0.253)
Business	-0.0620	-0.216	-0.0342
	(0.963)	(0.759)	(0.852)
_cons	8.404	4.585	1.061
	(0.400)	(0.416)	(0.400)
Ν		55	
Prob > chi2	0.0026	0.0024	
Pseudo R2	0.4705	0.4734	
Prob > F			0.0119
R2			0.4872
Breusch-Pagan test			
Prob > chi2			0.8418

Demographic factors appear to have positive effect (ceteris paribus) on the odds of sensing remittance monthly. Negative value of squared form of Age does not reverse positive value of Age variable. Strongest and the most significant effect is observed among married people that increases odds of remittances sending almost 10 times [exp(2.388) =10.89]. High number of family members also increases odds by 17% [exp(0.163) =1.177] and in the case of female by 33% [exp(0.291) =1.33].

Level of education does not have positive effect in both cases of secondary and university education. However, magnitude of the effect has decreasing tendency with the increasing level of education attained (from 94% to 10%). Trip characteristics variables do not have uniform sign. The length of the stay decreases odds of remittances by 14% [exp(-0,15)=0.86]. High level of wage earned during migration also decreases odds. Reverse trend appears in the case of wage paid in cash form, where effect is positive. Legal status of migrant appears to provide sufficient security for migrant to increase odds of sending regular transfers. Effect is enhanced by tax payment that also indicates legal form of status. Surprisingly, participation on the social security program decreases odds by 76% [exp(-1.442)=0.23].

Business or agriculture activities in the country of origin decrease odds of regular remittances. Result indicates that this type of remittance behaviour might not be the primarily motivated by business financing and subsidies provision. The second model analyses alternative type of remittance behaviour where migrants do not send money regularly but save them. Saved amount is at return journey transferred to Ukraine as single undivided amount (occasional form of remittances). Results obtained by this model would explain whether there is difference in motivation to remint among there two types. Number of observation remained unchanged. P-value of Wald statistics increased to 0.0501 or 0.0479 showing that null hypothesis of joint insignificance is rejected on the 5% level of significance. McFadden R² decreases to the 36% but remains within the range of tolerance and is comparable to the

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thematic studies (Massey et al., 2011). Again, model shows, with two exceptions in the LPM model, similar signs and value of coefficients.

Results of the model estimates are showed in the Table 3 are divided into the same categories of variables as the previous model. These groups help to compare results of models with different remittance types. The sign of demographic factors has changed. From the strictly positive coefficients variables Age and Household size in the first stage, negative effect appears. Magnitude of effect suggests that unlike regular remittances probability of single amount transfer increases in the case of young people with low number of household members. Age increase decreases odds by 20% [exp (-0.216) =0.8057], another household member then by 19% [exp (-0.204) = 0.81].

Human capital factors also changed in sign in the variable Secondary education level which now has positive effect and increases odds by 86% [exp (0.625) = 1.868]. The change might be connected to the fact that migrants might be engaged in undocumented or illegal form of employment or simply prefer informal distribution channels. Also, since 89 % of studied secondary respondents in the productive age (between 18 and 65 years), high proportion of workers and seasonal workers is expected (based on the summary statistics). Trip characteristics of this type of behaviour also changed. Length of the trip has no longer strong but very weak effect. On the other side, higher level of wage earned increases odds 1.3 times [exp (0.869) = 2.385)].

Probability of bringing money back home	(1)	(2)	(3)
	Logit	Probit	LPM
Demographic characteristics			
Age	-0.216	-0.117	-0.0210
	(0.480)	(0.489)	(0.625)
Age2	0.00205	0.00108	0.000194
	(0.553)	(0.571)	(0.684)
Female	0.672	0.396	0.0723
	(0.581)	(0.566)	(0.708)
Household size	-0.204	-0.108	-0.0241
	(0.551)	(0.604)	(0.684)
Married	0.0986	0.0963	-0.0189
	(0.925)	(0.870)	(0.904)
Human capital characteristics			
Secondary education	0.625	0.308	0.117
	(0.716)	(0.759)	(0.681)
Tertiary education	-0.178	-0.0873	-0.0246
	(0.856)	(0.875)	(0.864)
Trip characteristics			
Length of the stay	0.00956	0.00188	-0.00151
	(0.936)	(0.978)	(0.922)
Log of wage earned	0.869	0.495	0.125
	(0.339)	(0.345)	(0.352)
Wage paid in cash	1.917	1.165	0.183
	(0.252)	(0.229)	(0.300)
Legal status			
Legal residence	1.062	0.620	0.103
	(0.430)	(0.407)	(0.579)
Social security	-0.537	-0.279	-0.0590

Table no. 3: Probability bringing money back to Ukraine

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Probability of bringing money back home	(1)	(2)	(3)
	Logit	Probit	LPM
	(0.739)	(0.762)	(0.787)
Income tay	-0.582	-0.290	-0.107
	(0.732)	(0.763)	(0.656)
Ownership			
Agriculture land	4.076**	2.372**	0.664**
	(0.003)	(0.001)	(0.000)
Business	0.442	0.269	0.0461
	(0.738)	(0.703)	(0.807)
_cons	-4.707	-2.950	-0.333
	(0.581)	(0.541)	(0.797)
Ν	55		
Prob > chi2	0.0501	0.0479	
Pseudo R2	0.3593	0.3617	
Prob > F			0.0712
R2			0.4087
Breusch-Pagan test			
Prob > chi2			0.1079

Effect of legal status also reversed and indicates that this form of remittances is send more by migrants who do not pay income tax in the destination country. To the most surprising categories belong ownership structures, where all variables have positive sign. Results shows that having business or land increases odds of money transfer by 55% [exp (0.442) =1.55]. This might imply that remittance behaviour of this form is motivated also by business financing. Statistical significance of both models suggests that majority of variable are singularly insignificant with exception of Married, Wage and Legal residence. In the case of second model significant variables reduces to the Land ownership. Nevertheless, both models have proven to have jointly significant variables.

The second part of hypothesis testing consists of model describing amount of remittances sent and variables explaining factors that are believed to have effect on the amount. Dependent variable – amount of remittances sent is divided into the three categories. Amount of remittances sent monthly, amount of money (savings) brought back to Ukraine at return journey and monthly savings. First and second type corresponds with previous Binary response variable model (specifically its dependent variable). Third dependent variable describing level of savings is used in construction of supporting model. Multiple version of model is inspired by Massey et al. (2013) who studied similar model describing spending behaviour of migrants in Latin America.

Dependent variable is applied in the logarithm form for purposes of easier interpretation of results. In the view of cross section nature of data, Ordinary Least Squares (OLS) method is considered to be the most appropriate tool of analysis. We begin with the model calibration in the initial form with few independent variables and then gradually increase number of variables. Measures of interest for model evaluation are number of observations, R², joint and singular significance of model and further statistical inference. Final versions of all three models include control variables that help us to define model reliability.

OLS method defines R^2 and an effective supporting indicator for "goodness of fit" determination. Values between 37% and 53% are comparable with similar studies (Massey at al. 2013, Strielkowski et al., 2012). However, in order to obtain efficient coefficient, we have to verify hoskedasticity of residuals. The Breusch-Pagan test with P-value 0.6279 and

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0.4726 suggest that we do not reject null hypothesis of homoskedastic residuals. In the case of the third model, P-value is 0.0347 suggesting non-constant variance of residuals and presence of heteroskedasticity. Correction procedure that would eliminate problem would be computation of unbiased robust standard errors. Limitation of this procedure is asymptotic validity of F and t statistics and standard errors. Application on the small data sample would not have to result in the valid statistical inference. Therefore, we do not include third model in the result discussion. Following test reject presence of multicollinearity among variables in two remaining models.

Table no. 4 shows that in the case of amount of regularly sent remittances, age and household size have positive effect. Additional household member increases amount remitted by 8%. On the other side marriage and gender (female) generate reverse effect. Additional year of school appear to increase amount by 15%. Length of the stay appears to have very limited positive effect but presence of family member decreases transferred amount. Explanation might be that presence of close family members demotivate in sending additional money transfers to Ukraine (Bilan, 2014a, b). Wage earned during trip and business ownership tend to decrease remittances. Therefore, model does not suggest business financing from regular foreign transfers. Control variable "savings" confirms validity of model (higher savings tend to generate lower regular remittances – exclusive relationship).

Amount of remittances send	(1)	(2)	(3)
	Log Remit	Log money brought	Log Savings
Demographic factors			
Age	0.108^{***}	0.309	0.213*
	(0.0102)	(0.212)	(0.0838)
Age2	-0.000884***	-0.00317	-0.00210*
	(0.000114)	(0.00240)	(0.000926)
Female	-1.235***	2.123	-1.306***
	(0.0276)	(0.892)	(0.210)
Household size	0.0853***	-0.186	-0.138
	(0.00886)	(0.190)	(0.0694)
Married	-0.383***	-0.897	-0.599*
	(0.0279)	(0.405)	(0.210)
Human capital factors			
Education	0.150^{***}	-0.0133	0.0901**
	(0.00412)	(0.106)	(0.0256)
Trip characteristics			
Length of the stay	0.0503***	0.163	-0.0103
	(0.00199)	(0.0742)	(0.0148)
With family	-0.289***	-0.556	-0.242
	(0.0291)	(0.852)	(0.178)
Log of wage earned	-0.456***	1.022	0.752***
	(0.0226)	(0.771)	(0.145)
Income tax	1.021***	-0.160	-0.293
	(0.0412)	(0.362)	(0.232)
Ownership			
Business	-0.905***	0.682	-0.173
	(0.0230)	(0.416)	(0.158)
Control variables			

Table no. 4: OLS regression for amount of remittances

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Amount of remittances send	(1)	(2)	(3)
	Log Remit	Log money brought	Log Savings
Log Savings	-0.177***	0.300	
	(0.0114)	(0.554)	
Log Remit			-0.537***
			(0.0997)
_cons	4.499***	-6.715	-0.728
	(0.215)	(4.479)	(1.506)
Ν	21	15	22
Prob > F	0.0000	0.0890	0.0002
	Robust SE		Robust SE

Second version of the model employs dependent variable – single amount brought back to Ukraine. Comparison of both models shows identical signs of variables Age, Married, Length of the stay and Presence of family. Direction of all effects corresponds with results of LAMP Massey at al. (2013). On the other side, there are visible differences in the profile of migrant sending this type of remittances. Household size appears to motivate to send larger amounts rather regularly than at once. Length of the stay appears to have stronger positive effect of the amount sent. Income tax payment withholding tends to increase the amount brought.

The most interesting development show variable business ownership which does promote higher amount brought to Ukraine. This indicates that businesses receive larger amounts from single money transfer rather than from regular. Control variable confirms validity of the model. Despite very promising outcomes and joint significance, main model shortcoming is singular significance of variables. Authors suggest that increase of the data sample would contribute to increase of explanatory power of the model.

There is no clear consensus about channelling remittance to the productive or unproductive forms of consumption. We may observe two related approaches that studied topic. First focuses on the general tendency to spend productively in connection to receiving remittances. Second approach analyses factors influencing probability to spend productively. Aim of this model if to partially merge approaches and presents more conclusive results. For purposes of our study we consider only migrants' answers as representative respondents and not to all family members (whose answers were very limited). We believe that answers of the family representative are sufficiently valid for the whole family and there is no need to artificially increase data sample.

Conclusions

Our methodology that stemmed from the Latin America and Mexican Migration Project aimed at merging this approach with its European application and provide more detailed analysis of the topic that would explain details of remittance behaviour and would be applicable on the international level. The first hypothesis tested determinants of remittance behaviour. In two stages model we gradually tested factors influencing probability to remit and amount transferred to Ukraine. Our findings confirm that probability to remit is determined by demographic factors. However, there is difference between remittances regularly send and saving with which migrants return. There is also difference in types of migrants.

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Migration and Remittances Nexus: Economic Implications and Analysis

Odds of regular remittances increase in the case of older and less educated migrants with larger family that might have undocumented status. Negative sign in "ownership" variables suggest that remittances are not motivated by business financing. Based on the sign of coefficients and their magnitude results speak in favour of altruistic motive of regular remittances. Further, savings brought back to Ukraine at return journey show different type of effect. Odds of this type behaviour increases with young migrant with small or any family and finished secondary education. However, there is also small impact of income tax withhold suggesting that there is undocumented form of employment present. Variable signs and magnitude also showed that businesses in the source country are more likely to be financed from this form of transfer (with statistically significant results).

Concerning amount of remittances sent, results confirmed above described effect respecting remittances types. Results are mostly consistent with previous finding of Massey at al. (2013) but there is also interesting effect of income suggesting that higher income increases amount of money brought back but not regularly sent remittances. Though, result of the model did not show statistically significant effect. Policy implications stemming from the first hypothesis should highlight the remittances typology. Results confirm that despite highly developed financial system, informal channels are preferred for money transfer. The reason might be prevailing illegal or undocumented form of employment as seasonal worker.

Some studies suggest that migrants tend to channel remittances into the short-term consumption for food and to smoothened long term consumption. Nevertheless, contradicting findings questions validity of the statement. Result of the second hypothesis testing shows that both forms of remittances are mainly invested either as business investment or investment into education (productive spending). Statistical significance of these variables supported by control factors therefore confirms validity of stated hypothesis that: Remittances channelled to the source country are invested into productive forms of consumption.

The third hypothesis goes back to the source of remittances: a procurement of the skilled position that would both provide finances for money transfers and intermediate socioeconomic integration of migrant. The model outcomes confirm hypothesis that human capital factors positively influence probability of getting skilled position with limited validity for secondary education. Cause of this effect might stem from the market saturation and the programs focusing on the employment of highly educated migrants.

Generally, we may say that outcome of the models support microeconomic and individual level point of view. Diversity among different subtypes of the one variable confirms that the aggregated macroeconomic dataset might omit important details that after extraction generate contradicting effects. For example: A reverse economic effects of remittances on the source country then might be simply combination of regular and occasional form with different weight. Therefore, migration policy development should not neglect microeconomic effects that have potential to solve aggregate level problems.

Regarding the limitations of our paper, the authors acknowledge limitation based on the small data sample that allowed construction of models with limited robustness. However, current sample significantly tested methodology and data potential for further research. When it comes to the pathways for the further research, a more comprehensive data compendium embedding a sample of several EU countries with large inflows of Ukrainian migration and remittances flows would be useful for deeper understanding of the determinants and the factors of the Ukrainian migration and remittances in Europe.

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