REMITTANCES AND HOUSEHOLDS' INVESTMENTS IN UKRAINE

by

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Abstract

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Remittances in developing countries are often considered one of the main sources of external finance. Ukraine is no exception – over the last ten years the inflow of remittances from Ukrainian migrants increased in five times. Apart from positive macroeconomic effects, the remittances influence households on the micro level, raising their income and, consequently, changing consumption patterns. The following research by using the Ukrainian Longitudinal Monitoring Survey and addressing the self-selection issue tries to determine whether Ukrainian households treat their remittances as transitory income and invest larger share in human and physical capital. The main findings of this research, are the following: irrespective of the source of the remittances, the households receiving them spend less on food and more on health; households receiving international remittances spend less on education, but significantly larger share on housing.

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Chapter 1

INTRODUCTION

Remittances sent by international migrants to their countries of origin constitute the largest source of external finance for developing countries after foreign direct investment. According to the World Bank Data, the top three countries largely dependent on remittances inflow in 2014 are Tajikistan, with remittances amounting to 41.7% of GDP, Kyrgez Republic – to 30.3% of GDP and Moldova 26.1% of GDP (see figures 1-3). While the amount of Ukrainian remittances is larger in 2 times than Tajikistani, they comprise 5.6 % of GDP. However, the amount is still significant, since even Zaporizhia oblast created only 3.6 % of GDP in 2013 (State Statistical Service of Ukraine, 2015).

Furthermore, according to International Fund for Agricultural Development (2015), Ukraine is a leading receiver of remittance flows from European Union. In particular, from the US$ 109.4 billion that migrants sent to lower-income European countries and to the developing world in 2014, US$ 7.587 billions were sent to Ukraine. The second and third places are held by Poland and Romania, with US$ 7.466 billions and US$ 3.431 billions respectively.

European Union countries are first among destinations of Ukrainian emigrants – 56.3% of Ukrainian emigration stock reside there. The United States holds 18.8% of migrant stock, Israel – 13.8% and Russian Federation – 5%. The fact that economic turmoil persists to afflict the citizens of Ukraine induce us to conclude that the Ukrainian emigrant stock may increase, and increase in remittances may follow.

The amount of remittances received by Ukrainian households instigates the research of the role it is playing in the economy. Since Ukrainians are inclined to migrate to countries with much higher average wage than in Ukraine, the families staying at home and receiving remittances may benefit from it much higher than from domestic income. Moreover, the whole country can benefit as well; remittances may become a source of investments, auspiciously affecting the productivity and employment in the country, in its turn promoting the overall growth.

Thus, the evaluation of remittances' effects on the domestic economy can be conducted on two levels: micro and macro. The first level concerns the expenditure patterns of households receiving remittances. The surveys prior to 2010 showed that remittances are used mainly by Ukrainian households for consumption of durable goods, housing, education, less frequently it is spent to repay debts, to save or buy healthcare products and services (Kupets, 2012). However, no rigorous research was conducted using intricate empirical methods. Moreover, since 2010 the country experienced growth in remittances, perhaps due to economic calamity, the expenditure patterns could have changed.

The raise in remittances may be also attributed to the improvement in statistical gathering of data or increased awareness of financial intermediation. Furthermore, the estimated share of remittances to be sent through unofficial channels varies from 15% to 200% of reported remittances, which speaks in favor of decreasing the fee of financial intermediation in remittance transferring to cause the accretion of currency in international reserves.

The expenditure patterns of households will define the overall effect of remittances on the economic development. Miscellaneous studies substantiate the fact that remittances are more frequently used to make savings. In its turn,

this increases the capabilities of financial intermediaries to extend credits and give additional stimuli for investments. Consequently, the macro level effect of the remittances can be studied in terms of its impact on investments.

However, the negative influence of remittances is still possible. For instance, since remittances are often used for housing, it may bring inflation to the real estate sector. Since remittances are also used for gaining education, it may lead to a skill mismatch and employability. The absence of parents, willing to seek income sources abroad, may have a negative impact on children in the form of psychological aberrations and poor performance at school (Kupets, 2012).

Thus, the goal of this research is to determine the impact of remittances on savings decisions and expenditure patterns of Ukrainian households and investments in Ukrainian economy. The expected results is that Ukrainians treat their remittance earnings as transitory (rather than permanent) income, and since the marginal propensity to invest out of transitory income is higher than for other sources of income, savings and the expenditure on education and housing would be higher for households receiving remittances (Adams, 1998).

The paper is structured as follows. Chapter 2 gives an overview of the literature related to the past and recent studies of remittances; Chapter 3 describes the data and methodology of research; Chapter 4 describes the estimated results; finally, Chapter 5 contains policy implications and conclusions.

Chapter 2

LITERATURE REVIEW

The definition of remittances is lucid and exerts no controversy in economic literature. Remittances are household income received from abroad, resulting mainly from the international migration of workers. The official channels of sending remittances are international money transfer companies, such as Western Union and Money Gram, along with banks (Yang, 2011). The informal channel encompasses the transfers of funds out of legal foreign exchange transfer framework, such as Hawala (Jost and Sandhu, 2000).

A common remittance transaction includes the following steps: first step is for a migrant to contract with an agent; second constitutes the transmission of the money to the agent via cash, check, credit card, or other debit instruction; within the third step the agent directs its own affiliate in the receiving country to convey the remittance to the beneficiary (Singer, 2010).

The theory behind research of remittances is tightly interconnected with the theory on migration, which in fact underwent a substantial change in recent decades. The evolution of the thought on the influence of migration on economic development was accompanied with vacillations between "migrant pessimists" and "migrant optimists". According to Hein de Haas (2010), the recent theory cycle is imbued with optimism; it started in 2001 and stresses the importance of remittances.

The optimistic view takes its roots from neoclassical theory, which states that migration contributes to optimal allocations of labor in destination country and country donor of migrants (Todaro, 1969). The free movement of labor also

ensues the increase in wages in the migrant sending country, since the outflow results in scarcity of labor; hence, the theory predicts that the migration stops when the wage levels in two countries equalize (Massey et al., 1998).

However, the neoclassical theory disregards the role of remittances (Taylor, 1999). It perceives the migrants as utility-maximizing agents and ignores their altruistic motives that include helping their families (Hein de Haas, 2010).

On the contrary, the new economics of labor migration (NELM) contends that migration is a strategy chosen collectively by a household to increase income, raise money for investments and insure against income risks. Hence remittances relax the income, production and investment constraints predetermined by poor economic environment in the country (Taylor, 1999).

Another optimistic theory regarding migration and remittances is the development theory. Rooted in studies on European and American rural-urban migration, the theory underscores not only a positive impact of money brought back with migrants, but also the effect of knowledge, ideas and entrepreneurial spirit. Furthermore, migration was deemed to meliorate the income distribution and quality of life. Migrant workers also were anticipated to invest significantly in firms in the country of origin. On the macro level, remittances were supposed to be a crucial source of hard currency (Hein de Haas, 2010).

The empirical studies aiming at corroboration of remittance's importance, do it on two levels: micro and macro. S. Bertoli & F. Marchetta (2014) using the data for Ecuador showed that the receipt of remittances is estimated to reduce the share of poor households among recipients between 17.4 and 20.8 percentage points.

The poverty reduction effect was also confirmed on a larger scale. The low-income and middle-income countries, as defined by World Bank (2000), were used to estimate the role of international migration and remittances in diminishing poverty (Adams, 2005). While instrumenting for endogeneity of international migration and controlling for the income level, the estimation showed that 10% increase in remittances per capita, on average, leads to 3.5% decrease in share of people living on less than US$ 1 per day. Similarly, the 10% increase in share of migrants in the population of the country leads to 2.1% decrease in poverty rate.

Apart from alleviating poverty of the family and finance consumption, migrants might also send money back home for self-interested reasons, such as to provide for the maintenance or expansion of existing investments (businesses, land, etc.) that they left behind, or the repayment of loans (Singer, 2010). Moreover, there is such a phenomenon as remittance investing; according to Sameera Fazili (2009), migrants pursuing such investment, may be willing to invest in low-yield projects in return for the social and emotional return of seeing positive developments in their home region. In Catalonia and Marseilles, Moroccan emigrants have done just that, establishing associations to pool their funds and channel them into infrastructure and development projects in Morocco.

More on motives to remit can be found in the paper of Robert E.B. Lucas and Oded Stark (1985). Among self-interested reasons to remit, they distinguish the desire to inherit, invest and return home. The first one concerns the fact that actions of a person influence his odds of receiving the inheritance, consequently, by remitting more he increases his chances. The last one is about improving the material and social conditions in the homeland; it also includes enhancing prestige by being perceived as caring and solicitous altruist. Moreover, the authors identify the enlightened self-interest or tempered altruism which covers a number of

contractual agreements between the household and the migrant. For instance, sending one of the family members abroad as a way to insure against risks and shocks to family income or property.

Charles W. Stahl and Fred Arnold (1986) studied the consumption patterns of Asian countries and found a difference between expenditure patterns for households receiving and not receiving remittances. For instance, in India the major portion of remittances to Kerala are used to meet the basic consumption needs of receiving households. Furthermore, at low levels of remittances the major investment is in land. With a rise in remittances there is a shift towards the purchase of jewelry and then to buildings.

Migrant households in Philippines primarily use remittances to fulfill the basic consumption needs. Remittances beyond this are devoted principally to debt repayment, house building or home improvement, consumer durables and education. Overseas contract workers save a significant portion of their overseas earnings in Philippines, although they do not personally invest these savings in productive activities to any great extent. Bangladesh and Thailand display the similar pattern.

Richard H. Adams (2013) studied the impact of remittances on expenditure patterns. Using two stage multinomial logit model he found that households receiving internal or international remittances are inclined to spend 3.3% or 5.7% more, respectively, on housing than the amount they would have spent with absence of remittances. Besides, such households spend more at the margin on health. Specifically, households getting remittances spend 0.8% (if internal remittances) or 3% (if international) more, respectively, on health than without obtaining remittances. At the mean, households receiving remittances, internal or from abroad, spend 1% or 2.4% less at the margin, respectively, on food than

what they may have spent without remittances. Moreover, families receiving remittances spend more at the margin on their education. At the mean, families receiving internal remittances spend 1.9% more at the margin and those receiving external spend 3.6% more, on education.

Furthermore, Adams (2013) estimated multinomial probit model with the dependent variable of probability being poor and found that receiving international remittances in Ghana reduces the probability of being poor substantially, specifically by 96.6%.

Concerning the reduction of poverty on macro level, remittances were shown to contribute higher than just with the initial amount of inflow to the country. In particular, Durand et. al. (1996) found that each dollar sent to Mexico generates 4 dollars in demand for goods and services. Furthermore, the households that do not receive remittances also face an auspicious effect. For example, construction laborers, lumber producers, and day laborers advantage if remittances are used for home construction (Kapur, 2005).

Paola Giuliano and Marta Ruiz-Arranz (2008), using cross-country series for remittances covering a large number of developing countries over the period of 1975–2002, found that remittances foster growth. They estimated the dependency of GDP growth rate on inflow of remittances adding financial development indicators and their interaction with remittance variable, since better financial facilitations mitigates money transferring. Furthermore, the amount of remittances and efficiency of financial market may rise with higher GDP growth rates engendering the upward bias in two estimates. To address the endogeneity problem, they apply the system generalized method of moments regression. Literature offers other methods, for example, to use variables that are not subject to reverse causality, such as creditor rights (La Porta et al.,1997). Rajan

and Subramanian (2005) use the distance from the country of origin as an instrument for remittances. Though, these variables possess the downside in being static over time.

As a result, a positive effect of remittances and a negative interaction is observed; consequently, the marginal impact of remittances on growth diminishes with the increasing level of financial development. Without proxies for the financial development the estimates do not appear to be statistically significant.

Furthermore, they estimated the impact of remittances on investments to GDP ratio, and found that the marginal impact of remittances on investment ranged between 0.2 and 0.4 at the median level of financial development.

Additional favorable effect of remittances concerns their countercyclical nature: migrants send more money to their families when their home countries experience economic downturns, financial crises, or natural disasters. Moreover, adverse circumstances often trigger more migration, which then results in greater remittance inflows. This induces countries, which have a substantial inflow of remittances, to set fixed exchange rate and not to worry about forsaking domestic monetary policy autonomy (Singer ,2010).

David Singer (2010) conducted the analysis of data for 74 developing countries from 1983 to 2004, and found that when remittances increased by 0 percent to 10 percent of GDP—the probability of fixing the exchange rate increased from 6 percent to 12 percent.

The research of remittances sent by Ukrainian migrants usually concerns only one country of migrant destination. Wadim Strielkowski et. al. (2012) studied the case of Ukrainian migrants in Czech Republic. They found that the probability of migration depended on gender, age, size and income of the household, while

education had no significant effect. Thus, men are more likely to migrate and remit, the probability of remitting rises with age, though decreases for those who already decided to migrate. Moreover, they estimated the probabilities of spending on several categories. Households that receive remittances are more likely to spend less on consumption of food and apparel, but more likely spend it on housing.

Olga Kupets (2012) without any rigorous estimation analyzed the influence of remittances on Ukraine. She contends that remittance flow is procyclical, it helped to mitigate the depreciation from ever increasing trade deficit during 2008 crisis; remittances are attributed to the growth of the construction sector, retail trade and real estate sectors, as well as transport and financial intermediation; also, it alleviated poverty in some Ukrainian regions.

Chapter 3

METHODOLOGY

The analysis of expenditure patterns is usually conducted with the help of Working-Lesser model. The widespread use of this model is explained by the fact that its functional form allows to study expenditures for a wide range of goods, health expenditures, housing, food, consumer durables and so on, besides, it mathematically permits to have different marginal propensities to consume (constant, rising or falling) for a wide range of expenditures, finally, the marginal propensities for all categories under research should sum up to one.

The functional form of the Working-Lesser model is the following:

$$\frac{C_i}{EXP} = \beta_i + \frac{a_i}{EXP} + \gamma_i(logEXP) \quad (1)$$

where C_i/EXP is the share of good i in the overall annual expenditure per number of family members EXP. However, due to the fact, that some idiosyncrasies of households may influence the amount of expenditures on a particular good, the model is augmented:

$$\frac{C_{mi}}{EXP} = \beta_{si} + \frac{a_{mi}}{EXP} + \gamma_{mi}(logEXP) + \sum_k \left[\frac{\varphi_{mik}Z_k}{EXP} + \theta_{mik}Z_k\right] +$$

$$+ \sum_l \pi_{mil}\lambda_{il} + v_{mi} \quad (2)$$

where Z_k – kth characteristic of the household, λ_{il} – inverse Mills ratio, where $l \neq m$. The model is estimated with a two-stage multinomial logit by Dubin and McFadden method (1984), since there is a concern for self-selection. Specifically,

households may have unobservable characteristics that affect their decision to receive remittances and are different from households not receiving remittances and should be considered in estimating household expenditures. Thus, the first stage estimates the polychotomous choice model, where we assume that households make a decision about remittances. Specifically, there are three options in the range of decisions (denoted by m in the (2) equation): not to receive remittances, receive internal remittances and receive international remittances. The multinomial logit is utilized for this stage:

$$Prob(Y = m|Z) = \mathrm{f}(\tau_m + \sum_k \omega_{mk} \mathrm{Z}_k + \sum_a \xi_{ma} \mathrm{InstrVar}_a) \quad (3)$$

The variable λ_{il}, from the (2) equation, inverse Mills Ratio, is meant to address the issue of the self-selection and it is calculated after the first stage. Specifically, λ_{il} is the selection correction variable that takes the following form:

$$\lambda_{il} = \frac{P_l}{(1-P_l)} lnP_l + lnP_m \quad (4)$$

where P_m is the probability of choosing the m^{th} expenditure category and P_l – the l^{th} correspondingly. Furthermore, from the (2) equation, $\pi_{mil} = \sigma_{mi} r_{mil}$, where σ is the standard deviation of u_m, and r_{mil} is the correlation coefficient between u_s and unobserved factors, which follows type I extreme value distribution.

The proper instrumental variable is crucial for obtaining valid estimation results. There is a number of variables commonly used in remittance research and most of them appeal to the historical migration patterns in regions. Hanson and Woodruff (2003), in the paper which study the effect of sending the family member abroad on education completion of children in Mexico, uses the interaction between household characteristics and state migration rates which

reflect the solidity of regional migration networks. The interaction is needed to insure that the instrument varies not only among states, but also among households. Furthermore, the accessibility of the migration network may influence the migration behavior of the household differently, considering the characteristics of the household.

Munshi (2003), studying the job networks of Mexican migrants, utilizes the fact that the rain-fed agriculture is a predominant employment in origin-community networks. Therefore, he uses data on rainfall in communities to instrument for the size of migration networks in the country-destination. The paper of Woodruff and Zenteno (2007) again concerns the influence of migration networks, but this time, financial soundness of microenterprises is in the center of the research. The instrument is the distance between the capital of the state where the migrant was born and the nearest train station as if it was in the early 1900s.

Adams (2013), apart from the mentioned instruments uses the unexpected rate of job creation, obtained as the difference between an AR(1) process for the job creation rate and the observed job creation rate in the destination of the migrant.

The following research tries to capture the effect of migration networks and historical migration patterns employing the average emigration rate during 2002-2007 in the oblast, dummies for Ukrainian macroregions (West, Center, East-Center, East and South) and unemployment rate in the oblast in 2007. The dummies are expected to grasp historical idiosyncrasies of regions that effected migration. The unemployment rate reflects the availability of jobs in the oblast and, hence, the willingness to find it elsewhere.

Household's characteristics that are typically incorporated in the model are interconnected with motives to remit described in the previous section. If the migrants evince altruistic motives, then such variables as the number of family

members, total family income, total time of being ill by family members, number of children up to a certain age may well appear to be statistically significant. In the latter case the age can be chosen according to labor laws in the country; for instance, in Ukraine a person can work if he is 15 or older[1], hence, the probability to remit decreases with children reaching this age, because they can contribute to family wealth on their own.

The self-interest driven by the desire to own assets and maintain them can be caught by the corresponding variable of total value of assets, total area of land, etc. Robert E.B. Lucas and Oded Stark (1985) found that sons tended to remit more in Botswana than daughters if the household owned more than 20 units of cattle. Since cattle is the dominant inheritance asset in the country, the statistically different behavior of sons could indicate their interest towards maintaining the cattle.

Other characteristics of households include members with primary, secondary and tertiary education, age, gender, ethnicity, sector of employment, total population and migration rate in the area. The factors influencing the probability to remit similarly may influence the preferences towards particular categories of expenditure, since motives effect both the probability to remit and money spending.

Finally, after the second-stage estimation we calculate the effect of receiving remittances on the expenditures:

$$ATT_{jl} = E\left(MBS_j \middle| m = j\right) - E(MBS_l | m = j) \quad (4)$$

[1] The Law of Ukraine on Employment of Population from 05.07.2012 № 5067-VI

where MBS is the marginal budget share:

$$MBS_{mi} = \frac{dC_{mi}}{dEXP} = \beta_{mi} + \gamma_{mi}(1 + logEXP) + \sum_k [\theta_{mik} Z_k] \quad (5)$$

Thus, Average Treatment Effect on the Treated (ATT_{jl}) shows the difference between MBS for families that spend on category j, conditioning on the characteristics of the families that spend on j and MBS for families that spend on category l, conditioning on the characteristics of the families that spend on j. We expect ATT to be positive and statistically significant for housing and education expenditures, as well as health.

Chapter 4

DATA DESCRIPTION

The data for the following research comes from the "Ukrainian longitudinal monitoring survey 2007" conducted by Kyiv international institute of sociology at the request of the consortium consisting of IZA (consortium leader), Centre for Economic Reform and Transformation (CERT), Economics Education and Research Consortium (EERC) in Ukraine, and DIW, Berlin. The survey was carried out from May 1, 2007 till April 16, 2008 in all Ukrainian regions by 189 interviewers.

The survey of households sought to gather details about the wealth of Ukrainian families, sources and volumes of income, expenditures and consumption patterns, while the individual questionnaire was aimed at conglomerating the information on education, employment, job-searching strategies, health and migration of members of Ukrainian households. The final data set comprises 3101 household observations and 6774 individual observations.

Since the data contains missing values for some important variables, the number of households used in the research is lower. Moreover, some families reported very low level of expenditures on food products; hence, to avoid the problem of misrepresentation we exclude observations for which monthly food consumption is less than 200 hryvnias. Thus, the resulting sample contains 2864 observations.

Since the following research focuses on remittances, it is crucial to expand on the structure of the remaining sample in terms of its relation to migration. The number of households that do not receive any kind of remittances is 2541, which

is 88.72% of the sample. The next category of our interest is remittance receiving families. Those households that receive internal remittances constitute the greatest share of this category – 262 observations or 9.15%. The remaining 2.13% is the group of households receiving remittances from abroad; their exact quantity is 61. According to the survey of International Organization for Migration (2016), there are 4.4 % of Ukrainian households that have international long- or short-term migrants; 89% of them are labor migrants, while on average 66% of them remit regularly. Consequently, 2.6% of the households receive international remittances. Thus, in such terms our sample is representative, considering that the remittance inflows were smaller in 2007.

Table 1: Description of expenditure categories

Expenditure category	Description
Food	Processed grain products: bread, flour, macaroni; beans and cereals; vegetables; fruit, berries, seeds, nuts; milk and dairies; meat, meat products, eggs; butter, margarine, sauces; fish and sea products; tea, coffee, sugar, jams, sweets, salty bakery products; non-alcoholic drinks, alcoholic drinks, and tobacco products, etc.
Consumer goods, services and durables	Perfumes, cosmetics, hygienic means, tooth paste, shampoo, conditioner, shower gel, etc; household cleaning; books, newspapers, magazines; petrol, diesel engine fuel, lubricants; paycards for mobile phone and internet; clothes, footwear, underwear; fabrics, bed linen, tableware, kitchen utensils, water filter; watches, clocks, small electric goods; refrigerator; microwave oven; washing machine, tumble-dryer, colour television, computer, laptop, car etc.; municipal or local transportation, taxi services; cinema, theater, museums, concerts, etc.
Health	Medicines, medical treatment or examination, sanatoriums, sports activities; care for sick or disabled people.

Table 1(continued)

Expenditure category	Description
Education	Private lessons, tutors pay, textbooks; pay for education at higher educational establishments (colleges, institutes, universities, etc); pay for classes in interest circles, sections, training courses and tutors for adult family members.
Housing	Garage, dacha or other house, part of a house, garden house; apartment, part of an apartment; flat/house or other building repair/construction; house rent; repair/construction materials, etc.
Other	Pet food and other products for domestic animals; toys; baby-sitting, private nannies; medical treatment of pets; purchase of bonds, shares and other securities; insurance payments: life, health, vehicles, dwellings, etc.; repayment of credit, loans, debt; alimonies; vehicle tax; savings, to lend somebody, gifts, donations etc.

The other statistical data of great significance for the research is the information on expenditure patterns of Ukrainian households. Fortunately, the questions on this topic are presented abundantly in the survey. All expenditures are divided into six categories: food expenditures; consumer goods, services and durables; health; education; housing and other. The detailed description of expenditures entered into the each category is presented in table 1.

To calculate the expenditure shares, all respondents' answers were transformed into the uniform time measure. The averages of expenditure shares across the households differentiated by the remittance reception are displayed in table 2. As we can see, Ukrainians, irrespectively of the remittance, spend the predominant part of their budget on food items; however, there is a tendency for lower food

share in remittance-receiving families, especially for international receivers, where the difference is almost 7 %.

Furthermore, the second largest category is consumer goods, services and durables. Households without remittance supply spend on average 22.09 % of their total family budget on them. Internal remittance receiving households spend on average 2.06% more on consumer goods, services and durables, while families with migrant sending money from abroad spend 2.44% more on average than non-receivers do.

Table 2: Average expenditure shares

Expenditure category	Non-remittance-receiving household, %	Internal remittance-receiving households, %	International remittance-receiving households, %
Food	53.09 (19.79)	49.97 (19.51)	46.79 (22.39)
Consumer goods, services and durables	22.09 (14.93)	24.15 (15.42)	24.53 (14.93)
Health	03.75 (8.97)	04.17 (9.22)	04.28 (10.52)
Education	1.35 (6.67)	01.38 (5.01)	1.63 (5.98)
Housing	12.76 (13.36)	11.21 (11.25)	13.35 (15.18)
Other	6.96 (11.96)	9.13 (13.41)	9.75 (13.28)
standard errors in parentheses			

Health and education expenditures occupy larger share in the Ukrainian family budget, in case of international remittance-reception, which is in alignment with our hypothesis about transitory income. However, households with internal households spend on average almost the same, their budget share is higher only by 0.03% than for non-receivers. Moreover, the housing expenditures do not conform to our hypothesis either, since they are lower on average in the total expenditure structure for households receiving internal remittances. Particularly, the housing share is 1.55% lower in budgets of households that receive domestic remittances; although the hypothesis survives in the case of international remittances, the share is 0.6% higher for receivers of international transfers in comparison to the non-receivers.

Furthermore, other expenditures are higher for remittance receiving families; since it includes such items as repayment of debt, money lent to somebody, insurance and taxes, it possibly could be higher for families with migrants. For instance, because while initiating migration, the household incurs some costs, it may be partially covered by borrowing, consequently, the repayment of debt should increase thereafter. Regardless of the reason, this expenditure category is not in the limelight of our research.

The crucial characteristic of the adult members in the household is human capital, which plays a great role in determining the probability for the household of receiving remittances, since better-educated people can more easily find a job in other regions of the country or abroad. The table 3 summarizes the education characteristics of the households.

As we can see from the table 3, higher educational levels are more associated with remittance-receiving households. Note that the table does not give the average number of people with certain level of education, rather it tells us the average

number of family members which did not accomplish any higher level. For instance, for households receiving international remittances, there are on average 5 people for every ten households, which did not complete anything higher than secondary education; and 3 people for every ten households, which obtained only undergraduate degree.

Table 3: Human capital of Ukrainian households, mean number of people with certain level of education as their highest

Level of education	Non-remittance-receiving household	Internal remittance-receiving household	International remittance-receiving household
Secondary	0.6291 (0. 7738)	0.4923 (0.7044)	0.5409 (0. 6291)
Vocational school without secondary education	0.1819 (0. 4612)	0.1450 (0.4220)	0.0983 (0. 1819)
Vocational school with secondary education	0.3515 (0.6256)	0.3664 (0.6277)	0.3934 (0. 3515)
Technical community college	0.4698 (0.6581)	0. 3664 (0.5633)	0.4754 (0.6581)
Undergraduate education	0.3412 (0.6498)	0.4084 (0.6589)	0.2950 (0.6498)
Graduate school	0.0071 (0.0929)	0.0153 (0.1228)	0.0164 (0. 0929)
standard errors in parentheses			

Clearly, we can see that the number of people who completed only secondary education or vocational schools without secondary education is decreasing with the instance of obtaining remittance source of income, while the number of people with further levels of education exhibits the increasing pattern. Thus, for every hundred households from the non-receiving sample, on average only 7 finished graduate school, while it is 16 for the sample of households with remittances.

Table 4: Age structure of the households and characteristics of household head

Characteristic	Without remittances	Internal remittances	International remittances
№ of members at least 15 years old	2.7255 (1.1456)	2.3321 (0.9944)	2.8361 (1.2541)
min-max	1-8	1-5	1-6
№ of members 4 years old or younger	0.1354 (0.3688)	0.2405 (0.4946)	0.1639 (0.3732)
min-max	0-3	0-3	0-1
Age of the HH head	52.101 (13.133)	46.191 (16.263)	50.771 (13.648)
min-max	18-89	19-86	22-73
Gender of the HH head (1 for male)	0.4817 (0.4998)	0.4046 (0.4918)	0.4262 (0.4986)
standard errors in parentheses			

Furthermore, we have the following structure of the households: the average number of people over 15 years old is 27 for every ten non-receiving families, 23 for receiving internal and 28 for receiving external remittances. The number of kids under the age of 4 is 14, 24 and 16 for every hundred of non-remittance-receiving, internal remittance receiving and international remittance receiving households respectively.

The characteristics of the major decision maker in the family could also substantially effect the remittance receiving status. On average the age of household head is 52 if the household does not receive the remittances, 46 if receives the internal and 51 if international.

The statistics shows that females dominate the family; 51.8% of households have a woman as a household head in non-receiving and 57.3% in international remittance receiving households. For some observations, the household head was not reported or it was misstated that a kid is a head of the family. In order to cope with this problem we assigned this title according to age and gender. Thus, the oldest male representative but no older than 60 years old was assigned for a heading position; if all members are older, than the youngest male was assigned, and if there is no men, the female person is chosen.

Although, the land, as stated earlier, may increase the chances of receiving remittances, in our sample, non-receiving households have more area in possession – on average 130 meters squared, while households that receive internal remittances have 0.37 meters squared and no land belongs to international receiving families. Under more thorough scrutiny of the data, we find that there are lots of unreported observations and this indicator cannot be relied upon. The same relates to cattle records.

Considering the geographical structure of the households' residence, 68 % of the families that do not receive any kind of remittances live in urban area, 71 % of the households that receive internal remittances also live in urban area. However, the share of rural population among households that receive international transfers is much higher and reaches 43 %, correspondingly the urban population makes up 57 %. Furthermore, the largest share of households receiving internal remittances resides in Vinnitsya, Kyiv, Zaporizhia, Kharkiv oblasts and Autonomous Republic (45 % cumulative), while the largest share of international receiving households live in Ivano-Frankivsk, Kharkiv, Chernivtsi oblasts and Autonomous Republic (50 % cumulative).

Almost the same oblasts, but in a different order are the destination regions of internal migrants: Vinnitsya oblast, Kyiv oblast, Autonomous Republic of Crimea and Kharkiv oblast (53.3 % cumulative). The main country destination among international migrants is the Russian Federation, which hosted 52 % of the migrants from the sample. Additionally, top countries are Italy (18%), Czech Republic (7 %), Germany (5%), Israel (3 %) and other. Note that in our analysis migrants are considered only if they remitted some part of their income back to the their families.

Based on the information provided earlier, the variables for further estimation were constructed. The estimation procedure involves two sets of dependent variables. The dependent variable in the first stage takes three values: 1 if the household do not receive remittances, 2 if receives internal remittances and 3 if receive international remittances. The second stage involves budget shares described earlier.

The human capital is represented by two dummy variables. The first one takes the value one if there is someone in the family who completed secondary or

vocational school without secondary education but did not move further in terms of education. The second takes the value one if there is someone in the family who finished technical college, completed undergraduate or graduate education. The age structure of the household is represented by two variables: the number of members under 4 years old and number of members over 15 years old.

Furthermore, since the survey contains a lot of unreported data on land and cattle ownership, but very well represents the information on consumption of the products that were produced within the household, we include the latter. Moreover, such variables will better fit into the model since they reflect not only the fact of the ownership of the land or cattle, but also the intensity of its utilization. Thus we include the variable that shows how many kilograms of vegetables were consumed, produced by the household and the variable which shows the same information, but for the meat.

In our first-stage estimation we have three instrumental variables: mean unemployment rate multiplied by the age of the household head squared, internal emigration rate multiplied by the age of the household head squared and the international emigration rate multiplied by the age of the household head squared. The age variable is squared to reduce the interaction with already included household head age.

The information on the unemployment rate and migration rates is taken from the State Statistics Service of Ukraine. The rates are presented in tables B.1-B.3 in appendix. As we can see, Chernivtsi, Rivne, Ternopil and Zhytomyr oblasts outpacing other Ukrainian regions in terms of unemployment rates; the value of the indicator ranges from 9.7 % to 10.15 % for them. The lowest unemployment rate is oberved in Kyiv city with only 3.5 %.

Cherkasy oblast is the leader of internal emigration with 20 per 1000 people, Vinnitsya oblast (the main provider of internal migrants in our sample) is the fifth and its average internal emigration rate is 18.85 per 1000 people. According to the table B.3, the Autonomous Republic of Crimea is the top region in terms of international migration rate; the average rate here was 1.9 per 1000 people during 2002-2007 years. Kharkiv and Chernivtsi oblasts are also listed in top ten regions.

Macroregional dummies are also treated as instrumental variables, since each region has its historical and infrastructural idiosyncrasies that may define the internal and external migration flows. On the other hand, we expect that the consumption patterns are not statistically different across macroregions, when we control for the determined set of factors. The structure of the macroregions is decomposed in the table 4.

Table 5: Macroregions' structure

Macroregion	Region
West	Chernivtsi, Ivano-Frankivsk, Lviv, Ternopil, Volyn, Zakarpattya;
Center	Cherkassy, Khmelnytsky, Kirovohrad, Kyiv, Rivne, Vinnitsa, Zhytomyr;
East-Center	Sumy, Poltava, Dnipropetrovsk, Chernihiv;
East	Kharkiv, Donetsk, Lugansk;
South	the Autonomous Republic of Crimea, Zaporizhia, Mykolaiv, Odessa, Kherson.

Due to the fact that we exclude the instrumental variables from the second stage and due to the nonlinearity of the estimation, we have the identifiable model.

To conclude, the statistics shows some differences between households receiving remittances and not receiving them in human capital, age structure, land ownership, expenditure shares and household's head characteristics. Considering the budget shares, the most dramatic distinction is observed in food consumption. There is more than 6 % difference in shares allotted for food items between households with remittances sent from abroad and households without remittances. As was expected, on average the former spend less on food, more on consumer goods, services and durables, health and education, however, less on housing; though we cannot make any formidable conclusion before examining the estimation results in the next section.

Chapter 5

EMPIRICAL RESULTS

As was delineated previously, to conduct the analysis of the marginal spending behavior, we initially have to follow two-stage estimation procedure with selection correction technique of Dubin and McFaden. The first part of the estimation procedure includes the estimation of the polychotomous choice model with multinomial logit, where households have three options available: to not receive remittances, receive internal remittances and receive international remittances. The results are presented in table 6.

Table 6: First stage multinomial logit results

Variable	Receiving internal remittances		Receiving international remittances	
	Coef.	Marginal effects	Coef.	Marginal effects
constant term	1.8694*** (0.6045)		0.2916 (1.0225)	
Dummy for secondary and vocational education without secondary	0.2227 (0.1757)	0.0174 (0.0143)	0.2999 (0.3643)	0.0054 (0.0073)
Dummy for vocational education with secondary, undergraduate and graduate education	0.5427*** (0.1977)	0.0422*** (0.0161)	0.7759* (0.4398)	0.0141 (0.0089)
№ of members at least 15 years old	-0.5077*** (0.0889)	-0.0407*** (0.0071)	-0.2055 (0.1367)	-0.0029 (0.0027)
№ of members 4 years old or younger	0.4162** (0.1824)	0.0335** (0.0149)	0.1228 (0.3409)	0.0015 (0.0067)
Age of the HH head	-0.0651*** (0.0160)	-0.0051*** (0.0013)	-0.0766** (0.0305)	-0.0014** (0.0006)

Table 6 (continued)

Variable	Receiving internal remittances		Receiving international remittances	
	Coef.	Marginal effects	Coef.	Marginal effects
Gender of the household head (dummy for male)	-0.3045** (0.1524)	-0.0241* (0.0124)	-0.2696 (0.3117)	-0.0046 (0.0062)
Vegetables consumed that were produced in the HH	-0.0019** (0.0007)	-0.0002** (0.0001)	-0.0014** (0.0006)	-0.0000* (0.0000)
Dummy for urban area	-0.0627 (0.2060)	-0.0034 (0.0166)	-0.7364** (0.3339)	-0.0144** (0.0066)
Unemployment rate*HH head age	-0.0001*** (0.0000)	-8.31e-06*** (2.51e-06)	0.0000 (0.0000)	0.0000 (0.0000)
Internal emigration rate * HH head age	0.0001*** (0.0000)	5.31e-06*** (1.41e-06)	5.29e-06 (0.0000)	-0.0000 (0.0000)
International emigration rate * HH head age^2	0.0000 (0.0001)	0.0000 (0.0000)	0.0004*** (0.0001)	7.14e-06** (3.01e-06)
Macroregional dummies	joint significance at p-value of 0.000			
Pseudo R^2 =0.14, standard errors in parenthesis, * p<0.10, ** p<0.05, *** p<0.01				

The observations were weighted with weights provided in the survey. The base outcome is households that do not receive any remittances. For receiving internal remittances, all variables are highly significant; only international migration rate does not have any statistically significant effect, which is irrelevant for this outcome, and dummy for secondary and vocational education without secondary. On the other hand, more advanced levels of education have a more substantial effect on the probability to receive internal remittances, in fact the probability is 4.2 % higher on average relative to the base outcome holding other variables constant.

The number of adults in the household has a negative effect, as expected; the higher the number of people the lower the need and motivation for additional sources of potentially higher income. The number of children in the family could influence the remittance decision in two ways; firstly, we could expect that the presence of little kids would restrain an adult to leave for the sake of nurturing. However, since parents are not the only people that could migrate, the effect can be the opposite – an adult from the household would leave incentivized to provide funds for nurturing. On the other hand, if someone migrated before the birth of a new household member and never remitted, he would also be encouraged to remit. The sign in our estimation is positive, meaning that the second or the third effect is observed and children at or under age 4 increase the probability to receive transfers. The specific age was determined by the experiment, among 4, 5 and 6 years it showed the most significant effect.

The nonlinearity of the impact of age of the household head was corroborated. The probability to receive internal remittances decreases with decreasing pace, since the squared term is positive. Moreover, the estimation showed that if the household head is a man, the probability falls by 2.4 % on average holding other variables constant. The survey of IOM (2016) shows that males more frequently engage in migration, therefore if the head is a man and he decides to migrate, than the woman will be more likely to be reported as a head of a household.

The agricultural components of our estimation indicate that the intensity of land usage and the scope of utilization of domestic animals[2] negatively influence the chances of receiving remittances. Either because the migrant is convinced that the household can cope very well without his transfers or because the act of

[2] The consumption of meat produced within the household was omitted, so not to waste the degrees of freedom, since it showed no statistical significance for the third outcome and for the second stage estimation.

migration never happens in the first place. Eventually, there is a chance that high levels of consumption of own agricultural products is a sign of a successful farm business.

The instrumental variables of interest, that is unemployment rate and internal migration rate interacted with household characteristic which is the age of the household head squared in this case are jointly significant at p-value of 0.000. Moreover, the Wald test shows that all instrumental variables are jointly significant at the similarly low p-value, therefore confirming the relevance for the estimation. In terms of economic significance, only the unemployment rate raises some doubts and is counterintuitive at a first glance, as it has a negative sign, meaning that the probability of receiving remittances decreases if the household resides in the area with high unemployment rate. However, the explanation may lie in the fact that the term is interacted with the head age. The older the person is, the harder it is to find a job, so if the person is struggling to find a job in his native region, he may be demotivated to look for it in other places, or if he has one be apprehensive about giving it up, knowing that it is hard to find. It should be noted, however, that the unemployment rate devoid of interaction exhibit positive and statistically significant relationship with probability to obtain internal remittances; nevertheless, we cannot leave it like that in the model.

Proceeding to the third outcome with international remittances, we observe that the coefficient on the high education dummy is higher than for the second outcome. Consequently, the relative probability of receiving international remittances rather than not receiving is higher than the relative probability of receiving internal remittances rather than not receiving at all for families with better educated people. In fact, if we raise the Euler's number to a power of the difference between these coefficients, we will get 1.263; thus, the relative

probability of receiving international remittances rather than receiving internal is higher by 26.3 % for better educated families.

The variable denoting the number of members over 15 years old is statistically significant at p-value of 13 % for the third outcome and, exhibits some negative relationship with the probability just as in the second outcome. Thus, again, the increasing amount of people negatively influence the likelihood of obtaining remittances.

The vegetables consumption is still significant for the international remittance outcome. Apart from it, the urban dummy is significant, which was not for the second outcome. It tells us that if the household resides in the urban area, the probability to receive remittances declines by 1.44 %. So rural population has higher chances for international money transfers if we control for other factors, including vegetables consumption out of own production, that is the main occupation in villages; consequently, the variable should capture the effect for those who are not so successful in farming. Although, the urban population may have better chances to migrate, we accentuate on the instance of receiving remittances and not migrating.

The next step of the estimation consists of calculating inverse Mills ratios, and estimating the second stage for each expenditure category and remittance status. The results of the estimating twenty-one equations are presented in the tables C.1-C.3 in appendix. Variables divided by the annual expenditure are omitted from the output. Since the two-step estimation may lead to overstatement of standard errors, the bootstrapping procedure is recommended to eradicate the problem (Adams et. al., 2008). However, the bootstrapping for the survey data is more complex and requires setting the characteristics of its design and data collection, which for the sake of avoiding the identification of the households is

omitted. Thus, we proceed with OLS, however, using weights provided in the survey.

All models exhibit overall significance. Furthermore, the average R-squared for models of households without remittances is 12%, for households receiving internal remittances it is 19%, while for families receiving international remittances it is 49%. The models for food, consumer goods, services and durables and housing have the highest R-squared.

The inverse Mills ratio (denoted by λ in the tables C.1-C.3) is significant for three equations considering non-receiving households, for five equations considering internal remittance-receiving households and for two equations considering international remittance-receiving households, consequently, the selectivity bias is pertinent for our case and would lead to erroneous results if it was not taken into account.

The penultimate step in the estimation consists in calculating marginal budget shares and counterfactual marginal budget shares. The results are displayed in table 7. The counterfactual MBS in the fourth row in the table 5 is the share that would have been pertained to the households receiving internal remittances, if they had received none. It is attained by applying estimates in table C.1, of non-receiving households, to equation (5) and using observations that have status of receiving internal remittances. The counterfactual MBS in the sixth row in the table 5 is the budget share that would have been possessed by the households receiving international remittances, if they had not received any. Similarly to the previous case, it is obtained by applying estimates in table C.1 to equation (5) and using data for families that receive international remittances.

Table 7: Marginal budget estimates

Expenditure category	Estimated MBS for HH not receiving remittances	HH with internal remittances		HH with international remittances	
		Estimated MBS	Counterfactual MBS	Estimated MBS	Counterfactual MBS
Food	0.4010	0.3521	0.3684	0.3042	0.3513
Consumer goods, services and durables	0.2527	0.2828	0.2702	0.2571	0.2707
Health	0.0527	0.0636	0.0536	0.0650	0.0538
Education	0.0264	0.0195	0.0227	0.0178	0.0332
Housing	0.1508	0.1385	0.1585	0.2178	0.1561
Other	0.1165	0.1434	0.1265	0.1381	0.1349
Sum	1.0001	0.9999	0.9999	1.0000	1.0000

The final step is accomplished by subtracting counterfactual MBS from the estimated MBS, thus, getting the average treatment effect. The resulting average treatment affects are presented in table 8; the standard errors are obtained by applying bootstrap procedure with 1000 repetitions. As we can see, the share of expenditures on food is lower for both instances. Moreover, the difference between households that receive international remittances and those that do not receive any is higher than the difference between households that receive internal remittances and non-receivers. In this regard, our hypothesis about transitory income is stronger for international transfers.

Table 8: Average treatment effects for household with different remittance receiving status (compared to non-receiving)

Expenditure category	Internal remittances	External remittances
Food	-1.63%***	-4.71%**
	(0.51%)	(2.38%)
Consumer goods, services and durables	1.26%**	-1.37%
	(0.52%)	(3.42%)
Health	1.00%***	1.12%
	(0.25%)	(1.9%)
Education	-0.32%**	-1.54%***
	(0.13%)	(0.45%)
Housing	-2.00%***	6.18%***
	(0.43%)	(2.35%)
Other	1.69%***	0.33%
	(0.29%)	(1.56%)
standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01		

Looking further into details, we can see that health is also in accord with the hypothesis. At the mean, the receivers of internal remittances spend 1% more on health at the margin, while receivers of international remittances spend 1.12% more at the margin, though the second estimate is insignificant.

The unexpected result is obtained for education. At the mean, the budget share allocated for education is lower in families with both internal and external source of money transfers, though for internal the estimate is miniscule, so can be perceived as economically insignificant.

Finally, the share of housing expenditures are lower at the mean for households receiving internal remittances and substantially higher for households receiving remittance from abroad. The former spend 2% less at the margin on housing, while the latter spend 6.18% more at the margin on housing. Consequently, the hypothesis is partly corroborated.

Chapter 6

CONCLUSIONS AND POLICY RECOMMENDATIONS

Using the Ukrainian Longitudinal Monitoring Survey, the following research has analyzed the effect of the internal and international remittances on the expenditure patterns of the Ukrainian households. Specifically, the main objective was to determine the effect on households' investments. It was hypothesized that Ukrainian households treat remittances as transitory income and spend more at the margin on health, education and housing, that is, physical and human capital.

The study showed that the hypothesis is partially true for Ukrainians. There is indeed a lower share for food items in expenditure structure, households spend 1.63 % less at the margin on food if they receive internal remittances and even 4.7% less if international. The expenditures on health are also higher by around 1 % for families with internal and international remittances. Moreover, at the mean, households that receive international remittances spend 6.18% more at the margin on housing. There are also unexpected results; for instance, the receipt of remittances associates with lower spending on education, while reception of internal remittances associates with lower spending on housing.

Evidence from all over the world suggests that remittances influence expenditure patterns of their receivers, making them spend more on health care, education and housing. Moreover, remittances has been proven to be a strong force against poverty in such countries as Ghana, Nepal, Egypt, India and others. Furthermore, remittances flow countercyclically, alleviating financial disasters on domestic markets, supporting economy in case of political and civil crises, helping people to recover from natural disasters.

Considering the Ukrainian case, even the partial confirmation of the hypothesis has important policy implications. Investments in health and housing can lead to a positive impact on the economy and well-being of its population, as it contributes to an increase in human capital. To amplify its effect, it is crucial to create a proper climate for remittance sending and improving investment climate.

The first concern is the transfer costs of remittances. Remitters should have the ability to pay a low flat fee for transfer services rather than percentage, that discourage to remit large sums of money. The Turkey experience can be adopted in encouraging banks to maintain low fees. The Turkish central bank financially supported banks that opened their subsidiaries across the border and offered low payments for transfer services[3].

The International Fund for Agricultural Development with the support of European Committee established the Funding Facility on Remittances that accepts the projects with innovative financial proposals that could provide an easy access of poor people to transfer services. It also supports the formation of strategic partnerships between different entities related to remittances like credit unions, hometown association, etc. (International Fund for Agricultural Development, 2010).

The innovative financial services, indeed, lower the cost of money transfers, however, migrants may not know about their existence. Moreover, people may not know about institutions providing a basic assistance and information about migration and money transferring. The survey conducted by International Organization for Migration (IOM) found out that only 3 % of households with short-term migrants, 4 % of households with long-term migrants and 0 % with

[3] "How to attract remittances in foreign exchange reserves Ukraine", Forbes, accessed June 01, 2016, http://forbes.net.ua/ua/business/1374690-yak-zaluchiti-groshovi-perekazi-v-zolotovalyutni-rezervi-ukrayini

no migrants know about any organization or ministry providing information or help to people preparing to migrate (International Organization for Migration, 2016). Thus, creating and increasing public awareness of such entities should be done primarily.

The promotion of remittances can be also done by offering higher interest rates on accounts with foreign currency, offered in such countries as India, Pakistan and Bangladesh. In Mexico, every dollar transferred to the hometown association is complemented with three additional dollars by the state, and used for investments in this hometown. Furthermore, in Brazil, the future remittances can be used as a collateral for loans. This loans, then, can be used for education expenditures, housing and other investments (UNCTAD, 2011).

Finally, government should improve data collection and monitoring of migrant flows, remittances flows and related financial information to better manage the remittance and migration policies. Moreover, it would promote research and lead to a better understanding of migration decisions, remittance patterns and their influence on investments. Thereafter, the proposed recommendations and policy experience could be adapted to Ukrainian realities with better precision and will allow to achieve a better effect.

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APPENDIX A

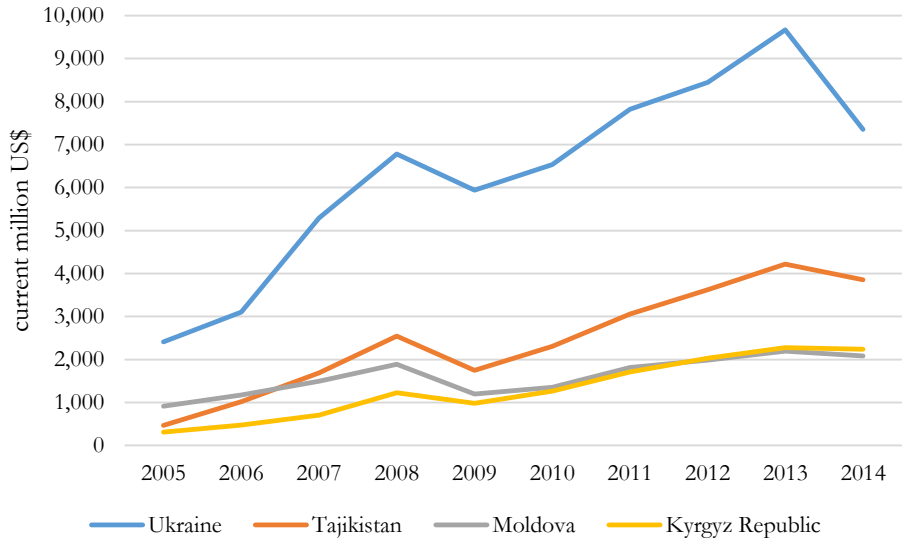

Figure A.1 – Remittances received, current million US$

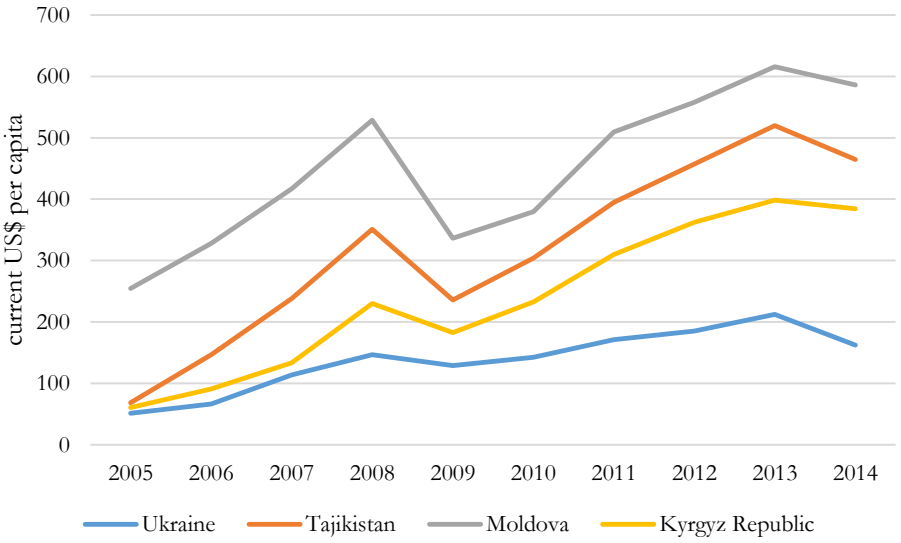

Figure A.2 - Remittances received, current US$ per capita

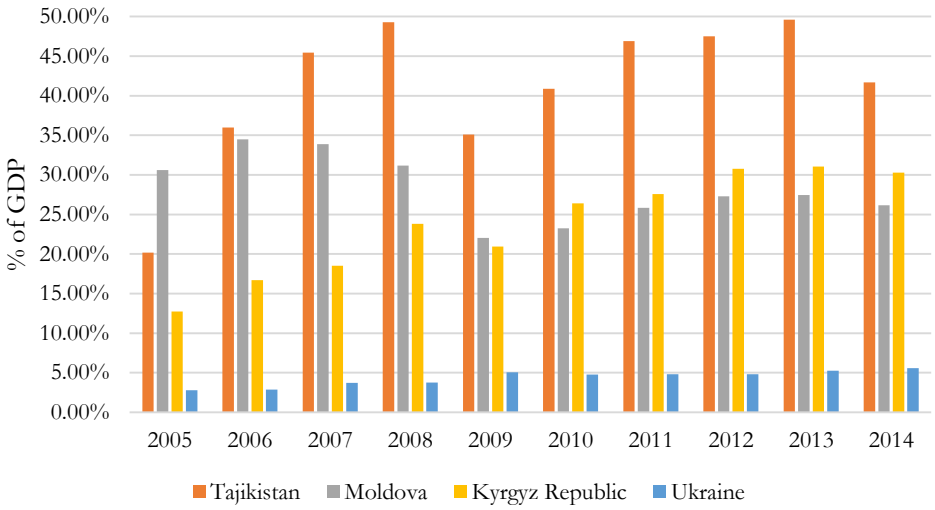

Figure A.3 - Remittances received, % of GDP

APPENDIX B

Table B.1 – Internal emigration rates in Ukraine by regions (per 1000 of regional population)

Region	2007	2006	Mean
The Autonomous Republic of Crimea	4.9	5.5	5.20
Vinnitsa	6.7	7.2	6.95
Volyn	8.8	9.4	9.10
Dnipropetrovsk	5.4	5.6	5.50
Donetsk	5.9	6.1	6.00
Zhytomyr	9.4	10	9.70
Zakarpattya	6.7	7.5	7.10
Zaporizhia	6.5	7	6.75
Ivano-Frankivsk	8.7	8.9	8.80
Kyiv	6.3	6.7	6.50
Kirovohrad	8.8	9	8.90
Lugansk	7.1	7.7	7.40
Lviv	8.5	9.1	8.80
Mykolaiv	9.1	9.5	9.30
Odessa	4.8	5.6	5.20
Poltava	7	7.6	7.30
Rivne	9.6	9.9	9.75
Sumy	8	8.2	8.10
Ternopil	9.4	10.1	9.75
Kharkov	5.8	6.6	6.20
Kherson	9	9.5	9.25
Khmelnytsky	9.1	9.7	9.40
Cherkassy	9.1	9.8	9.45
Chernivtsi	9.7	10.6	10.15
Chernihiv	8.7	9.4	9.05
Kyiv city	3.3	3.8	3.55

Table B.2 – Internal emigration rates in Ukraine by regions (per 1000 of regional population)

Region	2007	2006	2005	2004	2003	2002	Mean
The Autonomous Republic of Crimea	15.6	16.2	16.8	16.9	16	17	16.42
Vinnitsa	19.3	19.5	18.6	19.2	18.6	17.9	18.85
Volyn	18.6	18.7	18.1	18.1	14.5	15.8	17.30
Dnipropetrovsk	14.9	14.8	15.1	15	13.9	13.6	14.55
Donetsk	13.6	13.3	13.5	14	13.5	13.5	13.57
Zhytomyr	18.7	19.3	18.7	19.6	18.7	18.4	18.90
Zakarpattya	8.4	8.8	8.5	8.7	8	7.8	8.37
Zaporizhia	14.2	13.9	14.4	14.7	13.9	13.9	14.17
Ivano-Frankivsk	11.5	11.8	11.8	12.3	11.6	12.7	11.95
Kyiv	15.4	16.2	15.8	17.3	15.4	14.1	15.70
Kirovohrad	15.4	15.6	16.8	17.3	17	17.6	16.62
Lugansk	16.3	16.4	16.2	16.7	16.2	16	16.30
Lviv	12.8	13.1	13.1	13.2	12.9	13.1	13.03
Mykolaiv	15.9	16.3	16.2	17.4	16.5	16.5	16.47
Odessa	15	14.2	14.3	14.4	13.2	12.7	13.97
Poltava	18.6	19.3	19	19.9	19	18.1	18.98
Rivne	20.4	19.7	18.9	18.8	18.9	19.2	19.32
Sumy	19.5	19.8	18.4	18	17.9	17.3	18.48
Ternopil	13.5	13.5	13.7	14	14.4	14.9	14.00
Kharkov	16.7	16.7	16.8	18.3	17.7	16.7	17.15
Kherson	16.6	17.2	17.6	17.3	16.8	16.4	16.98
Khmelnytsky	19	18.3	18.3	19.2	18.5	18.1	18.57
Cherkassy	19.3	20.3	20.1	21.1	20.3	19.3	20.07
Chernivtsi	12.6	12.1	12.6	13	12.4	12.4	12.52
Chernihiv	18.1	17.9	18.1	18	17.7	17.6	17.90
Kyiv city	10.4	10.5	9.9	10.2	10.1	8.6	9.95

Table B.3 – International emigration rates in Ukraine by regions (% to labor force)

Region	2007	2006	2005	2004	2003	2002	Mean
The Autonomous Republic of Crimea	1.2	1.3	1.5	2.1	2.4	2.8	1.88
Vinnitsa	0.5	0.4	0.5	0.7	1	1.1	0.70
Volyn	0.8	0.8	0.9	0.9	1.2	1.5	1.02
Dnipropetrovsk	0.6	0.6	0.6	0.9	1.4	1.7	0.97
Donetsk	0.8	1	1	1.4	1.9	2.6	1.45
Zhytomyr	0.4	0.5	0.6	0.7	1.1	1.1	0.73
Zakarpattya	0.6	0.8	0.8	1.1	1.1	1.3	0.95
Zaporizhia	0.7	0.7	0.9	1.2	1.4	1.8	1.12
Ivano-Frankivsk	0.3	0.4	0.4	0.4	0.6	0.5	0.43
Kyiv	0.2	0.3	0.3	0.4	0.5	0.6	0.38
Kirovohrad	0.4	0.4	0.5	0.7	1	1.1	0.68
Lugansk	1.4	1.2	1.2	1.5	2.4	2.8	1.75
Lviv	0.3	0.3	0.3	0.4	0.6	0.7	0.43
Mykolaiv	0.5	0.5	0.7	0.9	1.5	1.7	0.97
Odessa	0.6	0.5	0.7	0.9	1.1	1.2	0.83
Poltava	0.3	0.4	0.5	0.6	1	1.3	0.68
Rivne	0.8	0.8	0.9	0.8	1.5	1.4	1.03
Sumy	0.7	0.5	0.6	0.7	1.1	1.1	0.78
Ternopil	0.4	0.4	0.5	0.5	0.6	0.5	0.48
Kharkov	0.8	0.7	0.8	1.2	1.6	2	1.18
Kherson	0.6	0.6	0.8	1.1	1.5	1.9	1.08
Khmelnytsky	0.4	0.4	0.4	0.6	0.8	0.9	0.58
Cherkassy	0.4	0.4	0.5	0.7	0.9	1.1	0.67
Chernivtsi	0.6	0.8	0.8	1.1	1.3	1.3	0.98
Chernihiv	0.6	0.6	0.7	0.8	1.1	1.3	0.85
Kyiv city	0.6	0.6	0.8	1.1	1.3	1.6	1.00

APPENDIX C

Table C.1: Expenditure patterns for non-remittance-receiving HH

	Food	Consumer goods, services and durables	Health	Education	Housing	Other
Log of annual expenditures per HH member	-0.1598***	0.0121	0.0138**	0.0184***	0.0504***	0.0650***
	(0.0116)	(0.0149)	(0.0060)	(0.0055)	(0.0154)	(0.0116)
Dummy for secondary and vocational education without secondary	0.0053	-0.0026	-0.0139*	0.0048	0.0040	0.0023
	(0.0143)	(0.0125)	(0.0078)	(0.0080)	(0.0142)	(0.0102)
Dummy for vocational with secondary, under- and graduate education	-0.0196	0.0430***	-0.0084	0.0032	-0.0032	-0.0149
	(0.0166)	(0.0130)	(0.0090)	(0.0078)	(0.0148)	(0.0125)
№ of members at least 15 years old	-0.0527***	0.0220***	0.0004	0.0143***	-0.0058	0.0219***
	(0.0071)	(0.0061)	(0.0037)	(0.0037)	(0.0061)	(0.0054)
№ of members 4 years old or younger	-0.0037	-0.0073	0.0002	-0.0190***	0.0308*	-0.0009
	(0.0152)	(0.0162)	(0.0071)	(0.0052)	(0.0164)	(0.0123)
Age of the HH head	-0.0010*	-0.0018***	0.0012***	-0.0002	0.0006	0.0012***
	(0.0006)	(0.0005)	(0.0003)	(0.0003)	(0.0005)	(0.0004)
Gender of the HH head (1 for male)	-0.0227*	0.0145	0.0028	0.0022	-0.0030	0.0062
	(0.0130)	(0.0117)	(0.0075)	(0.0074)	(0.0120)	(0.0085)
Vegetables consumed that were produced in the HH	-0.0002***	0.0000	-0.0000	0.0000	0.0000	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Dummy for urban area	0.0027	-0.0119	0.0072	-0.0070	0.0235	-0.0145
	(0.0176)	(0.0151)	(0.0080)	(0.0094)	(0.0185)	(0.0117)
λ_1	-0.0181***	0.0067**	0.0023	0.0003	-0.0021	0.0110***
	(0.0032)	(0.0026)	(0.0016)	(0.0015)	(0.0028)	(0.0020)
λ_2	-0.0061**	0.0025	0.0001	0.0009	-0.0005	0.0030**
	(0.0026)	(0.0021)	(0.0013)	(0.0018)	(0.0021)	(0.0015)
constant term	2.0338***	0.2075	-0.1233*	-0.1743***	-0.4044**	-0.5392***
	(0.1247)	(0.1538)	(0.0636)	(0.0544)	(0.1596)	(0.1180)
R-Squared	0.3008	0.1298	0.0349	0.0468	0.0350	0.1227
standard errors in parentheses, * p<0.10, ** <0.05, *** p<0.01						

Table C.2: Expenditure patterns for internal remittance-receiving HH

	Food	Consumer goods, services and durables	Health	Education	Housing	Other
Log of annual expenditures per HH member	-0.1127**	-0.0323	0.0712*	0.0304	0.0043	0.0390
	(0.0496)	(0.0517)	(0.0402)	(0.0214)	(0.0439)	(0.0284)
Dummy for secondary and vocational education without secondary	-0.0723	0.0816**	0.0165	-0.0137	-0.0382	0.0261
	(0.0515)	(0.0409)	(0.0297)	(0.0134)	(0.0348)	(0.0283)
Dummy for vocational with secondary, under- and graduate education	-0.0574	0.0466	0.0038	-0.0233	0.0442	-0.0139
	(0.0543)	(0.0471)	(0.0332)	(0.0228)	(0.0335)	(0.0439)
№ of members at least 15 years old	0.0112	0.0010	0.0096	0.0181**	-0.0197	-0.0201
	(0.0339)	(0.0201)	(0.0124)	(0.0071)	(0.0207)	(0.0149)
№ of members 4 years old or younger	-0.0068	-0.0757*	0.0360	0.0115	0.0171	0.0180
	(0.0457)	(0.0400)	(0.0260)	(0.0142)	(0.0296)	(0.0302)
Age of the HH head	0.0005	-0.0016	0.0020**	0.0001	-0.0003	-0.0007
	(0.0018)	(0.0018)	(0.0009)	(0.0004)	(0.0012)	(0.0013)
Gender of the HH head (1 for male)	-0.1127***	0.1301***	-0.0070	0.0033	-0.0368	0.0231
	(0.0433)	(0.0421)	(0.0229)	(0.0142)	(0.0262)	(0.0316)
Vegetables consumed that were produced in the HH	-0.0002	-0.0001	0.0000	0.0001	0.0002	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Dummy for urban area	0.0350	0.0188	0.0062	0.0259**	-0.0143	-0.0716*
	(0.0566)	(0.0468)	(0.0239)	(0.0121)	(0.0422)	(0.0373)
λ_0	0.0019	-0.1019***	-0.0050	-0.0015	0.0420*	0.0645***
	(0.0335)	(0.0293)	(0.0126)	(0.0096)	(0.0247)	(0.0231)
λ_2	-0.0152*	0.0006	-0.0061*	0.0018	0.0169**	0.0020
	(0.0088)	(0.0087)	(0.0034)	(0.0030)	(0.0075)	(0.0049)
constant term	1.4142**	0.4769	-0.8578*	-0.3188	0.3395	-0.0540
	(0.5604)	(0.5769)	(0.4832)	(0.2127)	(0.4556)	(0.3478)
R-Squared	0.3250	0.3254	0.1157	0.0860	0.1514	0.1584
standard errors in parentheses, * p<0.10, ** <0.05, *** p<0.01						

Table C.3: Expenditure patterns for international remittance-receiving HH

	Food	Consumer goods, services and durables	Health	Education	Housing	Other
Log of annual expenditures per HH member	-0.2243***	0.1029	0.1390	-0.0112	-0.0238	0.0174
	(0.0715)	(0.0864)	(0.0846)	(0.0162)	(0.0873)	(0.0680)
Dummy for secondary and vocational education without secondary	0.0394	0.0118	0.0826	0.0169	-0.0067	-0.1440*
	(0.0702)	(0.0651)	(0.0578)	(0.0145)	(0.0528)	(0.0736)
Dummy for vocational with secondary, under- and graduate education	0.2103**	-0.1291	0.1237*	-0.0170	-0.2075*	0.0196
	(0.0998)	(0.1283)	(0.0725)	(0.0199)	(0.1126)	(0.1186)
№ of members at least 15 years old	-0.0308	-0.0650	0.0380	0.0134	0.0602	-0.0158
	(0.0619)	(0.0549)	(0.0355)	(0.0111)	(0.0569)	(0.0338)
№ of members 4 years old or younger	-0.1194	0.1939	-0.1869*	-0.0453	0.2014*	-0.0437
	(0.1151)	(0.1191)	(0.1043)	(0.0316)	(0.1101)	(0.0887)
Age of the HH head	0.0108**	-0.0112***	-0.0014	-0.0000	0.0052	-0.0034
	(0.0041)	(0.0041)	(0.0030)	(0.0009)	(0.0042)	(0.0050)
Gender of the HH head (1 for male)	0.0666	-0.3173***	0.1086	-0.0279	0.1092	0.0608
	(0.0744)	(0.0918)	(0.0711)	(0.0201)	(0.0891)	(0.1037)
Vegetables consumed that were produced in the HH	0.0003	-0.0007***	0.0001	0.0001	0.0006*	-0.0003
	(0.0003)	(0.0003)	(0.0002)	(0.0001)	(0.0003)	(0.0003)
Dummy for urban area	0.0755	-0.0974	-0.1378	0.0230	0.0798	0.0570
	(0.1090)	(0.0820)	(0.0950)	(0.0242)	(0.0879)	(0.0980)
λ_0	-0.2405***	0.0881	0.1070	0.0316	-0.0696	0.0834
	(0.0762)	(0.1119)	(0.0668)	(0.0189)	(0.0829)	(0.0723)
λ_1	-0.0205	-0.0387	0.0509**	0.0119	0.0001	-0.0037
	(0.0314)	(0.0249)	(0.0228)	(0.0072)	(0.0223)	(0.0203)
constant term	1.5212*	0.1287	-1.0629	0.1943	-0.0463	0.2649
	(0.8071)	(1.0025)	(0.8725)	(0.1963)	(1.0547)	(0.7867)
R-Squared	0.7611	0.5839	0.4282	0.1983	0.6706	0.3218
standard errors in parentheses, * p<0.10, ** <0.05, *** p<0.01						