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Migration and remittances in the CEECs: a case study of Ukrainian labour migrants in the Czech Republic

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Abstract:
This paper aims to analyse migration and remittances in Central and Eastern European countries (CEECs) on the case study of Ukrainian labour migrants in the Czech Republic using primary data from survey questionnaires collected by the Ukrainian Migration Project (UMP). More specifically, it seeks to examine features and determinants of migration and remittances sent by Ukrainian labour migrants from the Czech Republic to Ukraine.

Our results show that in the case of Ukrainian migrants in the Czech Republic the main determinants of the decision whether to migrate, in order to provide own families with additional income, are demographic characteristics and income of the receiving household, while the level of education does not affect this decision. Further, we found that the remitted amount depends mainly on the labour migrant's income in the Czech Republic. No statistical significance was found in the relationship between the remitted amount and the income level of the receiving household. Moreover, we did not find any support for channelling remittances primarily into non-productive consumption in the data. On the other hand, no other productive spending besides the spending on house construction was confirmed either.

Good understanding of determinants and motives that are interconnected with them should be helpful for policymakers on both sides of the migration corridor to formulate proper policies that aim at influencing the migration and remittances flows. Thus, certain policy implications might be derived from this research in order to channel Ukrainian migration in CEECs and benefit from remittance transfers.

Keywords: international migration, labour market, CEECs, Czech Republic, Ukraine, remittances, remittance behaviour, migration and development policies

JEL: C33, F22, F24, J61

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1. Introduction

Migration and specifically international migration (and their social and economic impacts) have become widely-discussed and hot-debated phenomena of the 21st century. Among various impacts of the migration, the economic impact of migration became, by far and large, the topic that attracted perhaps the greatest attention. Economics of migration distinguishes the economic impact of migration on sending and receiving countries and researchers are trying to estimate these impacts by quantitative methods.

The creation of European Union in the 1950s and implementation its "four freedoms" of Common Market revived the new interest in migration. Especially, the accession of 12 New Member States in 2004 and 2007 and their integration into to Common Market which allowed for the free movements of labour and triggered various discussions on the effects of upcoming inflows of workers from new Member States.

When analyzing international migration and its impacts on the sending and receiving countries, the role of remittances or remittance transfers is often mentioned as the crucial one. Remittances are not considered by neoclassical theory as migration is caused by the decision to maximize lifetime earnings by permanent moving to the country with higher wages. On the other hand, New Economics of labour migration already counts with remittances that are the result of migration triggered by the attempt to overcome local market failures (Massey, Durand, Pren 2011).What makes them the important topic of the research in the economy of migration is the volume they actually present.

However, one of the key issues in monitoring international migration flows and remittances is the availability of reliable data. Quite often, the definition of migration and migrants differ greatly across countries. For instance, the migration data collected by the EU Member States are based on nationality of migrants. In contrast, in the USA the status of the foreign birth is the factor that defines immigrants (Zimmerman, 2005). Likewise, data concerning remittance transfers are usually extracted from countries' balances of payments and these estimations are not usually very exact as they do not capture remittances that are sent informally. In addition, many observations are missing. Aggregated data gathered e.g. by the World Bank (WB) or International Monetary Fund (IMF), where annual records of workers' remittances received by labour exporting countries are kept (Adams and Page, 2005). Additionally, illegal migration occurs very often and cannot be credibly monitored. The same holds for data on

remittances where illegal immigration and the use of informal channels make the monitoring of true values almost impossible.

With regard to the problems described above, it is often helpful to rely on data files compiled from surveys carried out among individuals or households. These surveys are often part of some micro-research led by labour economists. This study employs the data from such a survey of 250 Ukrainian households conducted under the Ukrainian Migration Project (UMP) by the "Geomigrace" research centre in Ukraine in October and November 2011.

This paper is organized as follows. Section two provides the literature review of migration and remittances in the economic theory with a focus on migration and its impacts and remittances and their importance in economic literature. Section three describes the economic situation in Ukraine, Ukrainian migration experience and Ukrainian migration and remittances in the Czech Republic. Section four describes the questionnaire survey and the UMP in more detail. In addition, it provides some summary statistics of data obtained from the UMP survey and formulates the main hypotheses to be tested. Section five outlines the empirical model and demonstrates its main outcomes. Section six discusses the results and provides some policy implications.

2. Literature review: migration and remittances

2.1. Migration and its impacts

Economic theory predicts that the welfare impact of immigration on the emigrant-receiving countries depends on the characteristics of the migrants as well as on the domestic labour market conditions. If high-skilled native workers are complementary inputs to low-skilled immigrants then the presence of migrants positively affects labour productivity, economic growth and real wages in the target countries.

Results across the studies are not very consistent, however, most of the studies agree on rather negligible effects, either insignificant or small in the extent. Longhi, Nijkamp, Poot (2005) examine 18 studies of the effect of migration on wages and pointed out that results vary across countries and they are related to the modelling approach. Negative and very small effect appears to be robust across studies. The wage response in Austria on the inflows from CEE was found negative, whereas German wages did not show the decrease as a result of

immigration (Zimmermann and Winter-Ebmer, 1998).The result from Germany is in line with finding of Lemos and Portes (2008) who did not find adverse effect of CEE migration on UK labour market as a result of EU enlargement in 2004. US labour market was examined very intensively. Butcher and Card (1991) did not find support adverse effects of immigrants' inflows in eighties, concentrating on lower tail of wage distribution as the group of foreign workers was mainly created by less educated persons. Little negative effect was discovered as a result of mostly unskilled migration in Cyprus but only for the group of natives with similar attributes of skills. Influx of foreign workers, on the other hand, results in quite substantial increase in wages of high-skilled natives (Christofides et al., 2007).

Card (2001) in his study highlight that studies usually do not make distinctions among groups of immigrants and use national level of wages and employment for research. Local labour markets and certain occupation mirror the impact more accurately. Borjas (2003) criticises that studies also usually define groups of skill according to the education, while job experience plus education characterize skill groups in much more detail. Both authors concentrate on the examination of the effect of migration within the group they actually enter and their results discover the negative effect on wages and employment – in competing group of workers, which is basically in line with theoretical models.

Once we consider the quantification of this effect, there are always several facts we have to take into consideration. For example, immigrants may choose their destinations according to the ability of absorb the additional labour supply they are about to provide. But in this case when immigrants place themselves into certain cities, the inter-city migration of natives could offset adverse effects of immigration. As migrants may also self-select themselves into high-wage areas, the impact on wages and employment may be underestimated (Card, 1990; World Bank, 2006). The results from empirical literature may depend on econometric approach taken. The reason why only weak impacts are found in the literature the most often may be the use of cross-sectional attitude. Panel data models that are employed in the analysis of these effects often bring different results (World Bank, 2006).

The assessment of possible effects of inflows of migrants on labour market is not a trivial task. Markets are subject to various shocks and cycles and there are many other factors that play crucial role in determining the result. One of the methods that help to eliminate problems associated with these multiple factors and influences would be running an experiment. This is in principle mostly impossible when it comes to the labour economics of migration; however, there were events in history that allow researchers to study the effect by so called natural experiment. One of the most well-known examples of an experiment in labour economics is

the research paper by Card (1990) where the effect of so called Mariel Boatlift[1] and its impact on Miami labour market in 1980 is studied and described in detail. The influx of Cuban workers increased the labour supply by 7 % as half of migrants settled down in Miami. Card (1990) compares the evolvement of unemployment and wage levels with four other American cities and argue that the influx did not have significant impact. Nevertheless, he did not forget to add that Miami had more specific labour market conditions and ability to absorb new labour force comparing to control cities and given its history of immigration (Card, 1990).

Common concerns that often shape the migration policy of the particular country occurred regarding immigrants coming into country and, without any contribution to the society, only "take advantage" of subventions to unemployed. Some studies therefore aimed at the probability of getting a job and, same importantly, attaining a job, arose in the research literature. Massey, Connor, Durand (2011) compared two case studies of Moroccans in Spain and Mexicans in USA and found that odds of getting a job mainly depend on age, education, language ability, and social ties and education, language skills and host country experience also explains the chance to attain a skilled job. Based on the probability of getting a job, Mexicans seem to be better integrated into American labour market than Moroccans in Spain.

Surely there are many other – positive and negative - effects of immigration discussed and examined in the literature and it is not aim of this paper to cover all of them. From the positive effects, for instance, one can mention Sanderson (2011) who found in the panel data that immigration increases per capita income in the long-run. For instance, Adams and Page (2005) conclude that increase in the share of international immigrants might result in decline in the share of people living in poverty.

2.2. Remittances in economic literature

One of the most noticeable effects of migration on the source country is represented by remittances. Remittances that are defined as "transfers of money (or in kind transfers) that migrants send back to the country of their origin directly to families they left behind" (IMF, 2008) usually constitute enormous inflows of foreign money for receiving countries. In 2010 alone, remittance flows are estimated to more than USD 440 billion, from which amount USD 325 billion is received by developing countries. As remittances often flow via informal

[1] Mariel Boatlift: the influx of approximately 125 thousand Cuban immigrants between May and September 1980 triggered by Fidel Castro's declaration, which stated that Cubans who wish to leave to the United States are free to go. The impact on US economy is well described in Card (1990).

channels (see further in this section), the amount could be much bigger than remittances officially registered. Top recipient countries in 2010 were India, China, Mexico, the Philippines and France. Probably more striking statistics of remittances is their share on GDP, reaching enormous values in developing countries. Top recipients in this category in 2009 were Tajikistan (35 %), Tonga (28 %), Lesotho (25 %), Moldova (31 %), and Nepal (23 %). Among the countries that are source of remittances there are mainly US, Saudi Arabia, Switzerland and Russia (World Bank, 2011).

Remittances transfers usually take place between family members and close relatives, so the motives behind them are personal and depend on human behaviour. One of the motives described in the literature is *pure altruism*. Migrants simply care about their families that are left behind drives flow of money. Economic theory copes with altruistic motives to remit with incorporating the consumption level of remittances as the argument in the utility function of the migrant (Chami et al 2008).

However, the problem is more complex and also other motives stemming from households arrangements that do not have to appear obvious for the "first sight" are probably present as well (Lucas, Stark 1985).

According to Rapoport and Docquier (2005) and Lucas and Stark (1985), the main motives of remittance behaviour might be: exchange, inheritance, pure self-interest, loan (debt) repayment or insurance. In addition, Massey, Durand, Pren (2011) state that, primarily, remittances as an alternative stream of earnings are sent to diversify risk to households' income.

Bougha-Hagbe (2004) researched motivations of remittance senders in Morocco and found that altruism and the "attachment" to the home country is considered as the main long-run determinants and motives of remittances. The same conclusion was supported by Schiopu and Siegfried (2006) who found that altruism is the main motive for remittances as the GDP differential between source and destination country determines to the amount remitted. The investment motive that is also investigated in the study is not as significant. Remittances of Pakistani migrants are most likely driven by altruistic motives but sometimes co-insurance and investment motive play the role (Anwar and Mughal, 2011).

The motives of migrants to remit funds back home can also affect the relationship of remittances to economic cycle: pure altruistic motive – to help your friends and family – can make remittance flows countercyclical as the amount of money sent is higher in the time of economic slowdown. If the motive is to invest, then the amount is lower under the fear of the unstable economy; hence remittances could be pro-cyclical (Vargas-Silva, 2011).

In searching for determinants of remittances researchers are usually interested in demographic characteristics of migrant and his family and financial information. For instance, Massey, Durand, Pren (2011) state that *"The propensity to remit and save is not uniform among migrants, but varies with personal, household, and trip characteristics as well as structural economic condition"* (Massey, Durand, Pren, 2011). Carling (2008) provides good overview of main potential determinants studied in the literature. Firstly, personal characteristics of migrants can play important role in determining remittances. The income of migrant usually has positive relationship with remittances or in some cases no pattern is observed. The level of education is other possible determinant of remittances, implying possible motive of loan repayment, however, no clear pattern across the literature was found.

Further the legal status of migrant can influence remittances both ways. Undocumented migrants may remit more as they do not feel safe in the destination country and sent money with intention to return home soon. On the other hand, illegal/undocumented migrants have restricted approach to formal channels since opening a bank account require strict documentation.

From the viewpoint of recipient' side, household income seems to be one of most important determinants of remittances – negative relationship is usually predicted (altruistic motive). The fluctuations and volatility of household income (insurance motive) was found as a determinant by Lucas and Stark (1985) during Bostwana's drought.

Other variable that determine remittances is the presence of close family in the host country – for migrants who were followed by family remittances are usually smaller. Further, the quality of transmitting services, the rural vs. urban status of family or nationality and ethnicity affect remittances in various countries.

For instance, Massey, Durand and Pren (2011) aimed at the region of Latin American countries and determinants of remittances from US back to this region. They use Logit model where the dichotomous dependent variable (presence of remittances or savings) is predicted by set of independent variables, such as life cycle characteristics (age, sex, number of children), human capital variable (education, experience), physical capital, legal status, duration of trip, wage of migrants, etc. Dummy variables are included to indicate country fixed effects. They found that odds of remitting rise with age, number of minors in household, years of prior experience with migration, physical capital ownership, wages of migrant and odds is higher if migrant is a male, whereas presence of spouse or family in the country of destination lowers odds of remittances. Anwar and Mughal (2011) used similar approach and came to the conclusion that gender of the household head, number of household members,

family income and urban/rural setting are strong predictors of remittances, whereas education and wealth of the family are not among significant predictors.

Some studies attempt to discover if remittances respond to macroeconomic characteristics of both home and host country – if they are determined by e.g. GDP, inflation rate, interest rate or exchange rate.

Vargas-Silva and Peng (2005) tested how remittances from USA react to macroeconomic variables and conclude that remittances are more affected by conditions in host country than in the recipients' country. Especially, remittances respond to positive shock of money supply (M2) that can be further connected to higher income and lower interest rate.

Schiopu and Siegfried (2006) focus on macroeconomics determinant of remittances and their study assert that relative poverty of receiving country, measures as the GDP differential, influences positively the amount of remittances, implying possible altruistic motive. Further, the share of unskilled workers among migrants reduces the amount of remittances – unskilled migrants have lower capacity to remit. The insignificance of interest rates differential indicates no severe investment motive behind remittances.

3. An overview of the Ukrainian migration experience in CEECs and in the Czech Republic

3.1. Migration in CEECs after the fall of Communism

In the last two decades, migration to the CEECs gained a special significance. Typically, there is a pattern of East-West migration, on the one hand from New Member States (NMS) of the EU to Western Europe, on the other hand from Newly Independent Countries[2] (NIS) to NMS. Leon-Ledesma, Piracha (2001) characterized the migration from CEE by the expression *migration often temporary and short term*. Many migrants are moving to work abroad just as seasonal workers that do not intend to live in the target country – their main motivation (a pull factor) to get a job abroad is the wage gap. Authors describe two characteristics that this kind of migration possesses: consumption of remittances or saved earnings is not the main

[2] NIS is used for 15 post-Soviet republics, namely: Armenia; Azerbaijan; Belarus; Estonia; Georgia; Kazakhstan; Kyrgyzstan; Latvia; Lithuania; Moldova; Russia; Tajikistan; Turkmenistan; Ukraine; Uzbekistan.

component of recipients or return migrants and skills acquired by migrants during their stay can be quickly used in their source economy after they return.

The Czech Republic is, due to its advantageous geographical location in the heart of Europe, very important country for European migrants – either as a final destination or a transitive point. From all post-Communist countries in the Central and Eastern Europe, the Czech Republic receives the largest part of foreign labour force, with Ukrainian workers as a most important group (Strielkowski and Glazar, 2012). In the year 2009 Ukrainians comprised 21 % of all immigrants and in 2006 their share was even larger – over 30 thousands of immigrants from Ukraine constituted 46 % of overall immigration (CZSO 2011). Generally immigrants from non-EU countries comprise 68 % of all foreigners in the Czech Republic, from which 43 % are originally from Ukraine (according to CZSO (2011) it is 124,281 persons).

3.2. Economic situation of Ukraine after the 1991

The process of transformation after the collapse of Soviet Union cannot be probably declared as finished. The country is still fighting with high unemployment, slow economic development and high inflation. Overall development of the country is hampered particularly by political environment and situation of dependency on Russian energy sources and struggles for power. The discontent with the situation in the country reached to the point that people started so called Orange revolution as a response on 2004 parliament election. However, pro-Western policy of new government was not successful and new elections brought pro-Russian wing back to power (Strielkowski and Glazar, 2012).

After the fall of Communist regime, the whole bloc of NIS and countries from the former so called Soviet bloc[3] experienced tough period of transformation towards market economies. There were two extreme attitudes of the process; one of them preferred shock therapy that basically triggered all important features of market economy overnight and after initial shock, economy was supposed to recover soon. The second attitude inclined to gradual, slower reforms steps that needed to be implemented with a great care and detailed analysis of impacts in advance. Either way, most of the countries chose one of the attitudes and started to reform their suffering economies immediately but the situation in Ukraine was different. No clear consensus took place – first attempts in 1992 lacked consistency (Kowalski and Polowczyk,

[3] Soviet Bloc refers to Poland, Czechoslovakia, Hungary, Bulgaria, Romania and Eastern Germany

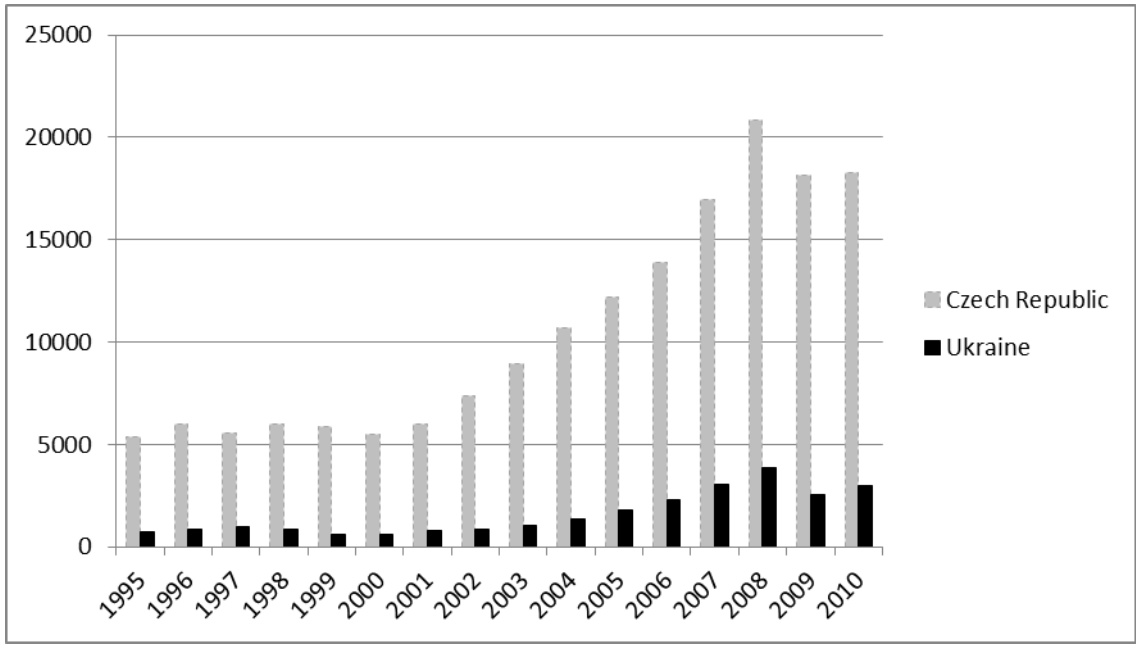
2012), the reform was postponed for 3 years and this delay aggravated cost of reforms. The expert assistance of IMF in the field of deregulation and financial stabilization in the years 1994 – 2000 was no doubt helpful but the consequences of the delay, such as high real interest rate for many years, was simply inevitable (Åslund, 2009).

In the second half of the 1990s, factories decreased production, payments of wages were postponed and unemployment reached around 40% if one included unrecorded numbers stemming from hidden unemployment (official statistics stated around 12 %). All these factors and low wages for those who were lucky enough to have a job created a set of push factors that support the trend of outmigration (Lupták, 2008).

For the whole decade the GDP growth was negative and economy started to recover in the beginning of the new century. That did not automatically mean that the recovery completely helped the soundness of economy. The GDP of the country in 2006 resulted in 63 % and in 2007 in 68 % of 1989's level. The world economic crisis caused further shock for the economy when in 2009 GDP shrank by 15 % (Kowalski and Polowczyk, 2012).

The evolvement of GDP per capita is depicted in Figure 1.

Figure 1: GDP per capita in the Czech Republic and Ukraine (1995-2010), current prices, USD

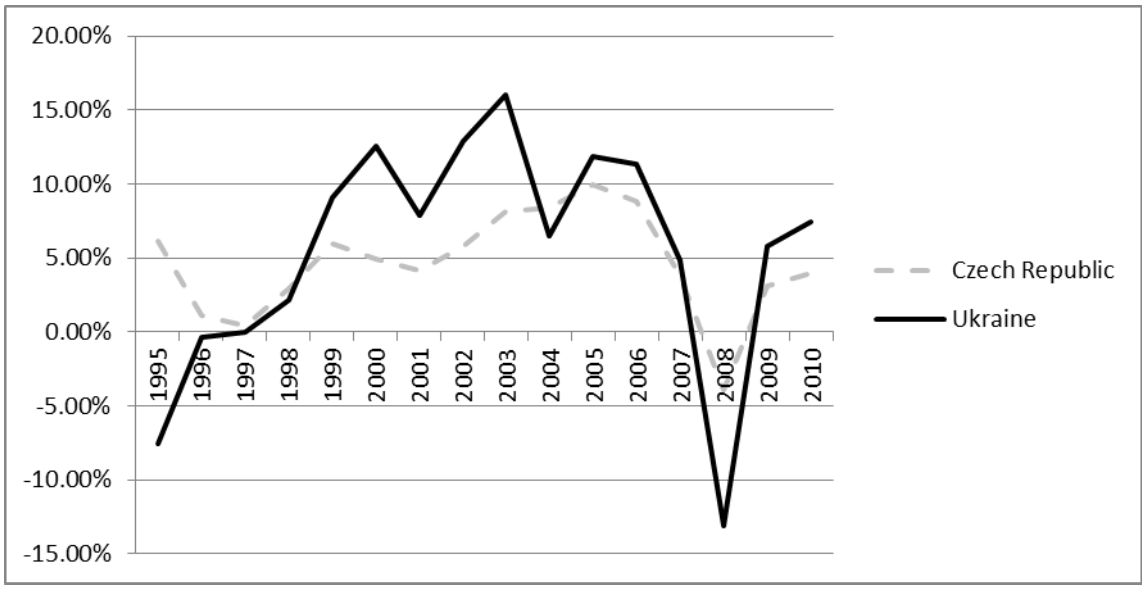


Source: International Monetary Fund (2011)

The situation in Ukraine is clearly getting better in the beginning of 21st century. For comparison, the economic situation in the Czech Republic is also shown. The striking

difference between values of GDP per capita is one of the evidence of better standards of living in the Czech Republic and thus these values can be understood as an important motivation for Ukrainian migrant workers in the time of their choice of destination country.
Figure 2 shows the evolvement of GDP growth in both countries. In 1996 for the first time, GDP started to grow (growth exceeded zero level). Until 2006 the economy of Ukraine experienced fast growth reaching two digit numbers. The maximum was achieved in 2003, when the growth was over 15 %. The world financial crisis hit the economy greatly and caused almost 15 % declined of GDP. Again for the purpose of comparison, the evolvement of Czech economic performance is also depicted.

Figure 2: GDP growth in the Czech Republic and Ukraine (1995-2010)



Source: International Monetary Fund (2011)

3.3. Migration experience of Ukraine after the fall of the Iron Curtain

Ukraine, as a part of the former Soviet Union, underwent labour migration only within certain strict limits and the freedom of movement was bounded by the Soviet Union borders and thus was oriented mainly to the Eastern countries. After the collapse of the Soviet Union, the isolation of the country ended and Ukraine experienced massive repatriation flows of ethnic Ukrainians from former Soviet republics. Further in the 1990s, the process of transformation cooperation and the overall orientation to Western Europe formed the new relationship and

triggered migration movement from Ukraine to the west (Malynovska, 2008; Düvell, 2006). There was also change in the type of migration – people did not migrate from ethic and political reasons, but mainly from economical (Jelínková et al., 2011). Ukraine became very important supply of labour for Member states of the EU since more than half of migrants enter EU's labour markets (Siar, 2008; Malynovska, 2008; Strielkowski and Glazar, 2011) and to keep pace with other countries, Ukraine had to adopt modern migration legislation, create migration and take part on cooperation in the sphere of migration (Malynovska, 2008).

Ukrainian migration is typically circular (i.e. with intention to return back regularly or for good), 80% of emigrants long to come back to Ukraine eventually, they maintain relationships with families, stay in direct contact, quite often are able to come home and they also realize investments in Ukraine (Markov et al., 2009).

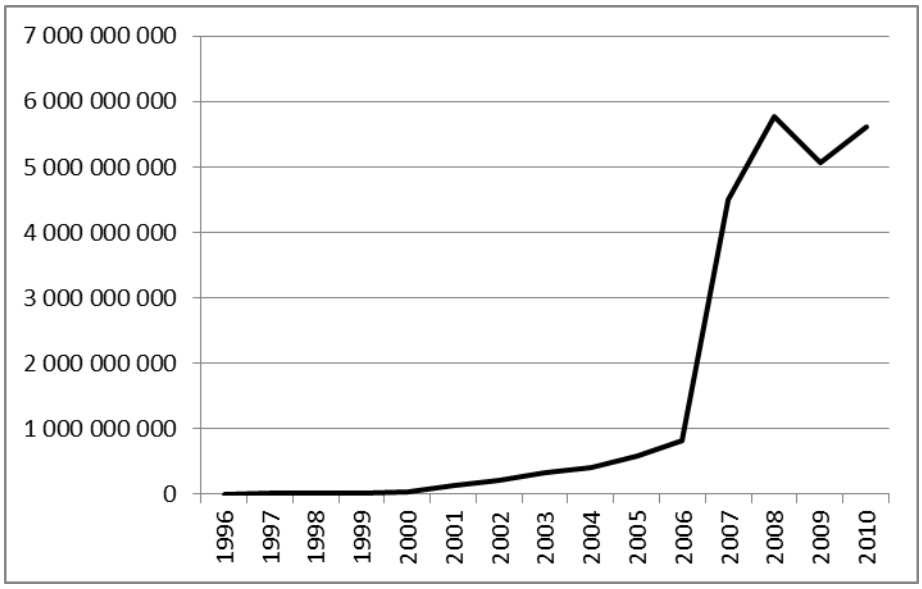
Currently more than 10 % of Ukrainian population (1/5 of working age population) work abroad, typically on temporary basis (Düvell, 2006). According to Siar (2008) 15.7 % of households have at least one or more members with experience of working abroad. Most often Ukrainians are engaged in secondary labour market and usually they do not constitute competitive counterparts to local workers (Markov et al., 2009). They are usually working in building and construction sector, in housekeeping and agricultural industry (Vollmer et al. 2010).

Despite the main importance of Ukraine as the source country of migrants for the Czech labour market, the Czech Republic, although no doubt an important target country for Ukrainian migrants, is not the most favourite. The Russian federation is the most linked country to Ukraine as a consequence of common history and still the majority of migrants leave Ukraine to settle down in Russia. Further, Ukrainians prefer to migrate to the Poland, USA, Israel, Kazachstan, Israel, Germany, Moldova, Belarus, Spain or Canada (World Bank 2011).

Another important aspect of labour migration for all developing countries is represented by remittances. Despite the fact that as a share of GDP, Ukraine is not among countries with highest levels - Ukraine received around 4 % of its GDP in 2010 (World Bank 2012) – overall amount of remittances received is increasing substantially, as it is evident from Figure 3.

From the pattern of the flow one can see that financial crisis affected the amount of remittances received but the effect was not that severe, compared to the level of foreign direct investment, that shrink twice in the year of 2009 (World Bank 2012).

Figure 3: Remittances received, Ukraine, current USD



Source: World Bank (2012)

It is necessary to understand that as remittances are surely sent via informal channels in a large extent (as it was mentioned above), the official amount of remittances is probably underestimated. For instance Markov et al (2009) in his research found out that as a share of Ukrainian GNP, international remittances (received by Ukraine) comprise 20 %.

Above mentioned facts deal with the general information about migration trends in Ukraine, whereas the following chapter aims to focus on migration flows from Ukraine to the Czech Republic.

3.4. Ukrainian migration and remittances in the Czech Republic

According to the estimates of Ukrainian embassy there are 200 – 250 thousands of Ukrainians living and working in the Czech Republic. Many of them come from the region of Zakarpat'ye, to be specific, as much as 50 % of migrants from Zakarpat'ye region come to work to the Czech Republic (Malynovska, 2008).

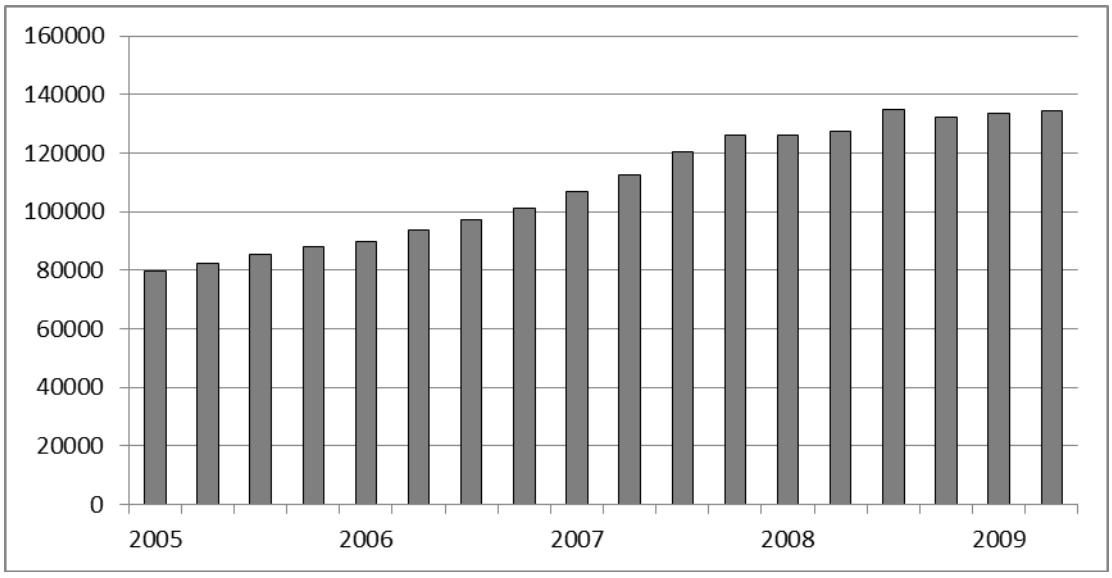
During economic transition, Ukraine had to adjust its migration policies so that the country would be able to become the part of new independent region. *"The Ukrainian government abolished all exit restrictions in January 1993, and, in February 1994, the "Law on the Order of Exit from Ukraine and Entrance to Ukraine for the Citizens of Ukraine" was adopted. It*

guaranteed Ukrainian citizens the right to freely depart and return to its territory. Additional guarantees of free movement are provided by the 2003 "Law on Freedom of Movement and Free Choice of Residence in Ukraine." (Malynovska, 2006).

The situation for labour migrants became more difficult since the visa requirements were launched since 2000. Perhaps as a consequence of that, significant number of migrants stays illegal or unregistered (Siar, 2008).

In 2009, the Czech Republic granted 92,138 visas for Ukrainian citizens. Further in 2009, the stock of Ukrainians, either on long term stay or permanent stay basis, reached the number of 131,977, which is the biggest group in the country. Based on the information of Ministry of Labour and Social Affairs, there are 57,468 Ukrainians active on the labour market and further 26,223 migrants from Ukraine work as entrepreneurs (MVCR 2010). The increasing trend of Ukrainian migrants in the Czech Republic in time is apparent from Figure 4. By comparing the number of immigrants in the beginning of 2005 and the second quarter of 2009, one can find that the stock of migrants increased by 68.9 %.

Figure 4: Stock of Ukrainian migrants in the Czech Republic



Source: World Bank (2010)

Quite often, migrants coming to the Czech Republic intend to stay for a longer period of time. More often than in the case of other countries, migrants coming to the Czech Republic are young (less than 28 years), less educated, and in line with the experience from other countries, mostly migrants work in construction sector (as much as 88.2 %) and in industry. 45.9 %

Ukrainian women prefer to work in restaurants and 31.5 % in light industry (Malynovska, 2008).

Higher wages in the Czech Republic (compared to Ukrainian wages that remained very low) and better working conditions (Lupták, 2008; Siar 2008) enabled those who migrated to pay for accommodation, education and also send financial support to their families, that gained higher purchasing power thanks to these remittance flows (Fedyuk, 2006; Malynovska 2004). Siar (2008) also noted that remittance receiving households are better off, and they tend to set up small businesses from received funds.

Contrary to the above findings, Lupták (2008) highlighted unfavourable situation for small businessmen in terms of insufficient support from the side of the state. He states that after they return, labour migrants prefer to invest their savings into housing and education rather than into unsecure business. Åslund (2009) agreed with this statement by pointing at poor business and investment environment and difficulties that erase when it comes to involvement of state sector (such as closing business, registering property, trading across borders etc.). The same is suggested by Malynovska (2006) as she said that mostly remittances and savings are used for consumption, education and housing since there are not sufficient incentives for enterprises in Ukraine.

Leontiyeva and Tollarová (2011) analysed data from the questionnaire surveys undertaken by the Institute of Sociology, Czech Academy of Sciences and Czech Statistical Office. The study focused on several immigrant groups – Moldavian, Russian, Ukrainian, Vietnamese and former Yugoslav migrant. According to their results, 81 % of Ukrainian migrants have unskilled or low-skilled jobs. Ukrainians also tend not to bring their spouse and children into country and, consequently, have the higher share of remitting individuals than other nations in the sample (61 % of them send remittances, compared to 40 % of former Yugoslavs). Older migrants are more likely to send remittances than younger migrants. Generally, according to their analysis, leaving children behind is probably the strongest predictor of both probability to send remittances and their volume. They found out that typically married, low skilled and unskilled workers remit, with the average length of residence of 4 – 5 years. For transactions of remittances they prefer to use informal channels.

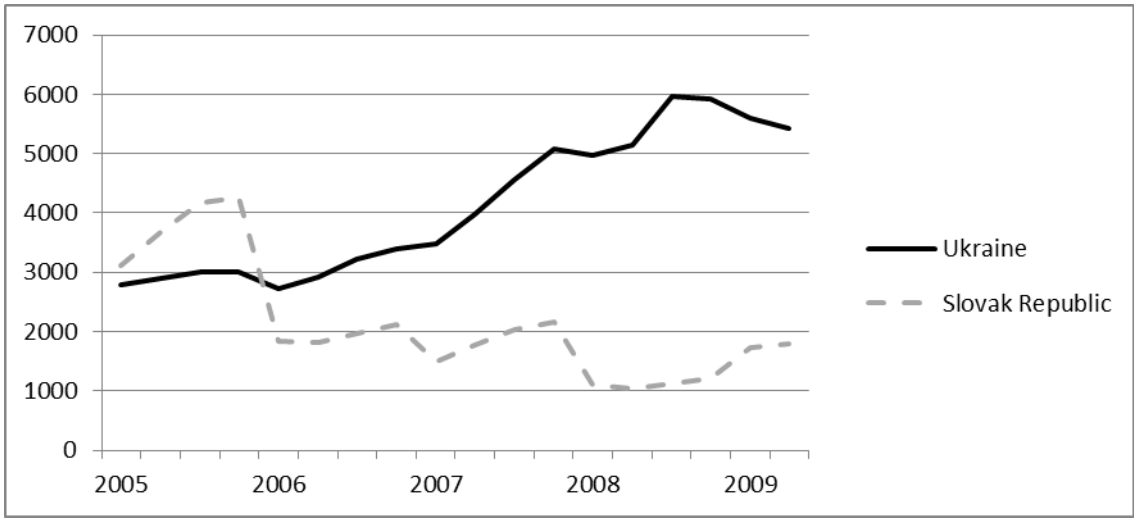
Their research further confirmed that remittances are stable even during years of economic downturn. Regarding the use of remittances, 58 % of money is used for basic needs and food, 30 % goes on medicines and education, 17 % real estate investment, and as for other investment and business only 5 % of money received is used by families of recipients. This

figure is in line with above mention statement of Lupták (2008), Åslund (2009) and Malynovska (2006).

Most often remittances are transferred back to Ukraine by unofficial channels, particularly with the help of friends or relatives or bus drivers (couriers). According to the study of World Bank (2010), 40 % of migrants use help of their friend or relative, 32 % prefer bus couriers and 25 % rely on MTO. The reason of their choice of methods is mainly transfer speed and low costs. 98 % of remittances are sent in US dollars (USD) and average sent amount is 200 USD. Among the other immigrants groups, Ukrainians are the ones remitting the lowest percentage of their income – 7 – 9 % (World Bank, 2010).

Within the remittance market in the Czech Republic, remittances to Ukraine comprised 42 % of total remittances and the amount of these flows is increasing in time, as one can see from Figure 5, where remittances flowing to Slovak Republic are added for the comparison.

Figure 5: Annual remittances in nominal terms, million CZK



Source: Sedláček (2010)

Clearly, Ukrainian labour migration is the essential phenomenon of the last two decades and that holds twice for the Czech Republic, since the migrants from Ukraine is far most important group of foreign labour force in the country.

4. Description of survey questionnaire and data analysis

4.1. UMP survey questionnaire

The analysis that follows, uses the unique data set obtained from the UMP questionnaire survey conducted by the team of researchers from the Charles University in Prague in Western Ukraine, in particular Zakarpat'ye region. The region is notoriously known for its large share of emigrants in the local population and important is also the fact, that in recent history, it came under authority of Austrian-Hungarian monarchy, Czechoslovakia, Hungary and the Soviet Union.

The survey is a part of the project *"Migration and development – economic, social and socio-economic impacts of migration on the Czech Republic, as migration target country and Ukraine, as migration source country (with a specific focus on the analysis of remittances)"*. The project is mainly focused on various socio-economic aspects of migration and its impacts. The research is divided into several tasks and many statistical methods are employed to collect data, such as semi structured in-depth interviews, diary records on daily incomes and spending of Ukrainian migrants in the Czech Republic and survey questionnaire both in Ukraine and in the Czech Republic.

Following methodology of Massey's MMP and LAMP, UMP questionnaires contained questions dealing with various economic and demographic characteristics, e.g.: household size, information on age, sex, education, occupation of each household member, total monthly net income of every household, percentage of income that is spent on food, the amount of remittances (both financial and in kind), that are received by the household from its members or non-members, frequency of receiving remittances. In addition, the questionnaire contained questions on the economic and social status of the migrant: her/his occupation, salary, marital status, attachment to family (expressed the frequency of contacting each other), knowledge of foreign languages.

The survey consisted of several parts but it has to be mentioned that not all questions were used explicitly in econometric models presented further in this paper.

As it is usual among data samples that are based on questionnaire survey, there are several limitations in data, such as sample selection, size, geographical distribution, etc. On the other hand, primary and unique data resulting from the survey have an advantage against balance sheet data on remittances collected on the macro level, since questionnaires detect also remittances that flow in the country by informal channels. Furthermore, it is possible to examine motivations and personal issues connected with each migrant-family relationship.

In total, 200 questionnaires in households having currently at least one member as a migrant in the Czech Republic[4] and 50 questionnaires in households that currently do not have any family member residing abroad were held.

Households in the sample were chosen by random sampling in particular cities in Zakarpat'ye region. Despite above mentioned limitations, the data sample is robust enough to show the basic existing patterns and dependencies in migration from the Western Ukraine to the Czech Republic and in remittances flowing in the opposite direction.

4.2. Summary statistics of the UMP survey

This section provides the basic summary statistics from the UMP survey described above. Summary statistics of migrants are displayed in Table 1 that follows.

Table 1: Summary statistics of migrants, UMP survey

Statistic	Measure	Value
Lifecycle characteristics		
Males	%	79.9
Females	%	20.1
Married	%	84.4
Age	Mean	42.2
Human capital		
University degree	%	55.2
Secondary school	%	41.0
Ability to speak Czech	%	58.5
Trip Characteristic		
Income group 3	%	51.9
Job in construction sector	%	43.2
Job in manufacturing sector	%	11.4

Source: own calculations based on UMP survey

Almost four fifths (79.9 %) of migrants in the sample are male. The age of migrants varies from 19 to 64. Average age is 42.2 years. The vast majority (84.4 %) from the group of migrants is married. With regard to the level of education, the largest share was the group of migrants with university degree – 55.2 %, and the second largest group was constituted by

[4] And the vast majority of these households do receive remittances from their family members in the Czech Republic

those migrants who completed secondary school – 41 %. Overall, 58.5 % of migrants are able to speak "somewhat" Czech.

If men and women are analysed separately (Figure 2), one finds that women are on average 38.7 years old, 62.8 % of them have university degree and 32.6 % completed secondary education. Almost 70 % from women are married. Men are on average older but the share of men with university degree is lower 52.6 %, and the share of those finished education on secondary level is 42.1 %. 87 % of male migrants are married. The ability to speak Czech is almost the same for both women and men.

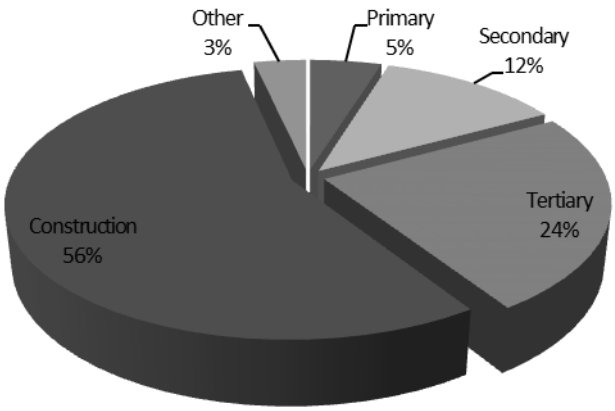
Table 2: Comparison of statistics Male vs. Female

Statistic	*Male*	*Female*
Age	43.1	38.7
Married	87.1 %	69.8 %
Secondary school	42.1 %	32.6 %
University degree	52.6 %	62.8 %
Ability to speak Czech	48.0 %	48.8 %

Source: own calculations based on UMP survey

Regarding the economic activity of Ukrainian immigrants, Figure 6 describes the main patterns.

Figure 6: Economic activity of Ukrainian migrants



Source: own calculations based on UMP survey

Particular economic activities were divided into primary, secondary and tertiary economic sectors (Table 3). The importance of the construction sector for Ukrainian labour migrants is solved by treating it as a separate category.

Table 3: Economic activity of Ukrainian immigrants

Desrcitption of Economic Activity Variable and Divison on sectors	
Primary Sector	**Tertiary sector**
1 = Agriculture, hunting	8 = Trade, repairing of household appliances, cars
2 = Forestry, fishing	9 = Transport and storage
3 = Mining	10 = Accommodation and gastronomy
	11 = Information and communication
Secondary Sector	12 = Finances and insurance
4 = Manufacturing	13 = Real estate
5 = Electricity, gas and heat production	14 = Science, research and technology
6 = Water supplying, sewages and waste management	15 = Administration
	16 = Public governance, defense, social security
7 = Construction (normally included in Secondary sector)	17 = Education
	18 = Healthcare and welfare
	19 = Culture, recreation, entertainment

Source: Eurostat (2012)

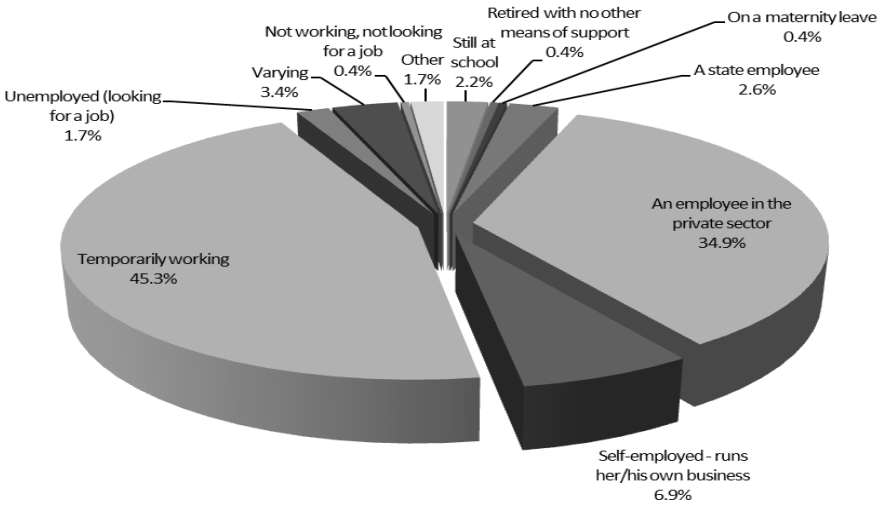
Not less than 56 % of Ukrainian immigrants from the sample work in construction sector. Together with other economic activities from secondary economic sector it makes 68 %. Almost one quarter is working in tertiary sector. In this sector, most immigrants work in category 8 – Trade, repairing of household appliances, cars, and 10 – Accommodation and gastronomy.

Regarding employment status of immigrants, Figure 7 reveals that almost the half of migrants is working temporarily. The second largest group of labour migrants is employed in the private sector – approximately one third.

Table 4 shows comparison of four characteristics for households receiving remittances (Rem = 1) and households that do not receive remittances (Rem = 0). Households that currently have a member working in the Czech Republic and sending remittances have on average

lower number of members and lower number of dependants.[5] Furthermore, households receiving remittances spend slightly lower share of their income on food.

Figure 7: Employment status



Source: own calculations based on UMP survey

Income of the households is a categorical variable that has 6 categories constructed on the basis of preliminary focus groups interviews with migrants and their families in Ukraine and the Czech Republic and pilot of the survey (1= (less than 599 UAH), 2 = (600-1499 UAH), 3 = (1500-2599 UAH), 4= (2600-4099 UAH), 5 = (4100-6599 UAH), and 6 = more than 6600 UAH).

Table 4: Comparison of households with and without remittances

Statistic	Measure	Value	Value
		Rem = 1	***Rem = 0***
Household size	Mean	2.92	4.3
Dependants	Mean	1.90	2.6
Share of income spent on food	Mean	39.4 %	41.4 %
Income group 3 and 4	%	63.3	26.6

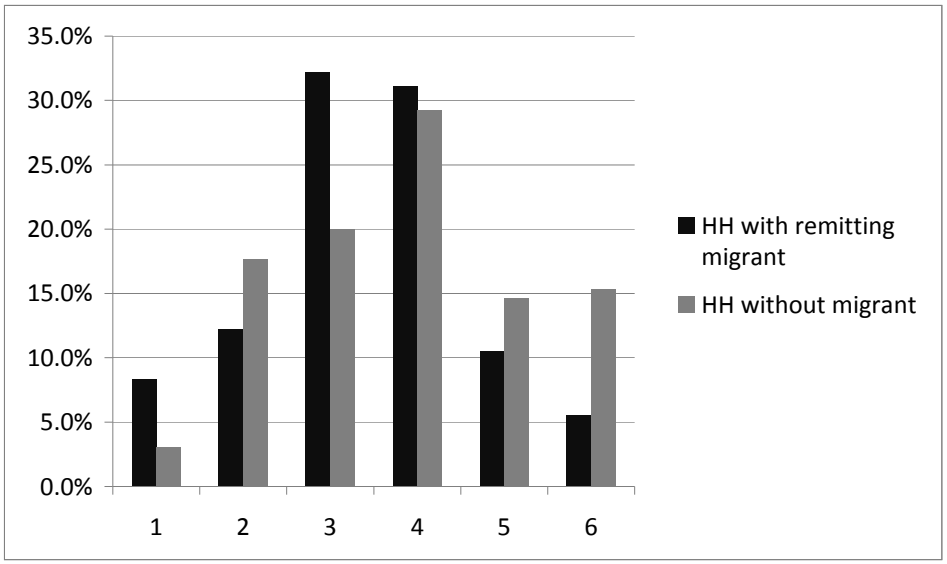
Source: own calculations based on UMP survey

[5] All household members that do not work are considered to be dependant (most often children, students and retired members belong to the group).

Out of 6 income groups, 63.3 % of households receiving remittances belongs to the category 3 and 4 (middle categories), whereas only 26.6 % from non-receivers belong to these two categories.

The distribution of income among households is better pictured in following histogram (Figure 8), where frequencies are used to show that the family belongs to the certain group. Interesting fact is that families that do not receive remittances are much more evenly distributed than families that do receive remittances.

Figure 8: Distribution of income



Source: own calculations based on UMP survey

Table 5: Remittances statistics derived from 2011 UMP survey data

Statistic (US dollars)	
Remittances	
Average remitted amount in 2010	7,512.88
Median of remittances in 2010	5,000
Range in 2010	100 – 68,500
Average remitted amount in 2011	7,325.92
Range in 2011	50 – 68,500
Median of remittances in 2011	4,110
Way of transfer	
Remittances sent via MTO or bank	31.7%
Used Western Union	71.5%
Remittances sent in cash	76.3%

Source: own calculations based on UMP survey.

Table 5 summarizes the amounts and other characteristics of remittances sent by migrants to Ukraine in 2010 and 2011 obtained from the UMP survey.

In 2010, remittances ranged from USD 100 to USD 68,500 and the amount remitted on average was approximately USD 7,512.88 USD. In 2011, the figure of average decreased by 2.5 %, becoming USD 7,325.92.

Median of remittances in 2010 and 2011 was USD 5,000, USD 4,110 and, respectively, implying that high values of several observations increased the mean of remittances above the level of median.

Once again, if analysing men and women separately (Table 6), one can see that men send more remittances than women in both years and that in 2011, amount remitted for male migrants fell by 3.7 % whereas for female migrants remittances sent increased by 10.3 %.

Table 6: Comparison of means for male and female

Statistic	***Male***	***Female***
Average remitted amount in 2010 (USD)	8,021.8	5,275.6
Average remitted amount in 2011 (USD)	7,728.1	5,819.5

Source: own calculations based on UMP survey

4.3. Main research hypotheses

This sub-section defines the hypotheses and the methodology of testing. Generally, there are two main hypotheses that are to be tested:

Hypothesis 1: *Remittances are significantly determined by income, demographic characteristics and human capital of migrants.*

The *Hypothesis 1* is based on Massey, Durand, Pren (2011) and the aim of the analysis is to test whether Ukrainian migration, in particular the remittance behaviour, is determined by similar factors as Latin American migration in the USA examined by Massey, Durand, Pren (2011), and based on the results of testing, to formulate these determinants explicitly.

Hypothesis 2: *Remittances are channelled primarily into consumption in the country of migrants' origin and not into more productive spending.*

Table 7: Variable description

Name of variable	Description
Variables describing remittances	
Remittances 2010,2011, sum	Amount of remittances received by a household from "their" migrant in 2010, 2011 and the sum of both years, respectively
Remittances sent via MTO or bank	Share of migrants that use financial intermediary
Remittances sent in cash	Share of migrants that sent money in cash (most often informally)
Demografic characteristics (for both migrants and household members)	
Age	Years of age
Male	Dummy variable, 1=male, 0=female
Education	Categorical, 1=primary level, 2=secondary level, 3=tertiary
Secondary school	Dummy variable, 1=secondary school completed, 0=otherwise
University degree	Dummy variable, 1=university completed, 0=otherwise
Marital status	Categorical, 1=(married), 2=(single), 3=(divorced), 4=(widowed), 5=(lives with partner in same household)
Married	Dummy variable, 1=married, 0=otherwise
Employment status	Categorical, see Figure 10 for details
Economic activity	Categorical, see Figure 9 for details
Migrant's characteristics	
Migrant's income	Categorical, 1=Less than 9,000 CZK, 2=(10,000 – 19,000 CZK), 3=(20.000 – 29,000 CZK), 4=(30,000 – 39,000 CZK), 5=More than 40,000 CZK
Ability to speak Czech	Dummy variable, 1=yes, 0=no
Household's characteristics	
Class in society	Categorical, 1=(lower), 2=(lower-middle), 3=(middle), 4=(upper-middle), 5=(upper)
Share of income spent on food	% of income that a household spend on food
Household income	Categorical, 1= Less than 599 UAH, 2=(600 – 1,499 UAH), 3=(1,500 – 2,599 UAH), 4=(2,600 – 4,099 UAH), 5=(4,100 – 6,599 UAH), 6=More than 6,600 UAH
Dependants	Number of members that are not productive
Household size	Number of members in a household

Source: Ukrainian Migration Project (2011)

The literature on remittances analysing the potential growth effects highlight that remittances are often mostly used for consumption of households, which might decreases the positive

effect on growth[6]. Positive effects are conditioned by more productive spending such as investment in businesses and in human capital (schooling) and in some literature and for the sake of this paper, channelling money into construction of houses is considered to be productive spending too.

Determinants of remittances (*Hypothesis 1*) are to be tested in two ways. Firstly, determinants are tested on the individual level. Here, binary response models, in particular logit, probit and linear probability model (LPM) are applied, where the binary dependent variable is equal to 1 if the person remits and 0 otherwise. Secondly, determinants of the *amount* of remittances is examined, thus only subsample of families *with* migrants in the Czech Republic are included in the model. For this analysis, linear regression and Ordinary Least Squares (OLS) method is used.

In order to test *Hypothesis 2*, binary response models, in particular logit, probit and LPM model are applied. In models that test the *Hypothesis 2*, the dichotomous dependent variable is equal to 1 if the household is using its income *primarily* for consumption of food and clothes in the first model, and in the second model the dichotomous dependent variable is equal to 1 if the household is using its income on productive spending. The variables used in the model are described in greater detail in Table 7 above.

It has to be mentioned that in analysis where binary responds methods are applied, results for probit and LPM models are displayed for the purpose of comparison. The same signs of estimates and the level of significance support robustness of logit estimates. However, statistical interpretation is only provided for logit models since it is more straightforward than interpretation of results from probit models. Besides, Logit estimates do not possess main drawbacks of LPM – linearity and unbounded dependent variable.

Signs of the coefficients are of the main interest in the analysis – if the coefficient is statistically significant, the negative sign shows that the increase in the explanatory variable lowers odds of the dependent variable to occur, the positive sign signals that the increase in the explanatory variable lowers odds and probability of occurrence.

From the size of coefficient, it is possible to easily find how much particular explanatory variables influence odds of the dependent variable *Y=1*. Estimate of coefficient is log of odds ratio in logit model. Taking inverse function of log (exponential function), odds ratio is revealed and it is not hard to interpret it, especially for binary explanatory variables.

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[6] In more details, the problem is discussed in the Chapter 2.4.

5. Construction and testing of the empirical models, discussion of main results

Our study employs binary response models logit, probit and LPM in order to predict a dichotomous variable – whether the person *migrates* and *remits* or not. Using in total two approaches of analysing determinants of remittances – binary response models and linear regression, this section firstly tests for the validity of *Hypothesis 1* and by these means main factors of remittances and their magnitude are to be formulated.

5.1. Factors influencing of odds of migration and remittance behaviour: logit, probit and linear probability model

As mentioned above, logit model is of the main interest and probit and LPM are displayed just for comparison. The logit model takes following form:

$$P(Y=1|x)=\frac{e^{\beta_0+\beta_1 x_1+\ldots+\beta_k x_k}}{1+e^{\beta_0+\beta_1 x_1+\ldots+\beta_k x_k}},$$

where β are coefficients to be estimated. The right hand side of the equation is in form of logistic cumulative distribution function. Probit model employs normal cumulative distribution function.

The dependent variable Y in probability model is binary – the individual either remits some positive financial amount or not. Thus y = 1 holds for Ukrainians who migrate and remits. Estimates of coefficients of explanatory variables β show how much the odds of remitting is increased if the explanatory variable increase. Thanks to the control group of observations among families with no migrants there is a possibility to estimate effects of particular characteristics on the probability of migration and sending remittances on the individual level. One group consists of those who remit and the in the control group there are all members of all households in the productive age of 18 – 65, students and retired excluded. By the introduction of binary variable that is equal to 1 if there is „Another member in the household who already remits", the fact, that there is already somebody else from the particular household remitting money from the Czech Republic, is captured.

As it was said before, the dependent variable is equal to 1 if the situation "positive amount of remittances sent" occurs. The choice of explanatory variables is inspired by the study of Massey, Durand, Pren (2011).

In logit model mostly the sign estimated coefficients are important but the magnitude reveals some information as well. If one is interested in the magnitude, taking the value of *exp* of the estimate results in *odds ratio*, since coefficient actually are log odds ratios. Results are summarized in the Table 8 below. For comparison, results for probit model and LPM are also displayed.

Age raises odds of remitting but the effect diminishes, as we can see from the negative sign of square of Age. Being male rising odds of remittances – men are more likely to migrate and remit money, since being man rising odds of migration and sending remittances. The number of household members lowers odds of migration with remittances – *ceteris paribus* additional household member lowers odds by almost 68 % (*exp* (-1.1354) = 0.32). Not surprisingly, the presence of one more family member sending remittances decrease odds by around 66 % (exp (-1.0839) = 0.34). Odds of migration and remittances also decrease the higher is the overall income of family (remittances excluded). In particular, moving from one category into the higher one decrease the odds by 23 % (*exp* (-0.2678) = 0.77). This can be explained by the fact that families with higher income in Ukraine do not rely heavily upon remittances. The remitting migrant might be residing in another country (in our case, the Czech Republic) in order to ease the family's situation and to make her or his own living abroad. In addition, this might mean that families who earned enough remittances in the past months or years might have invested them into some kind of business or other income-generating activity in Ukraine and therefore are not in need in regular remittances infusions.

Neither the fact that individual is married is not significant, nor the education has an influence on odds, since estimates of coefficients are not statistically significant. Household's class of society, number of dependants and share of income that is spent on food are not significant either.

P-value of Wald statistics is close to 0, which indicates that the null Hypothesis of joint insignificance (all estimations of coefficients are equal to 0) can be rejected. The goodness of fit can be interpreted from pseudo R2 (McFadden R2) and for this model, the value is approximately 32.4 %.

Table 8: Results of logit, probit and Linear Probability model, dependant variable – probability of remittance occurrence

	Logit			Probit			Linear Probability Model		
	β		**SE (β)**	**β**		**SE (β)**	**β**		**SE (β)**
dependent variable - probability person remitts									
Independent variables									
Life cycle characteristics									
Age	.2899931	***	.0863287	.1512416	***	.0475844	.0279346	***	.0082955
Age squared	-.0033937	***	.0009913	-.0017623	***	.0005481	-.0003216	***	.0000983
Male	1.672354	***	.2459247	.9420472	***	.1376549	.2338999	***	.0294668
Married	.3618044		.4109716	.1888328		.2242699	.035421		.0470559
Human capital									
Secondary education	.7331269		.6153145	.4758592		.3466632	.0561834		.0676876
University degree	.3236721		.6094933	.2224767		.3437009	-.0161699		.0650323
Household characteristics									
Anther member already rem.	-1.083949	***	.2836819	-.5941222	***	.1577284	-.141638	***	.0348409
Number of dependants	.2466357		.1611391	.1186784		.088088	.010987		.0175601
Class	-.1921903		.1698202	-.0906205		.092997	-.0170197		.0198258
% of income spent on food	-.0004181		.007539	.000397		.004227	.0002021		.0010179
Household size	-1.135373	***	.1740859	-.60964	***	.0921077	-.1133246	***	.0164658
Family income	-.2677782	***	.0985525	-.1553605	***	.0574944	-.0531923	***	.0126304
Constant	-3.432552	*	1.86596	-1.860753	*	1.030461	.2282916		.1881983
Number of observations	671			671					
Wald chi2	119.82			130.43					
McFadden R-squared	0.3241			0.3175					
p-value (wald chi)	0.0000			0.0000					
R-squared							0.2954		
p-value (F-test)							0.0000		

Note: * Significant on the 10% level; Significant on the 5% level; *** Significant on the 1% level.**

Source: own calculations based on the data from UMP survey

Test for heteroskedasticity (Breusch-Pagan test) was executed for LPM and with high level of p-value and low level of the statistic, the null of homoscedastic data cannot be rejected. That means that one can rely on homoscedasticity of disturbances and there is no need to employ robust standard errors that would correct heteroskedasticity.

5.2. *Factors influencing of odds of migration and remittance behaviour: linear regression model*

The analysis further proceeds to linear regression model. This time, the model does not try to find factors that influence odds of remittance occurrence, as it was the case with probability models, whereas by the linear regression, determinants of the *amount* of remittances could be found. The dependent variable Y is represented by the logarithm of amount remitted for both years together. The purpose of the model is to detect which variables have statistically significant influence on the dependent variables.

Following Massey et al. (2011), the model includes variables on Lifecycle characteristics of migrants, their human capital, trip characteristics (only income group of migrants is available) and Household characteristics. Particular variables are shown in the Table 9. The model takes following form:

$$Y_i = \beta_0 + \beta_1 x_{i,1} + \ldots + \beta_k x_{i,k} + u_i$$

where β are coefficients to be estimated and x represent independent variables and u disturbances. Table 9 summarizes main results. From the results reported in the table it is obvious that, besides the intercept, variables of Age, Age Squared, Married, are statistically significant at 5 % significance level and Migrant's income is significant at 1 % level. The estimated coefficient for Age is -0.13 and at the same time, the estimate for Age squared is positive and close to 0, still statistically significant. This implies that with rising age of migrant, amount remitted is decreasing, but the relationship is nonlinear and the effect is weakening with increasing age. Compared to the reference group of being single, married persons remit 59 % more than single ones.

For the variable of migrant's income, the estimated coefficient is 0.35, which means, that by the shift from lower salary group to the higher one, remittances increase by 35 %. The other variables in the model do not influence amount remitted significantly.

The R-squared value of 23 % is low but in general corresponds to the values reported in similar studies (see for example Massey, Durand, Pren 2011 or Sanderson 2011). . Adjusted R-squared is lower indicating too many variables in the model. The goodness of fit could be probably improved by adding other variables into the model.

Table 9: OLS estimation of amount remitted from the Czech Republic by Ukrainian migrants

	Log of Amount remitted *(in total)*			
	β		**SE (β)**	***p-value (t-test)***
Independent variables				
Life cycle characteristics				
Age	-.1331866	**	.0615748	0.033
Age squared	.0014525	**	.0007204	0.046
Male	.1612271		.2343337	0.493
Married	.5912866	**	.2565784	0.023
Human capital				
Secondary education	-.3870329		.8997624	0.668
University degree	-.1313669		.8954109	0.884
Trip Characteristic				
Income	.351311	***	0.000	.0831517
Household characteristics				
Number of dependent members	.1063848		.0840388	0.208
Family income	.0129573		.0672368	0.848
House ownership	.0082546		.3901373	0.983
Land ownership	.1967295		.1865244	0.294
Bank account in UA	-.0566404		.2076033	0.785
Constant	10.19178	***	1.555481	0.000
Number of observations	132			
R Squared	0.2330			
Adjusted R Squared	0.1557			
p-value (F-test)	0.0010			
p-value (Breusch-Pagan test)	0.8827			

Source: own calculations based on UMP survey

One of the key assumptions for OLS method to be efficient is to have homoscedastic disturbances. Based on the results of Breusch-Pagan test for heteroscedasticity the null Hypothesis of homoscedastic disturbances cannot be rejected – the assumption of constant variance of disturbances is valid. Thence, there is no reason to run regression with robust standard errors.

In addition, models with the same explanatory variables were run for dependent variables of log of remittances 2010 and 2011 separately and estimations and statistics came to nearly same values.

So far, the main determinants of remittances were being examined. It was found out that main determinants of likelihood of migration with remittances is age, sex, size of household and its

income, whereas education does not affect the remittance decision. Regarding the amount of remittances, also marital status is important and the strongest predictor is the income of the migrant. The income of the household in Ukraine is, quite surprisingly, not important determinant of *amount* remitted by the migrant.

Hypothesis 1 was confirmed to a large extent by the analysis. The only exception was that education (human capital) did influence neither odds of remittances nor its amount.

5.3. Remittances channelled into consumption

This section deals with testing Hypothesis 2 (*Remittances are channelled primarily into consumption in the country of migrants' origin and not into more productive spending).*

It has to be noted that now the analysis is conducted on the *household* level since we are analysing the way of spending household income by all member altogether, and thus, number of observations is equal to the number of households in the sample. The data of household incomes in Ukraine were obtained in the course of our survey (respondents were asked not only about remittances received from the Czech Republic but also about the average monthly net income of all households members, income of household as a total, structure of spending and ownership of goods (including the luxury goods).

The main aim of this section is to examine how presence of remittances as such influences odds of spending households' income on consumption. The dependant variable is binary and equals to 1 if the household prefers to use its income primarily (indicating the most significant spending) into consumption of food and clothes (in the questionnaire, the household members were asked about how they used the money from remittances during the last year, were provided a list of possibilities, and asked to assign a number from 1 to 5 with 1 being the most significant and 5 being the least significant).

If the variable is statistically significant and does have negative value, conclusion can be made that the presence of remittances, *ceteris paribus*, lowers the odds of spending income primarily on consumption of food and clothes. Table 10 summarizes main outcomes of the model. Standard errors are robust to correct for heteroskedasticity of residuals signalled by low p-value of Breusch-Pagan test.

The coefficient of main interest is "Receive remittances" – it signals that the family is a receiver of remittances, if it equals 1, 0 otherwise. Other factors that can determine the way how the income is used are controlled – mainly household size, number of dependant members, class in society and the group of family income. None of these controlled variables

are significant. Only significant variable in the model is the binary variable "Receive remittances" and its estimated coefficient is negative.

Table 10: Results of logit, probit and LPM

	Logit			Probit			Linear Probability Model		
	β		***Robust SE (β)***	***β***		***Robust SE (β)***	***β***		***Robust SE (β)***
dependent variable -income used primarily for consumption of food and clothes									
Independent variables									
Household characteristics									
Receive remittances	-1.512539	***	.3641833	-.8552176	***	.1915286	-.2287495	***	.0486403
Number of dependants	-.0565532		.1763341	-.0384014		.0997917	-.0079647		.0250281
Household size	.162991		.1743468	.1061573		.0962182	.0229835		.0237538
Class in society	-.1778666		.2398948	-.1229107		1329533	-.0260385		.0372649
Family income	.1067924		.1304315	.0402603		.0711804	.016968		.0195426
Constant	1.937027	**	.9488364	1.232021	**	.5380117	.8490977	***	.1470076
Number of observations	321			321			321		
Wald Chi2	31.50			35.62					
McFadden R-squared	0.0968			0.0968					
Chi2 test	0.0000			0.0000					
R-squared							0.0959		
p-value (F-test)							0.0000		

Note: * Significant on the 10% level; Significant on the 5% level; *** Significant on the 1% level.**
Source: own calculations based on UMP survey

The magnitude of the influence can be found by taking *exp* (-1.512539) = 0.22, hence being the receiver of remittances lowers the odds of spending income primarily into consumption by some 78 %.

Chi2 statistics of Wald test is high enough to reject the null of joint insignificance of the model. The PseudoR-squared suggests that Remittances do not explain variability of dependant variable to the large extent and it would be probably convenient to add other variables into model, however, the basic impact of remittances is captured.

The similar analysis with same explanatory variables was performed for other 3 binary dependant variable: use of income for (re)construction of a house, use of income to pay for school and to invest in business. Again Logit, Probit and LPM were executed and results did

not differ from each other for all three models. Table 11 summarizes the results of the coefficient estimates only for the variable of the main interest – presence of remittances in household (is equal to 1 if household does receive any positive number of remittances in the last 2 years), results are displayed only for logit model.

We find that regarding (re)construction of house, remittances increase odds of spending money in this area significantly and the overall significance of model is valid since we can reject the null Hypothesis of joint insignificance of all explanatory variables.

Table 11: Results of logit, probit and LPM

Results for Logit model				
Dependent variable	***β***		***Robust SE (β)***	***p-Value chi2***
Income used for (re)construction of a house	.8790237	***	.2617051	0.0092
Income used to pay for school	.7222111	***	.2817604	0.1114
Income used to invest in business	.4945989		.4656554	0.0001

Note: * Significant on the 10% level; Significant on the 5% level; *** Significant on the 1% level.**

Source: own calculations based on UMP survey

Regarding spending income for schooling, remittances significantly raise odds of this kind of productive spending but the overall significance of the model can be questioned since p-value of test for joint insignificance slightly crossed 10 % level of significance and hence, we cannot reject that coefficients are jointly insignificant.

The model where use of income to invest in business is the binary dependent variable can be considered as valid model but the fact that a household does receive remittances does not explain the dependent variable significantly. Rather, class and income group positively influence odds of productive spending in business significantly.

Based on this result, the first part of *Hypothesis 2* stating that remittances are channelled into consumption can be rejected. Regarding the second part of *Hypothesis 2*, it was found that remittance-receiving households channel income in housing but as for the most productive investments – in human capital and in business – remittances do not have an effect.

5.4. Discussion of the main results

The analysis of determinants of migration with remittances and the amount remitted showed that odds of migration with remittances increases with age and, at the same time, the remitted

amount decreases with the age for those who already decided to migrate and remit money back home. Young individuals in productive age may not feel secure to migrate abroad and as they have lower status in the family than more mature household members, they may not be considered to be main providers of income for the household as a whole. Other explanation could be that younger individuals still believe that by staying in Ukraine they are able to improve their position and remuneration on domestic labour market. As for the negative relationship of age of migrants and amount of remittances, it might be implied that older migrants might not be able to work more hours or overtime because of their health and productivity (migrants usually take physically demanding jobs) and thus they do not have so much extra income to send.

Furthermore, men are more likely to migrate and remit money than women but for those who migrated and send remittances, the gender is not a significant determinant of remitted amount.

Being married, compared to being single, is not a significant predictor of migration and remittances but married migrants send considerably more money than single ones. Marital status thus does not explain motivation to migrate and remit money but it has some explanatory power regarding to amount of remittances. This implies that as most migrants come to the Czech Republic without spouse and other family members, having spouse (and possibly children and larger close family) motivate labour migrants to send more money home, which can be interpreted as an altruistic motive described earlier in this paper.

The migrant's income proved to be the strongest predictor of remitted amount which was anticipated in the research Hypothesis. Migrants who earn more also send more to their families, which might also imply altruistic effect.

The higher the income of Ukrainian household, the lower is the amount of remittances received from the Czech Republic. This might be explained by the fact that wealthier families already accumulated enough capital to run their own business and do not depend on remittances. This relationship can also be viewed as a result of altruistic motive of the person who chooses whether to migrate or not, or, in accordance with the viewpoint of the New Economics of migration, as a strategy of household to send a member abroad to ensure additional income for the family. The migrant or migrants who would otherwise live in Ukraine and spend the money made abroad might choose to provide their own living by residing and working in another country (without paying too much attention on saving and remitting to Ukraine). Thus, insurance motive might play its role as well.

From the second part of our analysis, it becomes apparent that families that receive remittances are less likely to spend substantial part of their income on the consumption of

food and clothes than households that do not receive any remittances. This is one of the key finding as the literature more or less agreed that remittances have positive potentials once they are not spent into consumption. Furthermore, families that receive remittances are more likely to spend their income on construction of new house, which can be considered as productive spending. However, it was not confirmed that receiving households are more likely to invest into own business or human capital.

Our results are corroborated by the similar research on remittances conducted in the other parts of the world (for instance in Mexico and Latin America within the framework of MMP and LMP) (for example see Massey, Durand and Pren, 2011). Nevertheless, it has to be emphasized that relevance of the interpretation of results are naturally limited by the sample of observations and thus may be relevant mostly to the region of Zakarpat'ye.

6. Conclusions and policy implications

This paper clearly shows that there is no clear consensus on the effect of either migration, or remittances, across the literature. The positive fact is that researchers focus on the topic of remittances and especially their development potentials quite intensively. Opinions based on empirical research are divided into more branches according to the support that was found in favour or against the remittance potential in the area of development and growth. Also, opinions of compromise arose claiming that remittances undoubtedly influence the well-being and poverty in some areas but it is not reasonable to consider them either reliable or the most important development drive.

When it comes to analysing certain aspects of the migration corridor of Ukraine – the Czech Republic, our results show that the main determinants of the decision whether to migrate, in order to provide own families with additional income, are demographic characteristics and income of the receiving household. The level of education does not affect the decision. Further it was found that the remitted amount depends, not surprisingly, mainly on the labour migrant's income in the Czech Republic. No statistical significance was found in the relationship between the remitted amount and the income level of the receiving household. Most importantly, we did not find any support for channelling remittances primarily into non-productive consumption in the data. On the other hand, no other productive spending besides the spending on house construction was confirmed either. These findings correspond with the results in several research papers and can contribute to a deeper insight into the topic and even

lead to some policy implications. Nevertheless, it has to be emphasized that relevance of the interpretation of results and policy implications derived from results are naturally limited by the sample of observations and thus may be relevant mostly to the region of Zakarpat'ye.

Good understanding of determinants and motives that are interconnected with them should be helpful for policymakers on both sides of the migration corridor (i.e. the Czech Republic and Ukraine) to formulate proper policies that aim at influencing the migration and remittances flow. As the relationship between odds of migration with remittances is rising with lower household's income, remittances can be viewed as a strategy to alleviate poverty among households. By contributing to the quantities and qualities of the network between the Czech Republic and Ukraine and providing more information about the possibilities on the labour market, policymakers could substantially enhance the positive effects of these strategies.

The fact that the households which receive remittances do not channel the income primarily into consumption and are even more likely to spend the income in (re)construction is another argument to support this strategy, as long as we believe in positive effects of remittances once they do not lead just to the increased consumption. Ukrainian policymakers can support young workers from areas of high unemployment or of high excess of labour supply to temporarily move abroad, send remittances and then come back with the acquired knowledge. At least in the region of Zakarpat'ye, the support for this implication was found in the data from the questionnaires.

Further, it was not confirmed that remittances increase odds of spending income on business and investment or schooling. An improvement of environment of establishing new business (focus on transparency, simplicity and provision of good information to public) and/or lowering the tax burden of remittance receivers would probably positively influence the odds of spending remittances more productively. Again, it is assumed that productive spending would have positive effects on the economy of certain regions of Ukraine; in this analysis, Zakarpat'ye region.

From the preliminary analysis of the data, it seems that informal channels of sending remittances (usually cash send via friends or family members or in person) are most frequent. Lower fees or higher accessibility of formal services would probably result in higher share of migrants using formal way of sending finance to Ukraine.

Regarding the policy implications for both Ukrainian and Czech stakeholders, we might conclude that positive economic and political development in Ukraine would highly probably lead to the diminishing number of outward migrants from Ukraine to the Czech Republic. When it comes to the Czech migration policies, the results of this paper suggest that there is

hardly anything that can be done locally, in the Czech Republic, to influence the inward Ukrainian migrations, since migration and remittances are mostly determined by demographic characteristics. However, one implication can be made: instead of the making the inward migration to the Czech Republic (or other CEECs) more difficult (e.g. by introducing new visa and employment regulations for migrants from the East), the policymakers should think about easing the regulations, enabling thus the potential migrants to enter the country, engage in paid employment and remit back home. Their remittances will increase the standard of living in the East which, in turn, will lead to the decrease in incoming Eastern migrations to the CEECs. Our findings clearly show that the inward migrations to the Czech Republic (or to other CEE countries) might be reversed by enhancing the well-being of migration-originating households and that remittances represent the best means for doing so. Of course, this must go hand in hand with deep transformation measures/changes that will, step-by-step, improve the socio-economic conditions of Ukraine.

Despite some limitations, the outcomes of this paper might enrich the knowledge and public awareness on migration and remittances. They might also contribute to this issue from the perspective of basic and applied research (policy implications for the construction of migration and development policies in the Czech Republic and in other CEE countries where the situation might be similar, or for designing comprehensive statistics of remittances). Further research that would capture more extensive area in Ukraine and thus more representative sample would be justified and likely beneficial.

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