

REMITTANCES FOR THE REPUBLIC  
OF MOLDOVA: A WAY TO SURVIVE  
OR A CHANCE TO SUCCEED?

by

Irina Mîslițaia

A thesis submitted in partial fulfillment of  
the requirements for the degree of

MA in Economics

Kyiv School of Economics

2009

Approved by \_\_\_\_\_

Tom Coupé, KSE Program Director

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date \_\_\_\_\_

Kyiv School of Economics

Abstract

REMITTANCES FOR THE  
REPUBLIC OF MOLDOVA: A  
WAY TO SURVIVE OR A  
CHANCE TO SUCCEED

by Irina Mișlițcaia

KSE Program Director:

Tom Coupé

This paper analyses the impact of remittances on spending patterns of households from the Republic of Moldova using a demand-modeling approach. Like other related studies the findings show that the differences in marginal spending patterns of spending between remittance-receiving and non-receiving households are fairly small. Unlike other studies the paper analyses the influence of remittances depending on their share in the budget and claims that the size and significance of the differences in spending patterns depend on this criteria. The marginal share of personal investments dominates other categories for all households of the country. Remittances do not increase the marginal propensity to invest, moreover, the higher is the dependence on the remittances, the lower is on margin the inclination to invest. The extra purchasing power coming from remittances is used for consumer durables and services, significantly contributing to the reduction of poverty in Moldova and boosting demand for local goods and services. Remittances significantly increase the marginal propensity to save which can be viewed as a capacity to invest into income-generating activities. The higher is the share of remittances in the budget the higher is the marginal share of savings.

## TABLE OF CONTENTS

Chapter 1. Introduction .....	1
Chapter 2. Literature Review .....	4
Chapter 3. Methodology .....	10
Chapter 4. Data Description .....	18
Chapter 5. Empirical Analysis.....	27
Chapter 6. Conclusions .....	40
Notes .....	43
Bibliography .....	44
Appendix.....	47

## LIST OF TABLES AND FIGURES

Number	Page
<b>Table 1.</b> Expenditure categories .....	14
<b>Table 2.</b> Average budget shares, expenditure levels and total expenditures by remittance receiving status.....	19
<b>Table 3.</b> Means and standard deviations of explanatory variables in the expenditure equations, by remittance-receiving status .....	21
<b>Table 4.</b> Means and standard deviations of explanatory variables in the expenditure equations, by the share of remittances in household budget .....	23
<b>Table 5.</b> Average budget shares of expenditures by the share of remittances in household budget .....	25
<b>Table 6.</b> Results of OLS estimation of demand equations, by remittance-receiving status.....	28
<b>Table 7.</b> Comparison of marginal budget shares of expenditures by remittance-receiving status.....	31
<b>Table 8.</b> Results of OLS estimation of demand equations by the share of remittances in household budget .....	33
<b>Table 9.</b> Marginal budget shares of expenditures by the share of remittances in household budget .....	34
<b>Table 10.</b> Comparison of marginal budget shares of expenditures by the share of remittances in the budget.....	35
<b>Figure 1.</b> Evolution of net FDI and net remittances in the RM .....	47
<b>Figure 2.</b> Distribution of respondents by groups .....	22

## ACKNOWLEDGMENTS

I would like to thank my advisor Dr.Hanna Vakhitova for her permanent encouragement and guidance, as well as for insightful comments and useful suggestions in the process of writing the thesis.

I would like to express my grateful acknowledgement to Research Workshop professors for their careful assistance and valuable help with improvement of my paper. I also thank to Ghenadie Crețu from International Organization for Migration for providing the data for research.

The sincere words of gratitude are devoted to my family and friends for their kind support. Special thanks are to my daughter Anna for continuous inspiration.

## GLOSSARY

A **Remittance** is a transfer of money by a foreign worker to his home country.

## INTRODUCTION

Republic of Moldova is one of the countries which have been most affected by labor emigration for short-term periods as well as for longer term jobs. In 2006 about 1.4 million people out of total population of 3.4 million belonged to households that received remittances<sup>1</sup>. In 2007 the total amount of remittances reached 38.1% of GDP putting the country at the second place after Tajikistan in the Top 10 list of the remittance receiving developing countries.<sup>2</sup> In the period 2000-2007 remittances to Moldova increased almost 8.4 times in volume: from US\$ 179 mln in 2000 to US\$ 1498 mln in 2007, and the preliminary World Bank forecast for 2008 is US\$ 1550 mln. The main reasons for such an impressive growth are an increase in the total number of migrants and their wages, reduction in costs of sending money to the home country and poor employment prospects at home.

According to an IOM report<sup>3</sup>, there were two waves of migration from Moldova since the 1990s. The first one started in the late 1990s and was represented by young people with medium level of education; the second wave emerged from the early 2000s and consisted of older individuals with lower levels of education. These two waves are classified as needs-driven. The third wave, which consists of individuals planning to emigrate in the near future, is likely to be defined as opportunity-led. The first migrants have created migrant networks in the EU and CIS region considerably facilitating a significant inflow of the second wave in these countries.

These trends can explain the increase in the volume of remittances into the Republic of Moldova during the past decade. Thus, becoming a significant source of capital inflow, remittances are similar or even larger in magnitude than other external financial inflows such as foreign direct investment and transfers. In 2007 the inflow of foreign direct investment to the country constituted US\$ 532.7 which is 2.8 times less than the volume of remittances. For the same year the export of goods and services (as a source

of foreign currency inflow) amounted to US \$ 1360.7 mln which was also below the amount of remittances.

Remittances are considered to be one of the least volatile components of foreign currency income and are counter-cyclical in the recipients' country compared to capital inflows which tend to be pro-cyclical.<sup>1</sup>

This money, if spent on productive investments, can be considered as a driver for growth and a facilitating factor for creating local economic alternatives, especially in rural areas (Taylor, 2006). Moreover, they can act as a cushion during financial instability and economic downturn in the recipients' country (Shelburne and Palacin, 2007). However remittances similar to welfare can reduce incentives to work among recipients decreasing labor supply (Ratha, 2003).

One of the reasons for studying the spending of remittances is their influence on the demand for various goods and services. Ghencea and Gudumac (2004) estimated that remittances contributed more than 35% to the budget of 86% of households in the sample of 4500 families and for 34.8% of households they were the only way to escape poverty. Given that current economic crisis has affected the countries where the Moldovan migrants work, the rate of growth of the remittances sent to Moldova is expected to decline in 2009-2010.<sup>2</sup> Thus, it is very important for policy makers to know how remittances shape spending decisions in order to understand the effect of their possible change. The flow of remittances is too significant for the country for not being directed towards its economic growth.

Analyzing spending decisions at the micro level can lead to a better understanding of the contribution of remittances for the Moldovan economy as a whole. The main question of this paper is to determine how the receipt of international remittances affects households' spending patterns in the Republic of Moldova. The research is aimed to investigate if there any differences in spending decisions between remittance-receiving and non-receiving households. The novelty of this study is the analysis of remittances' impact depending on their share in the household's budget.

The study is based on the household survey conducted by the Center of Sociological Investigations and Marketing CBS-AXA in 2006 for International Organization of Migration. The survey is representative of Moldovan households at the national level and includes approximately 4000 households. In order to analyze the spending behavior, the expenditure model will be estimated to determine the marginal and average budget share of a particular spending category among two groups of households: those who receive remittances and those who do not.

The paper is structured as follows: chapter 2 gives an overview of the literature related to the past and recent studies of remittances, chapters 3 and 4 describe the methodology of research and the data, chapter 5 provides estimation procedures and results discussion, and the last chapter concludes.

## LITERATURE REVIEW

The literature related to spending of remittances focuses on two issues: the methodology of research and the overall effects of how remittances are spent on the economic development.

Therefore, this section consists of the following parts. The first part describes the theoretical developments in the field, the second part presents an overview of methodological aspects described in the literature and the last part outlines the main findings about the impact of remittances on the Republic of Moldova.

Before the 1980s, remittances research was mostly represented by remittance-use studies and qualitative descriptions of migration impact on local communities. These studies (Rempel and Robdell (1978), Rhoades (1978, 1979), Lipton (1980), Chandavarkar (1980), Wiest (1979), Stuart and Kerney (1981) lacked a theoretical framework to measure the complex interaction between migration and economic behavior within families and communities. In order to investigate these effects it is necessary to test how remittances influence the propensity to invest, not just to describe how they were spent.

Stark (1978) is the first to put migration in the context of household economic relationships and to study household's behavior in conditions of imperfect credit and risk markets that characterize migrant-sending areas. Further theoretical and empirical studies (Stark (1980), Stark and Lucas (1988), Stark and Katz (1986) Adams (1991), and Taylor (1992)) which emerge from this view, model the interaction between migration and development, conceptualizing the new economics of labor migration (NELM hereafter). This theory attributes to the migrant the role of intermediate investment during the transition process from familial type of production to commercial one. The main effects of migration predicted by NELM are the

lost labor effect, the direct and indirect effects of remittances on household income, including the increased productivity in the long-run caused by investment in household production and due to income diversification, which encouraged risk-averse individuals to start productive activities with uncertain outcome (Lucas, 1987).

The effects of remittances spending are quite controversial: depending on the economic impact of remittances there are two strands of literature. The pessimistic view claims that there is a negative influence of remittances on the local community. In contrast, the optimistic view emphasizes the significant contribution of migrants' money to sustainable development. The following part of this section provides details of the meaning of pessimistic and optimistic prospective of remittances.

The pessimistic view arises from the argument that remittances have a negative effect on the development of local communities through such channels as decreased incentives to work among recipients (Ratha, 2003), appreciation of national currency (Amuedo–Dorantez and Pozo, 2004), transmission of unfavorable changes in the economy of the host country to the recipient country (Shelburne and Palacin, 2007) and Dutch disease. The latter happens when remittances are used for unproductive needs such as consumption, which, in turn, leads to rising living standards achieved through huge inflows from abroad rather than economic activity in the community (Taylor, 1996; Shelburne and Palacin, 2007). There are several explanations of such a spending pattern: the initially low living standards and a low level of basic needs satisfaction in the migrant's family, uncertainty in the future, poor business environment, which reduces the incentive to invest in new enterprises, poor quality of infrastructure, etc.

Similar spending patterns are observed for developing countries on different continents. Capital investments in remittance-receiving households are replaced by so-called security investments: jewelry, houses and other items. These are likely to change the social status of the immigrant's family by raising its quality of life. Rhoades (1978) observed this effect for Spain, Shankman (1976) – for Western Samoa, Mills (1993) – for Thailand, Helweg

(1983) – for India, Dandler and Medeiros (1988) – for Bolivia, Stuart and Kerney (1981) – for Mexico.

The optimistic view is supported with the empirical findings which reveal that a substantial portion of remittances is used for investments and savings (Alderman 1996, Adams, 1998, Brown, 1997, Haas, 2005). Even if remittances are directed to satisfying current consumption needs and are not invested into productive sphere at - least some of the funds will be spent on domestically produced goods and services. Ghencea and Gudumac (2004) in their study of labor migration and remittances in the Republic of Moldova confirm the assumption of increased demand of migrants' families for construction materials and service that led to boosting profits of the enterprises in this sector. Goldring (1990) and Massey (1992) demonstrate that remittances significantly contributed to the financing of public infrastructural projects such as road construction, schools, churches and parks. Durand and Massey (1992) found that in some Mexican communities the share of money spent for productive purposes reached a significant portion, if households had access to education and real assets like land, housing and business. Taylor (1992) demonstrates that remittances contributed to livestock accumulation and increased return on these assets. Moreover investments induced by remittances in the long-run magnify their positive effect on the economic development of local communities (Taylor 1996).

The next sphere which drives the intensive development of migrant-sending countries is launching new business and entrepreneurship. Empirical surveys by Escobar and Martinez (1990) and Massey et al (1987) reveal that about 21-31% of migrants used their earning for capitalization of their own businesses launched in Mexico. Migrants while working abroad acquire entrepreneurial skills which can be used in their home countries. Adams (1991) found that in rural Egypt marginal propensity to invest was higher among households with a migrant compared to non-migrant families.

The NELM theory combines both pessimistic and optimistic views. It suggests that in the short term the relation between remittances and development is likely to be negative, while in the longer period the effect can

be positive. The latter effect depends on the profitability of investments in new activities, which is not only the function of the amount of remittances invested but is also determined by local factors.

The next part of the section gives an overview of studies from a methodological point of view. There are two distinct methods of studying the effects of remittances. The macroeconomic studies analyze aggregate data either related to a single country or cross-country studies, while microeconomic studies are based on household surveys.

The macroeconomic studies will be just briefly outlined here. This literature is presented by a number of papers which analyze the impact of remittances on various macroeconomic variables. Amuedo-Dorantez and Pozo (2004) find that the real exchange rate in 13 Latin American and Caribbean countries during 1990s appreciated due to significant inflow of foreign currency, reducing country's international competitiveness. Chami, et al. (2003) analyze a panel of 113 developing countries and find that remittances have a negative impact on economic growth by boosting inflation, reducing labor force productivity and deteriorating terms of trade. Catrinescu et al (2008) get a similar result using cross-country data. However, Giuliano and Ruiz-Arranz (2008) analyze about 100 developing countries and conclude that remittances as an alternative source of finance boost growth in countries with less developed financial systems helping to overcome current liquidity constraints. Leon-Ledesma and Piracha (2004) find positive effect of remittances on employment and productivity in 11 CEE transition countries. Adams and Page (2003) analyze 74 low and middle-income developing countries and state that remittances have a strong effect on poverty reduction. Haas (2005) finds that remittances significantly contributed to the economic development of Morocco.

The Microeconomic approach focuses on a family or an individual household as a basic unit of research. This choice is motivated with the fact that the immigrant comes from a household and the relation between them determines mostly the effects of share of remittances sent home as well as its use. Therefore, the first effects of migration and remittances on the development of local communities start from the analysis of household

spending patterns (see for example Taylor 1996, 2006, Alderman 1996, Becker 1974, Agarwal and Horowitz 2002, Yang 2006, Dimova and Wolff, 2008).

Two approaches dominate among the micro level studies: remittance-use surveys and demand modeling, in which remittances are included as a separate factor of influence.

Remittance-use surveys are based on surveys which ask households how remittances are spent. However, this information cannot provide a deep insight of the actual effect of remittances on expenditure patterns. The main reason for this problem is the treatment of remittances as a non-fungible source of income. In fact remittances are fungible: a dollar from remittances is treated as a dollar from any other source of income (Adams et. al. 2008).

The second approach is based on recent econometric techniques which are used for the estimation of demand for a certain category of goods or services. Remittances are added as an explanatory variable along with other factors (prices, socio-economic characteristics and income) in a demand function (Taylor 2006, Adams 2005, 1998 and Alderman 1996). For example, Taylor (1996) in his study of spending decisions in rural Mexico finds that as income increases irrespective of its source, expenditure patterns also change. He states that migration and receipt of remittances indeed significantly influence expenditure patterns but not in a way generally considered by previous studies. In particular, the marginal propensity to invest is higher among the families with migrants. Adams et. al. (2008), however, argues that there are no differences among migrant and non-migrant households in Ghana in terms of marginal spending patterns and the remittances are treated as any other source of income.

There are a number of papers describing the patterns of migration and remittances in the Republic of Moldova prepared by International Organization for Migration, World Bank and other organizations. Ghencea and Gudumac (2004) find that remittances play an important role in shrinking the current account gap of the country, contributed to the development of

the service sector and insured the minimum level of living for thousands of households in the Republic of Moldova.

Hagen-Zanker and Siegel (2007) analyze remittance behavior in Albania and Moldova and identify a number of reasons to remit. This decision depends on the mix of particular characteristics of migrants and receiving households, such as age, sex, marital status, wellbeing, unemployment and language of the destination country, distance between sending and receiving country. Craciun (2006) also finds that working experience, age, gender, income and destination country influence the likelihood and the size of remittances.

The purpose of this paper is to extend this literature by looking at remittances spending patterns in the Republic of Moldova. Unlike other studies, this paper will analyze the effect of remittances on spending decision depending on their share in the household's budget. The research will follow the microeconomic method of study using recent econometric techniques in order to determine if remittances change spending behavior of households in the country taking into consideration the hypothesis that remittances are fungible source of income.

## METHODOLOGY

The main question of the present research is whether remittances affect spending patterns of households in the Republic of Moldova. In order to address this issue the comparative analysis of marginal spending behavior measured by marginal budget shares of expenditures of remittance-receiving and non-receiving households must be performed.

One of the recent econometric approaches used to analyze expenditure patterns models consumer demand equations for various types of expenditures (Adams 2005, 2008; Alderman 1996). It takes into consideration the fungibility or equal treatment of income from different sources; a fact that has been ignored in earlier remittance-use studies. In the present research income will be pooled from all sources into a single budget constraint.

In the present study the demand for certain goods and services grouped in different expenditure categories is estimated depending on the level of income and a vector of socio-demographic characteristics for remittance-receiving and non-receiving households. Then, the results will be compared in order to reveal any differences in spending patterns of these two groups.

The proper functional form for a demand equation for econometric analysis should satisfy the following criteria mentioned by Adams (2008) and Taylor (2006). First, a good statistical fit must be provided to all categories of expenditures, the model should be flexible enough to allow marginal propensities to spend on a certain category to change as total level of expenditures changes. Second, from the theoretical point of view, the model should conform to adding-up criteria (the sum of all average budget shares must be equal to unity) and to allow imposing restrictions.

The Working-Lesser model which relates budget shares linearly to the logarithm of total expenditures meets these criteria. However, related studies used its modified version adding an intercept to the theoretical equation in order to reflect the income redistribution effect. Thus, a modified version of Working-Lesser model is used by Adams (2008, 2005) in estimating the effects of remittances on spending behavior in Ghana and in Guatemala. Taylor (2006) in estimating the effect of migration on household expenditure function uses the AIDS method (Almost Ideal Demand System) which is very similar to the Working-Lesser model. Since the goal of the present research is to estimate the effect of remittances on demand for different goods and services, a modified Working-Lesser model which satisfies above mentioned criteria will be used in the research.

The Engel function is expressed by the following formula:

$$C_i = \alpha_i \text{EXP} + \beta_i (\text{EXP}) (\log \text{EXP}) \quad (1)$$

Equation (2) which defines the model is obtained by dividing the formula (1) by EXP to express the share of expenditures :

$$C_i / \text{EXP} = \alpha_i + \beta_i (\log \text{EXP}) \quad (2)$$

where  $C_i / \text{EXP}$  is the share of expenditure on good  $i$  in total expenditure (EXP). As mentioned above the adding-up property of the model implies that the sum of average budget shares of each spending category is equal to unity.

Thus,  $\sum C_i / \text{EXP} = 1$ .

Many empirical studies (Osili 2007, Alderman 1996, Taylor 2006, Adams 2005, 2008, Bleahu et.al 2008) which compare expenditure behavior of households with different levels of income include various socioeconomic factors in the expenditure equation. Spending behavior may be partly explained by the observed differences in household composition (family size, number of children, etc), education, age, type of residence, geographic region or receipt of remittances. As explained above, these variables are included in the model so that they can influence the marginal propensity to spend on

certain categories. Let  $Z_j$  denote the  $j^{\text{th}}$  household characteristic variable and let  $\mu_{ij}$  and  $\lambda_{ij}$  be constants. The complete model is then:

$$C_i = \alpha_i \text{EXP} + \beta_i (\text{EXP}) (\log \text{EXP}) + \sum_j \mu_{ij} Z_j \text{EXP} + \epsilon_i \quad (3)$$

In semi-log ratio form, this is equivalent to:

$$C_i / \text{EXP} = \alpha_i + \beta_i (\log \text{EXP}) + \sum_j \mu_{ij} Z_j + \epsilon_i \quad (4)$$

From equation (4) the marginal and average budget shares for the  $i$ -th good (the  $MBS_i$  and  $ABS_i$ , respectively) can be derived as follows:

$$MBS_i = dC_i / d\text{EXP} = \alpha_i + \beta_i (1 + \log \text{EXP}) + \sum_j \mu_{ij} Z_j \quad (5)$$

$$ABS_i = C_i / \text{EXP}_i$$

One of the common problems widely discussed in remittance studies is the possible endogeneity of remittances as a consequence of the endogeneity of migration (Taylor 2006). Remittances are not exogenously determined; they are influenced by migrant's earnings and decision to migrate (Lucas and Stark, 1985).

The problem of endogeneity is related to the selectivity of migration. Empirical studies show that migration is a choice of individuals and communities (Taylor 2006). Households participating in migration and receiving remittances are fundamentally different from those who do not in their characteristics with respect to expenditure patterns (Mora and Taylor 2005). The variables which affect migration, and therefore, remittance behavior, may also affect household expenditures, for example, education (Lucas and Stark, 1985). Moreover, the decision to migrate can also be influenced by unobservable factors, such as individual preferences and needs. These factors, which cannot be measured and, therefore included in the model, could potentially influence the spending patterns of households with migrants and those who receive remittances. Failure to include the influence of these factors could produce omitted variable bias in the estimation of the marginal effect of remittances. Taylor (2006) points out that the issue of endogeneity is much more severe in the estimation of the effect of migration on spending decisions.

Adams (2005), however, argues that possible selectivity bias in the decision to migrate should not be such an issue in the study of impact of remittances because remittances are fungible; they are dollars which are spent like any other dollars without regard to its source. They simply contribute to the household's budget and increasing it, can influence expenditure patterns. Unfortunately, the available data set does not contain observations for several periods, making it impossible to control for selectivity bias. Panel data availability would qualitatively improve the research allowing to construct instruments for the migration variable and to include it into the demand equation.

Another problem in remittances studies is related to two types of measurement errors: the first one appears if remittances are measured with errors and the second one is observed when these errors are correlated with errors in the expenditure equation. As a possible solution to reduce the measurement error in estimating the volume of remittances is to use a dummy variable for receiving remittances instead of using the amount of remittances. This method also has disadvantages since the dummy variable, which indicates the receipt of remittances, is less informative than the amount itself. To get over this disadvantage, 4 dummy variables are introduced indicating the share of remitted money in the household budget. Thus, unlike previous related studies, this research takes into consideration the share of remittances in the budget in the course of analysis of their impact on spending decisions.

Similar to the other studies of household expenditures, this paper assumes that households maximize their utility by allocating available income among various spending categories. As an outcome of utility maximization, the demand equations are constructed reflecting the household's spending decision. As it was mentioned before, the assumption of pooled income will be used in the estimation process. However, the amount of expenditures rather than income is included in the demand function. Adams (2005) motivates the use of expenditures by the fact that measurement of expenditures in low-income countries like the Republic of Moldova is more precise than income due to its underreporting.

It is important to identify and combine spending items of households into certain categories according to the purpose of the present research. Since the issue under investigation is the influence of remittances on marginal propensities to invest or to consume, items of expenditures will be grouped in way to allow identification of investment and consumption purposes. Available data permits to create the following spending categories summarized in Table 1:

**Table 1: Expenditure categories**

<b>Category</b>	<b>Description</b>
Food	Food items
Other consumer goods	Clothes, shoes
Services	Electricity, phone bills, entertainment
Investments	Health, education and housing renovation expenses, repayment of loans
Savings	Savings

Identification of these categories is consistent with similar studies made for other countries (Alderman 1996, Taylor 2006, Adams 2005, 2008). Food, services and other consumer goods typically are considered consumption-purpose categories, whereas expenditures on health, education, housing renovation expenses and loan proceeds payments belong to investment goods. Savings are separated; their amount can be potentially used for investment purposes or served as a cushion against unexpected decline in household income.

The following variables describing socio-demographic characteristics of households will be also included in the model:

*HS* is the number of members of the household

*Child\_5y* is the number of children below 5 years in the household

*Age\_Head* is the age of the head of the household

*Second\_Ed* is the number of household members over age 15 with secondary education

*College\_Ed* is the number of household members over age 15 with college education

*Univer\_Ed* is the number of household members over age 15 with university education

*Urban* is a dummy variable which indicates urban (1) or rural (0) residence of household

*Rem* is a dummy variable indicating whether household receive remittances ( $Rem=1$ ) or not ( $Rem=0$ ).

A number of empirical studies related to the use of remittances found that the effect of socio-demographic characteristics on spending categories differs. Household size positively affects expenses on food, other consumption goods and education, and is negatively related to spending on health and dwelling (Taylor, 2006; Adams, 2005). However, for example, for Ghana (Adams, 2008), the effect of household size on health and consumer durables was positive. Taylor (2006) and Adams (2005) found that the number of children was inversely related to expenses on food and education and directly to expenditures in other categories. The number of household members with a certain level of education is found to affect spending patterns differently in various countries. The common finding is that individuals with higher education have higher marginal propensities to spend on education and health.

Equation (4) is augmented with remittances variable and its cross product with log of expenditures in order to reflect marginal effect of remittances on household spending behavior. The complete model for estimation is the following:

$$C_i / EXP = \alpha_i + \beta_i (\log EXP) + \gamma_{1i} (Rem) + \gamma_{2i} (Rem)(\log EXP) + \mu_{1i} HS + \mu_{2i} Child\_5y + \mu_{3i} Age\_Head + \mu_{4i} Second\_Ed + \mu_{5i} College\_Ed + \mu_{6i} Univer\_Ed + \mu_{7i} Urban + \varepsilon_i \quad (8)$$

The effect of remittances on the marginal budget share of expenditures equals to:

$$\Delta MBS_i = (MBS_i |_{Rem=1}) - (MBS_i |_{Rem=0}) = \gamma_1 + \gamma_2(\log EXP) \quad (9)$$

This formula is derived by multiplying equation (8) by EXP and taking the first derivative with respect to EXP.

The dummy variable for remittances (REM) enters equation (8) linearly and is interacted with a log of expenditures in order to be able to affect both the intercept and the slope. An F test will be used to test the significance of differences in marginal spending behavior of remittance-receiving and non-receiving households.

The available dataset includes information about the share of remittances in the household's budget. Incorporating this information into the model will provide a more detailed analysis of spending patterns of remittance-receiving households and of the differences in marginal propensities to spend. Thus, the second part of econometric analysis will focus on the impact of remittances depending on their share in the budget.

Equation (8) is extended to include four dummy variables indicating the share of remittances in the budget and their interaction terms:

$$C_i / \text{EXP} = \alpha_i + \beta_i (\log \text{EXP}) + \gamma_{1i} D1 + \lambda_{1i} D1 (\log \text{EXP}) + \gamma_{2i} D2 + \lambda_{2i} D2 (\log \text{EXP}) + \gamma_{3i} D3 + \lambda_{3i} D3 (\log \text{EXP}) + \gamma_{4i} D4 + \lambda_{4i} D4 (\log \text{EXP}) + \mu_{1i} \text{HS} + \mu_{2i} \text{Child\_5y} + \mu_{3i} \text{Age\_Head} + \mu_{4i} \text{Second\_Ed} + \mu_{5i} \text{College\_Ed} + \mu_{6i} \text{Univer\_Ed} + \mu_{7i} \text{Urban} + \varepsilon_i \quad (10)$$

where:

D1 equals to 1 if the share of remittances in the household's budget is between 0% and 25% or 0 otherwise;

D2 equals to 1 if the share of remittances in the household's budget is between 26% and 50% or 0 otherwise;

D3 equals to 1 if the share of remittances in the household's budget is between 51% and 75% or 0 otherwise;

D4 equals to 1 if the share of remittances in the household's budget is above 75% or 0 otherwise.

Therefore, four groups of remittance-receiving households can be identified:

*Group I* – is formed by households who receive remittances up to 25% share of the their budget;

*Group II* – is formed by households whose income consists of 25-50% of remittances;

*Group III* – is formed by households whose income consists of 50-75% of remittances;

*Group IV* - – is formed by households whose income consists of 75% and more of remittances;

The effect of remittances, depending on their share in the household budget, on the marginal budget share of expenditures equals to:

$$\Delta \text{MBS}_i = (\text{MBS}_i |_{D_j=1}) - (\text{MBS}_i |_{D_j=0}) = \gamma_i + \lambda_i (\log \text{EXP}) \quad (11)$$

## DATA DESCRIPTION

This research is using a CBS-AXA Survey conducted in 2006 for the International Organization for Migration. This survey was created to collect data on the factors that determine migration and remittances as well as to reveal their effect at the household level. It is representative at the national scale for each major geographic region of the Republic of Moldova (North; Centre; South and Chisinau) and for each major type of locality (large cities, i.e. Chisinau and Balti, towns and villages). The total number of households interviewed was 3940. 1018 households receive remittances, which is 25.8% of the total number of interviewed households. This share is consistent with the official data on migration in the Republic of Moldova. According to the IOM<sup>3</sup>, about one quarter of the population has emigrated from the country for labor purposes.

Household expenditures are summarized in Table 2. Panel A provides data on average budget shares of expenditure categories, while panel B describes average annual expenditures for each category in the national currency – Moldovan Lei (MDL).

**Table 2: Average Budget Shares, Expenditure Levels and Total Expenditures by Remittance-Receiving Status**

Expenditure category (1)	Remittance-receiving households (2)	Non-receiving households (3)	Percentage difference between receiving and non-receiving households (4)
<b>Panel A: Expenditure shares</b>			
Food	0.265 (0.243)	0.292 (0.257)	-9.247***
Other consumer goods	0.138 (0.153)	0.130 (0.148)	6.154
Services	0.293 (0.222)	0.236 (0.187)	24.152***
Investments	0.275 (0.210)	0.310 (0.215)	-11.290***
Savings	0.029 (0.087)	0.032 (0.093)	-9.375
Sum	1.000	1.000	
<b>Panel B: Average annual expenditure levels (per household, MDL)</b>			
Food	3119.65 (2922.83)	2898.21 (3059.64)	7.64**
Other consumer goods	1930.61 (2287.03)	1587.22 (2082.97)	21.63***
Services	3340.21 (2609.81)	2468.89 (2353.67)	35.29***
Investments	3795.77 (3570.39)	3602.93 (3333.14)	5.35
Savings	432.91 (1294.17)	353.53 (1039.88)	22.45**
Total expenditures	12619.14 (6383.44)	10910.58 (6614.61)	15.70***

Source: CBS-AXA Survey 2006

Standard deviations are given in parentheses

\* Significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level

Note: Column (4) is calculated according to the formula: ((2)-(3))/ (3)\*100%

The average annual value of total expenditures per household is 11352.03 MDL or about 866 USD (the official average annual exchange rate in 2006 was 13.11 MDL per 1 USD)<sup>4</sup>. On average the expenditures of remittance-receiving household is 12619.14 MDL which is by 15.7 % higher than that of non-receiving. This difference is significant at 1% level.

Compared to the non-receiving group, households that received remittances, on average spent lower share of their expenditures on food

(26.5% versus 29.2%) and higher share on services (13.8% versus 13.0%). However, they spent less in relative terms on investment goods (27.5% compared to 31.0 %). These differences are very significant. Average budget shares of other consumption goods and savings are statistically similar.

In absolute terms, due to higher available income, expenses on each category are greater for remittance-receiving households. The greatest percentage difference is for services (35%), followed by savings (22.45%) and expenditures on other goods (21.63%). It is interesting to observe that in absolute values, amounts spent on food and on investment items do not differ that much between the two groups: households that receive remittances spend on these categories 7.46% and 5.35% more than those who do not receive. Statistical estimation showed that the differences in annual expenditures between the two groups are significant for all categories, except for investment.

The available dataset provides detailed information on socio-demographic characteristics of households. Table 3 describes variables included in the model by remittance-receiving status. The two groups exhibit significant differences in their demographic characteristics. In particular, the remittance-receiving households are larger (3.778 and 3.179 members respectively). Remittances boost available income, therefore creating more opportunities to provide education for the family members: the average number of individuals in each of three educational categories is larger for remittance-receiving households (1.302, 0.967 and 0.585 versus 1.018, 0.737 and 0.524 respectively). Average age of the head of the family in the remittance-receiving household is 47.9 years, which is 4.6 years less than in the non-receiving household. Finally, the average share of urban residents in two groups is 33.4% and 39.5% respectively. All differences in household characteristics are significant at 1% level, except for the number of members with university degree (significant at 10%) and the number of children which is insignificant.

**Table 3: Means and Standard Deviations of Explanatory Variables in the Expenditure Equations, by Remittance-Receiving Status**

Variable	Remittance-receiving households		Non-receiving households	
	Mean	S.D.	Mean	S.D.
Household Size (HS)	3.778	1.418	3.179	1.497
Age of Household Head (AGE)	47.941	14.389	52.540	16.298
Number of household members over age 15 with secondary education (EDSEC)	1.302	1.304	1.018	1.234
Number of household members over age 15 with college education (EDCOL)	0.967	0.980	0.737	0.963
Number of household members over age 15 with university education (EDUNIV)	0.585	0.946	0.524	0.904
Urban	0.334	0.472	0.395	0.489
Number of children below 5 years (CH)	0.137	0.414	0.122	0.385
Rem	0.258 (0.438)			
Sample Size	1018		2922	

Source: CBS-AXA Survey 2006

As described in section III there are four groups of remittance-receiving households, the distribution of respondents is shown on the following figure:

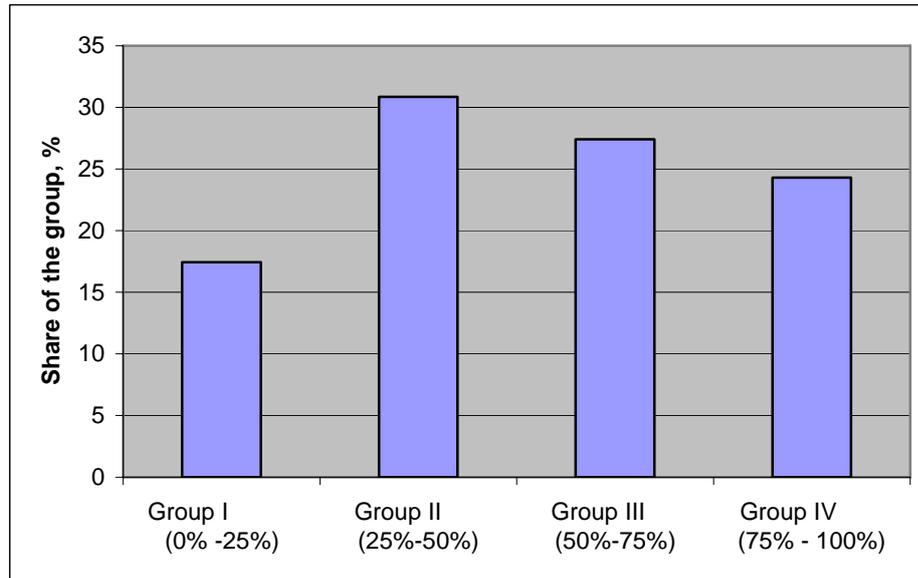


Figure 2: Distribution of respondents by groups.

The highest share in the sample of remittance-receiving households belongs to the group which receives them in the share of 25% - 50% of the budget (30.85%) followed by the third group (27.41%) and the fourth (24.31%). The lowest share (17.43%) belongs to the households who receive remittances up to 25% of their budget.

Table 4 describes characteristics of the households of each group. The differences between groups have been tested for statistical significance by means of t test.

**Table 4: Means and Standard Deviations of Explanatory Variables in the Expenditure Equations, by the Share of Remittances in the Budget**

Variable	Share of Remittances in the budget			
	0% - 25%	25% - 50%	50% - 75%	75% - 100%
<b>Household Size (HS)</b>	3.312 (1.458)	3.899 (1.502)	3.794 (1.304)	3.945 (1.397)
<b>Age of Household Head (AGE)</b>	50.548 (14.446)	49.309 (13.728)	48.745 (14.716)	43.831 (14.519)
<b>Number of household members over age 15 with secondary education (EDSEC)</b>	1.070 (1.144)	1.446 (1.423)	1.385 (1.282)	1.132 (1.179)
<b>Number of household members over age 15 with college education (EDCOL)</b>	0.866 (0.988)	1.000 (1.001)	1.057 (0.944)	0.909 (0.929)
<b>Number of household members over age 15 with university education (EDUNIV)</b>	0.675 (0.955)	0.615 (0.953)	0.494 (0.901)	0.616 (0.980)
<b>Urban</b>	0.458 (0.499)	0.338 (0.474)	0.283 (0.452)	0.278 (0.449)
<b>Number of children below 5 years (CH)</b>	0.070 (0.256)	0.144 (0.417)	0.085 (0.294)	0.260 (0.599)
<b>Sample size</b>	157	278	247	219
<b>Average annual expenditures, per household, MDL</b>	12576.38 (5953.5)	12228.86 (6088.04)	12919.58 (6976.60)	13166.19 (6392.43)

Standard deviations given in parentheses

The first group is of the smallest household size (3.312), has the oldest household head (50.55 years old) at the same time having the lowest number of members with secondary education (1.070) and the lowest

number of small children (0.070). The households of this group have the highest share of urban residents (45.8%) among all receiving remittances.

The second and the third groups have similar characteristics: they are bigger in household size (3.899 and 3.794 respectively) compared to the first group, have the highest number of members with secondary (1.446 and 1.386) and college education (1.000 and 1.057) and the average age of household head of these groups is younger (49.31 and 48.745 years). The shares of urban residents are 33.8% and 28.3% respectively.

The households from the fourth group are of the largest size (3.945) and have more children (0.260) than previous groups. The average age of the household head is the youngest (43.83 years). The number of members with secondary, college and university degree is 1.132, 0.909 and 0.616. The share of urban residents is the lowest – 27.8%.

The differences in the household socio-demographic characteristics are significant (except for the differences in the total amount of expenditures and the number of household members with university degree) for group I versus group II, group III versus group IV and group I versus group IV. Households of the second and the third groups are not statistically different in their characteristics.

Average budget shares of households' expenditures for each group are reported in Table 5.

**Table 5: Average Budget Shares of Expenditures by the Share of Remittances in the Budget**

Expenditure category	Share of Remittances in the budget, %			
	0-25	25-50	50-75	75-100
<b>Food</b>	0.277 (0.261)	0.277 (0.239)	0.283 (0.250)	0.245 (0.234)
<b>Other Consumption Goods</b>	0.129 (0.140)	0.127 (0.144)	0.134 (0.145)	0.164 (0.178)
<b>Services</b>	0.252 (0.168)	0.287 (0.202)	0.288 (0.223)	0.310 (0.253)
<b>Investments</b>	0.323 (0.229)	0.275 (0.201)	0.269 (0.207)	0.255 (0.208)
<b>Savings</b>	0.019 (0.052)	0.034 (0.087)	0.026 (0.083)	0.026 (0.086)
<b>Sum</b>	1.000	1.000	1.000	1.000

Standard deviations are given in parentheses

For a better understanding the differences in marginal propensity to spend it is essential to compare the structure of expenditures in each group. T test was used for the evaluation of significance of differences in average budget shares among these four groups of remittance-receiving households.

Households of the first group spend 32.3% of their budget on health, education and maintenance of housing, 27.7% and 25.5% on food and services. Savings constitute only 1.9% of their budget.

Households from the second and the third groups have similar structure of expenditures: services account for 28.7% and 28.8% of the budget for each group respectively; food expenses take 27.7% and 28.3%, investments – 27.5% and 26.9%. Their budget is roughly equally spent on these three categories, the remainder is used for clothes and shoes (12.7% and 13.4%). Savings do not exceed 3.4% for the second and 2.6 % for the third groups.

Households from the fourth group spend 31% of the budget on services, 25.5% and 24.5% on investments and food respectively.

It is interesting to observe that the first group has the highest average budget share of investments (32.3%), while the fourth group has the lowest one (25.5%). The difference between these two groups is statistically significant at 1%. This can be explained by a higher need for health services and medicines by the first group because of their older age.

The other clearly observable and statistically significant difference is for the share of services expenditures in the budget: the highest share corresponds to the fourth group (31.0%) and the lowest – to the first one (25.2%). The difference between the shares of services for the second group (28.7%) and first one is also significant. As the fourth group has the largest household size their expenses on electricity and other utilities are higher compared to smaller households.

The third group has the highest budget share of food expenses (28.3%) and it is statistically different from the lowest one (24.5%) of the fourth group. These groups have statistically different expenses on other consumption goods (13.45% versus 16.4%).

The difference in savings is statistically significant for the first group (has the lowest average budget share – 1.9%) compared to the second group, which has the highest one – 3.4%. The structure of the expenditures of the second and the third groups is not statistically different.

The descriptive analysis reveals significant differences in socio-demographic characteristics as well as in the structure of expenditures between households who do not receive remittances and those who receive. The latter group if classified in terms of the share of remittances in the budget consists of four distinct groups of households different in their household characteristics and spending patterns.

## EMPIRICAL ANALYSIS

Estimation of the effect of remittances on the marginal propensity to spend will be done in two stages. The first part provides the analysis of marginal budget shares of two groups of households: those who receive remittances and those who do not. The second part will focus on the differences in marginal spending patterns for each of the 4 groups of remittance-receiving households, formed according to the share of remittances in the budget, and non-receiving group.

The results of the ordinary least squares estimation of the model corrected for heteroskedasticity for each of the five expenditure categories are presented in Table 6. Equation (8) was estimated for 3939 households of the sample.

**Table 6: Results of OLS Estimation of Demand Equations by remittance-receiving status**

Variables	Expenditure category				
	Food	Other Consumption Goods	Services	Investments	Savings
<b>Log EXP</b>	0.00009 (0.01)	0.03506*** (8.30)	-0.10810*** (-13.26)	0.06233 *** (8.93)	0.01062 *** (4.72)
<b>Rem</b>	0.04801 (0.34)	-0.16124 ** (-1.98)	0.50786*** (3.60)	-0.33131*** (-3.14)	-0.06331 (-1.33)
<b>RemlogEXP</b>	-0.00514 (-0.34)	0.01612 * (1.86)P	-0.04931*** (-3.30)	0.03147 *** (2.79)	0.00686 (1.34)
<b>Child_5y</b>	0.03335*** (2.93)	0.01257* (1.76)	-0.03210*** (-3.76)	-0.01311 (-1.46)	-0.00072 (-0.23)
<b>Age_Head</b>	0.00231*** (8.30)	-0.00119*** (-7.26)	-0.00264*** (-12.53)	0.00096*** (3.96)	0.00056*** (5.46)
<b>Second_Ed</b>	-0.00340 (-0.77)	0.00106 (0.39)	0.00560** (1.74)	0.00078 (0.20)	-0.00405 ** (-2.40)
<b>College_Ed</b>	-0.01730*** (-3.47)	-0.00112 (-0.37)	0.02256*** (6.11)	-0.00083 (-0.19)	-0.00330* (-1.93)
<b>Univer_Ed</b>	-0.05816*** (-11.76)	-0.00327 (-1.01)	0.05102*** (11.61)	0.01283*** (2.81)	-0.00242 (-1.33)
<b>Urban</b>	-0.06136 *** (-7.09)	-0.03423 *** (-6.84)	0.05733*** (8.82)	0.04372 *** (5.81)	-0.00546 * (-1.85)
<b>HS</b>	-0.02045*** (-4.97)	0.00819*** (3.34)	0.01489*** (4.94)	-0.00195 (-0.56)	-0.00068 (-0.49)
<b>Constant</b>	0.30132 *** (3.91)	-0.13885 *** (-3.40)	1.2444*** (16.19)	-0.32422 *** (-4.86)	-0.08266*** (-4.09)
<b>Sample size</b>	3939	3939	3939	3939	3939
<b>R-squared</b>	0.1286	0.0862	0.2363	0.0745	0.0184

t-statistics in parentheses, \* significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level

The central question of the paper is to analyze the differences in spending patterns of remittance-receiving and non-receiving households; therefore it is necessary to evaluate the influence of remittances dummies on the variables of the model.

The regression analysis shows that remittances influence household expenses in two ways: shifting the intercept (by entering the equation in linear form) and changing the marginal propensity to consume (by entering the equation interacted with logarithm of total expenditures) for certain categories. F test reveals statistical significance of the remittances influence on expenditures on such categories as other consumption goods, services and investments.

In order to better understand spending patterns of households it is necessary to analyze the influence of other factors included in the model. Thus, the increase in the level of expenses leads to the higher budget share of other consumption goods, investments and savings, but lowers the share of services.

The presence in the family of more children under five years old increases demand for food, clothes and shoes, at the same time decreasing the possibility to spend on services. Its influence on investment and saving shares is insignificant.

The older the head of the household the higher is the share of savings, investments and food in the budget. The age of head is negatively associated with expenses on other consumption goods and services. This coefficient is significant in all five equations.

The higher the number of members with university degree in the household the more they spend on services and investments, spending less on food. The influence of this factor on other categories of expenses is insignificant. The impact of the number of members with college education is significant for two categories and is different from that of university degree: the increase in this number leads to a higher share of spending on services and lower – on food. The coefficient of the number of members with secondary education is positively associated with expenses on services and negatively - with that of savings. For the remainder of categories it is insignificant.

The higher the size of the household the higher is the share of services and other consumption goods, and the lower is that of food. Its influence on savings and investments is insignificant.

The impact of locality factor is statistically significant for all expenditure categories. Thus, households living in urban areas are likely to spend more on other consumption goods and services. Rural inhabitants are inclined to invest and save more.

These findings are consistent with other studies, except for the following results. Thus, Taylor (2006) finds that average budget share of food expenditures decreases as log of expenditures rises while in the present research the correspondent coefficient is insignificant. This difference might be explained by the comparison of the shares of food expenses in the budget for non-migrant households: 29.2% in the present sample versus 42.1% in the study by Taylor. The influence of increase in income is more significant if the initial share of food expenses was high. The impact of the level of education of household members is similar to estimations of Adams (2005, 2008) and Taylor (2006), despite a slightly higher mean level of household education (e.g. the average number of members with college education in the given study is 0.967 versus 0.746 in the study by Taylor).

In order to compare the marginal propensities to spend between remittance-receiving and non-receiving categories it is necessary to calculate marginal budget shares for two groups.

Marginal budget share for the  $i^{\text{th}}$  category of expenses is determined by the following formula:

$$\text{MBS}_i = dC_i / d\text{EXP} = \alpha_i + \beta_i (1 + \log \text{EXP}) + \sum_j \mu_{ij} Z_j + \gamma_{1i} (\text{Rem}) + \gamma_{2i} (\text{Rem})(\log \text{EXP} + 1) \quad (12)$$

This formula is derived by multiplying equation (8) by EXP and taking the first derivative with respect to EXP. The resulting equation shows the change in the level of expenses of correspondent category if income increases by 1 leu. Therefore, the sum of marginal budget shares in each category of expenses is 1.

In order to calculate MBS for each expenditure category the estimated coefficients from regression equations defined by formula (8) are plugged in the formula (12). For remittance-receiving category Rem is set to be equal to 1, for the non-receiving group it equals 0. Variables describing socio-demographic characteristics and the log of total expenditures are set equal to their total sample means. Table 7 reports marginal budget shares of households for each expenditure category for

two groups as well as percentage differences and their statistical significance.

**Table 7: Comparison of Marginal Budget Shares of Expenditures by Remittance-Receiving Status**

<b>Expenditure category</b>	<b>Remittance-receiving households</b>	<b>Non-receiving households</b>	<b>Percentage difference between receiving and non-receiving households</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<b>Food</b>	0.281	0.285	-1.465 (0.06)
<b>Other Consumption Goods</b>	0.173	0.171	1.420** (3.54)
<b>Services</b>	0.137	0.130	5.498*** (27.32)
<b>Investments</b>	0.361	0.373	-3.148*** (16.84)
<b>Savings</b>	0.048	0.041	15.390 (0.90)
Sum	1.000	1.000	

F-statistics in parentheses, \* significant at 10% level, \*\* significant at 5% level

\*\*\* significant at 1% level

Note: Column (4) is calculated according to the formula: ((2)-(3))/ (3)\*100%

The highest marginal budget shares for remittance-receiving and non-receiving households belong to investments (0.362 versus 0.373) and food category (0.281 versus 0.285), followed by other goods (0.173 versus 0.171), services (0.137 versus 0.130) and savings (0.048 versus 0.041). Therefore, both groups of households spend their increased budget on healthcare, education, housing renovation and repayment of loans as well as on food.

These results suggest that the recent real estate boom<sup>5</sup> and fast increase in the number of students enrolled in the state and private educational institutions<sup>6</sup> can be partially explained by an increase in the flow of remittances which relieved the financial constraints of households permitted them to invest in housing and education.

The differences in marginal spending behavior between the two groups are fairly small. Households receiving remittances compared to the

non-receiving group have a higher marginal propensity to spend on services and other consumer goods (the percentage difference is 5.5 and 1.42 respectively). However, they have a lower propensity to invest: the marginal budget share for the investment category of remittance-receiving households is lower by 3.148%. The differences in marginal spending on food and savings between the two groups are statistically insignificant.

The fact that extra purchasing power coming from remittances is used for consumer durables and services is consistent with current economic situation in the Republic since it is the poorest country in Europe<sup>7</sup>.

Comparing the results with the studies on samples from Mexico (Taylor, 2006) and Guatemala (Adams, 2005) similar patterns for two groups of households are observed. However, while the direction is the same, the magnitude of the differences is much larger. For example, the marginal propensity to spend on food of Mexican households receiving remittances is lower by 54.4% compared to non-receiving group. It is also lower by 25.4% on health, housing and education, but at the same time marginal expenses on other consumption goods are higher by 84.73% versus non-receiving households. The significant differences in the impact of remittances on marginal spending between households in Moldova and Mexico can be explained by the differences in their structure of expenses. For a Mexican household receiving no remittances food expenses on average constitute about 40% of the budget, expenses on consumer goods about 10% and each of the other categories of expenses is less than 10%; therefore, an increase in income leads to more significant in magnitude changes in the structure of expenses. For households with a very low level of income, expenses on food take almost half of the budget, therefore as income increases the expenses on non-food categories increase decreasing in relative terms the share of food.

Similar trend in the impact of remittances on marginal spending on food and consumption goods is observed for the study in Guatemala (Adams, 2005), however there is a positive effect for expenses on personal investments (health, education and housing).

Estimation of equation (10)

The next part of analysis focuses on the impact of remittances on the spending patterns depending on their share in household's budget. The results of the ordinary least squares estimation of the model corrected for heteroskedasticity for each of the five expenditure categories are presented in Table 8. Equation (10) was estimated for 3822 households of the sample.

**Table 8: Results of OLS Estimation of Demand Equations by the Share of Remittances in Household Budget**

Variables	Expenditure category				
	Food	Other Consumption Goods	Services	Investments	Savings
<b>Log EXP</b>	-0.00045 (-0.06)	0.03510 *** (8.28)	-0.10720*** (-13.08)	0.06166 *** (8.80)	0.01090 *** (4.83)
<b>D1</b>	0.94342 *** (2.77)	-0.36971 *** (-2.97)	-0.13929 (-0.43)	-0.32975 (-1.07)	-0.10466* (-1.86)
<b>D1logEXP</b>	-0.10032*** (-2.80)	0.03887*** (2.90)	0.01642 (0.48)	0.03511 (1.07)	0.00992 (1.58)
<b>D2</b>	0.02110 (0.09)	-0.09319 (-0.83)	0.37942* (1.76)	-0.29347* (-1.76)	-0.01386 (-0.21)
<b>D2logEXP</b>	-0.00060 (-0.02)	0.00772 (0.64)	-0.03663 (-1.60)	0.02731 (1.52)	0.00220 (0.31)
<b>D3</b>	0.12983 (0.48)	-0.23524* (-1.79)	0.43088 (1.59)	-0.20500 (-1.08)	-0.12047** (-2.06)
<b>D3logEXP</b>	-0.01256 (-0.44)	0.02350* (1.69)	-0.04088 (-1.43)	0.01728 (0.86)	0.01266* (1.93)
<b>D4</b>	-0.10554 (-0.42)	-0.43383*** (-3.01)	1.05275*** (4.01)	-0.33434* (-1.78)	-0.17903** (-2.23)
<b>D4logEXP</b>	0.00983 (0.37)	0.04685 *** (3.06)	-0.10556*** (-3.84)	0.02992 ** (1.51)	0.01895 ** (2.15)
<b>Child_5y</b>	0.03427 *** (2.97)	0.01075 (1.49)	-0.03047*** (-3.54)	-0.01260 (-1.38)	-0.00195 (-0.63)
<b>Age_Head</b>	0.00223 *** (7.90)	-0.00116 *** (-6.95)	-0.00254 *** (-12.02)	0.00090 *** (3.67)	0.00055 *** (5.29)
<b>Second_Ed</b>	-0.00373 (-0.83)	0.00077 (0.28)	0.00766 ** (2.42)	0.00056 (0.14)	-0.00525*** (-3.46)
<b>College_Ed</b>	-0.01860 *** (-3.65)	-0.00051 (-0.16)	0.02336 *** (6.31)	-0.00058 (-0.13)	-0.00366 ** (-2.11)
<b>Univer_Ed</b>	-0.05868 *** (-11.60)	-0.00387 (-1.18)	0.05216 *** (11.73)	0.01314 *** (2.80)	-0.00275 (-1.51)
<b>Urban</b>	-0.05834*** (-6.57)	-0.03431*** (-6.82)	0.05594 *** (8.56)	0.04218 *** (5.49)	-0.00548* (-1.82)
<b>HS</b>	-0.02005*** (-4.81)	.00866 *** (3.49)	0.01353 *** (4.53)	-0.00143 (-0.40)	-0.00071 (-0.52)
<b>Constant</b>	0.30899 *** (3.99)	-0.14217 *** (-3.46)	1.23219*** (15.96)	-0.31633 *** (-4.72)	-0.08267 *** (-4.08)

t-statistics in parentheses, \* significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level

The influence of different socio-demographic characteristics included in the equation (10) is similar to that of the model described by equation (8).

According to the results of econometric analysis, for households that receive 75% - 100% of their income through remittances, the latter shift both the intercept and marginal propensity to spend for all expenditure categories except food. For this category of households remittances as the main source of household income strongly determine the spending decisions.

If the share of remittances in the budget is less than 25% their influence on the intercept and marginal propensity to spend is significant for two expenditure categories: food and other consumption goods.

In order to understand the way remittances reshape spending decisions depending on their share in households' budget the detailed analysis of marginal budget shares will be performed. Again, resulting coefficients from the estimation of equation (10) are used to calculate marginal budget shares of each expenditure category for 4 groups of remittance-receiving households and remaining non-receiving ones. Table 9 provides the information about these shares.

**Table 9: Marginal Budget Shares of Expenditures by the Share of Remittances in Household Budget**

Expenditure category	Share of Remittances in the budget, %				Non-receiving households
	0-25	25-50	50-75	75-100	
<b>Food</b>	0.209	0.299	0.287	0.279	0.284
<b>Other Consumption Goods</b>	0.196	0.156	0.174	0.213	0.171
<b>Services</b>	0.158	0.138	0.146	0.111	0.131
<b>Investments</b>	0.399	0.357	0.343	0.342	0.373
<b>Savings</b>	0.038	0.050	0.050	0.055	0.041
Sum	1.000	1.000	1.000	1.000	

There are several results that are noteworthy.

First of all, the marginal share of investment goods dominates in all five groups. Being the highest for the first group of remittance-receiving households (share of remittances is less than 25%) – 0.399, it is followed by non-receiving households – 0.373. Comparing only remittance-

receiving groups an interesting pattern can be observed: the greater is the dependence of household income on the remittances, the lower is the marginal propensity to invest and to spend on services and the greater is the marginal propensity to save (0.055 for the fourth group and 0.038 for the first group of remittance-receiving households). Thus, marginal budget share of services is 0.158 for the first group and 0.111 for the fourth group of households.

The marginal budget share of other consumption goods is the highest for the fourth group – 0.213, followed by the first, third and the second groups of households (0.196, 0.174 and 0.156) respectively. The marginal propensity to spend on food is the lowest for the least dependent on remittances groups – 0.209 and the highest is for the second group – 0.299.

Percentage differences in the marginal budget shares of remittance-receiving versus non-receiving households and their statistical significance are presented in Table 10.

**Table 10: Comparison of Marginal Budget Shares of Expenditures by the Share of Remittances in the Budget (Percentage difference between remittance-receiving and non-receiving households)**

Expenditure category	Share of Remittances in the budget, %			
	0-25	25-50	50-75	75-100
<b>Food</b>	-26.505** (3.96)	5.270 (0.61)	0.804 (0.36)	-1.997 (0.37)
<b>Other Consumption Goods</b>	14.660*** (4.66)	-8.627** (3.03)	1.991* (2.64)	24.588*** (4.80)
<b>Services</b>	20.999 (0.98)	5.660*** (6.81)	12.071*** (7.94)	-14.685*** (12.61)
<b>Investments</b>	7.198 (0.58)	-4.334*** (6.48)	-7.922*** (5.50)	-8.175*** (8.17)
<b>Savings</b>	-9.354*** (10.80)	20.441 (0.74)	19.439** (3.27)	32.145** (3.12)

Value of F test in parentheses, \* significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level

Table 10 is analyzed both horizontally (the influence of remittances on each expenditure category) and vertically (the differences in the impact of remittances on spending patterns among 4 groups of remittance-

receiving households depending on the share of remittances in their budget).

Remittances influence the marginal propensity to spend on food only if their share in the budget is less than 25% - in this case the marginal budget share of food expenditures for this category of households is 26.5% less compared to the non-receiving group.

Remittances increase the marginal budget share of other consumption goods for the first, third and the fourth group (by 14.66%, 1.99% and 24.59% respectively) and decrease by 8.63% for the second group of households.

The demand for services is boosted by remittances if their share in the budget is up to 75% and reduced if it is higher than 75%. The correspondent increase in the marginal budget share for the second and the third group is 5.66% and 12.07%, for the last group the difference is – 14.69%.

Remittances do not increase the marginal propensity to invest if their share is higher than 25%: the difference is -4.33%, -7.92% and -8.175% respectively for the second, third and the fourth groups compared to non-receiving households.

Marginal propensity to save is positively influenced by remittances if their share in the budget is higher than 50% (the increase is by 19.44% and by 32.15%), however, if their share is less than 25% - the influence is negative, marginal budget share of savings being less by 9.35%.

Households who are the least dependent on the remittances have lower marginal propensities to spend on food and higher propensity to spend on consumption goods. The families of this group are smaller in size and have fewer children (see Table 4); they are more likely to spend the increment in their income on other consumption goods and less on food compared to non-receiving group. The structure of food expenditures may be different from that of other groups, and as a result

meals consumption can cost less. Their high marginal budget share of investment expenditures (39.9%) might be explained by a higher demand and need for health services, as the members of this group are older (average age of head is 50.5 years old), and therefore, may have a poorer health status.

The second group of remittance-receiving households is likely to spend more on services and less on consumption and investment goods. The third group has higher marginal propensity to spend on other consumption goods, services and savings but it less inclined to invest. The type of expenses of households from these two groups can be described as necessity driven. Putting together their estimated marginal propensity to spend with the structure of expenditures (see Table 5) the following can be inferred. These households have roughly equal shares of expenditures on food, services and investments; therefore the increase in the income does not significantly change their spending patterns, since remittances simply help ensure the minimum level of living. There is no single dominating category in the structure of expense since the households try to satisfy their basic needs by careful allocating of available income. Relatively low level of savings and low marginal propensity to save can be explained by the lack of available income which remains after all necessary expenses.

The most dependent on remittances group of households has significantly higher marginal propensity to save and to spend on other consumption goods compared to other groups, at the same time they are less inclined to invest and spend on services. Combining the estimates of their marginal spending with the descriptive portrait of the group (young families with children living predominantly in rural areas, totally dependent on remittances) two explanations might be provided for the fact that the increment in income is likely to be spent for food and clothes rather than on education, health and housing maintenance. If the initial level of satisfying the basic consumption needs is very low, it is obvious that the increase in the budget will be used for these purposes and not spent on renovation of house or education. The other explanation comes from the fact that if parents are working abroad leaving the children on their own without control – the money they sent home might be “wasted” for

unnecessary consumption rather than on schooling. The desire to “improve” the social status in others’ view by spending more on clothes is consistent with so called “mentality of the poor people”: good education is less valuable compared to a good appearance wearing new clothes and shoes.

The highest among the 4 groups marginal propensity to save can be explained by the fact that being totally dependent on remittances, households treat them as a transitory and uncertain flow and would like to save a penny for “rainy” days.

The findings from econometric analysis reveal that a part of the budget increase due to remittances is spent on unproductive household assets and consumption. This fact is in line with current poverty situation in the country. In 2006 30.2% of the population was living below the poverty line of \$ 220 per person per year. The current reduction in poverty can be partially attributed to the growth of remittances during the recent decade since by 2006 the number of people living below the poverty line decreased by 2.5 times (according to the Ministry of Economy and Trade of Republic of Moldova).<sup>8</sup> At the same time increased demand for local consumption goods and services stimulates growth in this sectors contributing to generation of the new jobs.

Due to the current economic crisis the rate of growth to remittances is expected to decline and the households who significantly depend on them will experience the lack of financial resources to satisfy their daily consumption needs. Therefore the government will have to pay more attention to the poverty situation in the country.

There is also another fact that provides hope for optimism. For all types of remittances recipients 40c of additional leu will be spent on personal investments like health, education and housing maintenance. This expenditure category has the largest marginal budget shares for all households.

A higher propensity to save among recipients of remittances can be viewed as a capacity to invest in the future. According to an IOM report,

the main reasons which refrain families with migrants to launch their own business or to invest accumulated money into income-generating activities are administrative and red-tape barriers favoring corruption in the country as well as high business set-up costs.<sup>9</sup> Therefore, the success of undergoing reforms aiming at improving the business climate in the Republic of Moldova is essential for many households with migrants. They have accumulated the financial capacity and can invest it in the country's economy contributing to its development and growth.

## CONCLUSIONS

This paper has analyzed the impact of remittances on spending patterns of households in the Republic of Moldova using a nationally representative survey conducted in 2006 for International Organization for Migration.

In order to address the issue the comparative analysis of marginal spending behavior measured by marginal budget shares of expenditures of remittance-receiving and non-receiving households was performed. The demand-modeling approach used for estimation takes into consideration the fungibility or equal treatment of income from different sources as well as socio-demographic characteristics and the level of household's income. The novelty of this research is that the effect of remittances was analyzed depending on their share in the household's budget. Econometric analysis revealed statistically different spending patterns of households of groups defined with respect to this criterion.

The following findings emerge from the present research. The differences in marginal patterns of spending between remittance-receiving and non-receiving households are fairly small; Adams (2008) also finds no differences in terms of marginal spending between migrant and non-migrant households in Ghana. However, this study claims that the size and significance of the differences in spending patterns depends on the share of remittances in the household's budget. Remittance-receiving group if classified in terms of the share of remittances in the budget consists of four distinct groups of households different in their household characteristics and spending patterns.

The marginal share of personal investments, such as expenditures on health, education, maintenance and renovation of housing as well as for loans repayment, dominate other expenditure categories for all remittance-receiving households independently of the share of remittances in the

budget. The high marginal budget share of personal investments (35-37%) is beneficial for the development of human capital which is essential for the country's economy.

However, higher share of remittances does not increase the marginal propensity to invest. Moreover, the higher is the dependence on the remittances, the lower is on margin the inclination to invest. This trend can be partially attributed to the differences in socio-demographic characteristics of the groups with respect to the share of remittances in the budget. High marginal propensity to spend on personal investments of the least dependent on remittances group might be explained by a higher demand and need for health services, as the members of this group are older (average age of head is 50.5 years old), and therefore, may have a poorer health status. Unlike this group, the most dependent on remittances households (younger families with children) prefer to spend the increment to their income on consumption rather than on personal investments. This fact is disturbing, because this group is the youngest and represents the potential human capital of the country. Having consumption-oriented spending the households from this group have the lowest willingness to invest in their education and health.

The extra purchasing power coming from remittances is used for consumer durables and services significantly contributing to the reduction of poverty in Moldova and insuring the minimum subsistence level for many households of the country. These findings are consistent with other studies (Ghencea and Gudumac (2004), Adams and Page (2003)). The structure of expenditures of households whose income consists of remittances up to 75% can be defined as necessity-driven, since the expenses on each category are balanced without any disproportional spending. These household members try to satisfy their basic daily needs by careful allocation of available income.

However, higher share of remittances in the budget significantly increases the marginal propensity to save which can be viewed as a capacity to invest into income-generating activities. The higher is the share of remittances in the budget the higher is the marginal share of savings.

Household that receive 75%-100% of their income through remittances on margin save by 32% more than non-receiving households.

Thus, currently remittances have rather been the way to survive for many households in the Republic of Moldova. However, by stimulating demand for consumption goods and services they have contributed to the development of respective economy sectors as well as to generation of employment opportunities. At the same time investment into human capital and accumulated savings due to the remittances build up a foundation for investment into productive sphere if the business climate improves. Therefore, remittances are waiting to become the chance to succeed.

## Notes:

- <sup>1</sup> “Remittances in the Republic of Moldova: Patterns, Trends, and Effects”(2007) Report prepared for International Organization for Migration, available on-line at <http://www.iom.md>
- <sup>2</sup> “Migration and Development Brief”. Outlook of Remittance Flows 2008-2010. World Bank Group., available on-line at <http://www.worldbank.org/prospects/migrationandremittances>.
- <sup>3</sup>“Remittances in the Republic of Moldova: Patterns, Trends, and Effects” (2007) Report prepared for International Organization for Migration, available on-line at <http://www.iom.md>
- <sup>4</sup> National Bank of Moldova website: [www.bnm.org](http://www.bnm.org)
- <sup>5</sup> Global Property Guide: <http://www.globalpropertyguide.com/Europe/Moldova>
- <sup>6</sup> According to the Ministry of Education of Republic of Moldova, the number of students per 10 000 people increased from 217 in 2000 to 351 in 2006, <http://edu.gov.md/?lng=ru&MenuItem=3&SubMenu0=7>
- <sup>7</sup> IFAD, <http://www.ifad.org/english/gender/cen/profiles/mda.htm>
- <sup>8</sup>Ministry of Economy and Trade of Republic of Moldova, <http://www.mec.gov.md>
- <sup>9</sup> “Remittances in the Republic of Moldova: Patterns, Trends, and Effects” (2007) Report prepared for International Organization for Migration, available on-line at <http://www.iom.md>

## BIBLIOGRAPHY

- Adams, R. 1991. *The Economic Uses and Impact of International Remittances in Rural Egypt*, Economic Development and Cultural Change 39:695-722.
- Adams, R. and J. Page, 2003. *International Migration, Remittances and Poverty in Developing Countries*, World Bank Policy Research Working Paper No.3179.
- Adams, R., A. Cuecuecha, and J. Page, 2008. *Remittances, Consumption and Investment in Ghana*, World Bank Policy Research Working Paper No.4515.
- Agarwal, R., and A.W. Horowitz, 2002. *Are International Remittances Altruism or Insurance? Evidence from Guyana Using Multiple-Migrant Households*, World Development, Vol. 30, pp. 2033-2044.
- Amuedo-Dorantez C., and S. Pozo, 2004. *Workers' Remittances and the Real Exchange Rate: A Paradox of Gifts*, World Development Vol. 32, No. 8, pp. 1407-1417.
- Becker, H.A. 1974. *Theory of Social Interactions*, NBER Working Papers Series No.42.
- Buch, C. M. and A. Kuckulenz, 2004. *Worker Remittances and Capital Flows to Developing Countries*, ZEW Discussion Paper No. 04-31, Mannheim.
- Catrinescu, N. et al. 2008. *Remittances, Institutions, and Economic Growth*, World Development, doi:10.1016/j.worlddev.2008.02.004.
- Chami, R., C. Fullenkamp and S. Jahjah, 2005. *Are Immigrant Remittance Flows a Source of Capital for Development?* IMF Staff Papers, Vol. 52, No. 1.
- Chandavarkar, A. 1980. *Use of Migrants' Remittances in Labor-exporting Countries*. Finance and Development 17:36-44.
- Craciun, C. 2006. *Migration and Remittances in the Republic of Moldova: Empirical Evidence at Micro Level*, National University "Kyiv-Mohyla Academy".
- Dandler, J. and C. Medeiros, 1988. *Temporary Migration from Cochabamba, Bolivia to Argentina: Patterns and Impact in Sending Areas*. In *When Borders Don't Divide: Labor Migration and Refugee Movements in the Americas*, edited by Patricia R. Pessar, pp. 8-41. Staten Island, NY: Center for Migration Studies.
- Dimova, R. and F. Wolff, 2008. *Are private Transfers poverty and Inequality Reducing? Household Level Evidence from Bulgaria*, Journal of Comparative Economics 36, 584-598.
- Durand, J., W. Kandel, E. A. Parrado, and D. S. Massey, 1996. *International Migration and Development in Mexican Communities*, Demography, Vol. 33, No. 2, pp. 249-264.
- Durand, J. and D. S. Massey, 1992. *Mexican migration to the United States: a critical review*. Latin American Research Review 27:3-42.

- Elbadawi, I. A. and R. Rocha, 1992. *Determinants of Expatriate Workers' Remittances in North Africa and Europe*, Working Paper WPS 1038, Country Economics Department, The World Bank.
- Escobar, A. and M. Martinez, 1990. *Small-Scale Industry and International Migration in Guadalajara, Mexico*, Commission for the Study of International Migration and Cooperative Economic Development.
- Ghencea, B. and I. Gudumac, 2004. *Labor Migration and Remittances in the Republic in Moldova*, International Labour Organisation, Alliance on microfinancing of Moldova - Chisinau: AMF-SOROS.
- Giuliano, P. and M. Ruiz- Arranz, 2008. *Remittances, Financial Development, and Growth*, Journal of Development Economics.
- Goldring, L. 1990. *Development and Migration: A Comparative Analysis of Two Mexican Migrant Circuits*, Commission for the Study of International Migration and Cooperative Economic Development.
- Haas, H. 2005. *Migration, Remittances and Regional Development in Southern Morocco*, Geoforum 37 (2006) 565–580.
- Hagen-Zanker, J. and M. Siegel, 2007. *The Determinants of Remittances: A Comparison between Albania and Moldova*, Maastricht Graduate School of Governance.
- Helweg, A. 1983. *Emigrant Remittances: Their Nature and Impact on a Punjabi Village*, New Community 10:3-20.
- Leon-Ledesma, M. and M. Piracha, 2004. *International migration and the role of remittances in Eastern Europe*. *International Migration*, 42(4), 65–83.
- Lipton, M. 1980. *Migration from Rural Areas of Poor Countries: the Impact on Rural Productivity and Income Distribution*. *World Development* 8:10-20.
- Lucas, R. E. B. 1987. *Emigration to South Africa's mines*. *The American Economic Review*, 77(3), 313–330.
- Lucas, R.E.B. and O. Stark, 1985. *Motivations to Remit: Evidence from Botswana*, *Journal of Political Economy* 93(5): 901-917.
- Massey, Douglas S. 1987. *Understanding Mexican Migration to the United States*, *American Journal of Sociology* 92:1,372-403.
- Mills, M. 1993 *"We Are Not Like Our Mothers:" Migration, Modernity and Identity in Northeast Thailand*, University of California, Berkeley, CA.
- Mora, J. and J. Taylor, 2005 *Determinants of Migration, Destination and Sector Choice: Disentangling Individual, Household and Community Effects*, NewYork: Palgrave Macmillan.
- Rempel, H. and A. Richard, 1978. *The Role of Urban-to-rural Remittances in Rural Development*, *Journal of Development Studies* Vol 14.
- Rhoades, R. 1978. *Intra-European Return Migration and Rural Development: Lessons from the Spanish Case*, *Human Organization*. Vol 37.

- Stark, O. 1980. *On the Role of Urban-to-rural Remittances in Rural Development*, Journal of Development Studies 16:369-74,
- Stark, O., and E. Katz, 1986. *Labor Migration and Risk Aversion in Less Developed Countries*, Journal of Labor Economics 4:134-49.
- Shankman, P. 1976. *Migration and Underdevelopment: The Case of Western Samoa*, Boulder, CO: Westview Press.
- Shelburne, R., and J. Palacin, 2007. *Remittances in the CIS: Their Economic Implications and a New Estimation Procedure*, UNECE Discussion Papers Series No. 2007.5
- Stuart, J. and M. Kearney, 1981. *Causes and Effects of Agricultural Labor Migration from the Mixteca of Oaxaca to California*, La Jolla, CA: Center for U.S.- Mexican Studies, University of California, San Diego.
- Taylor, E. et al., 1996. *International Migration and Community Development*, Population Index, Vol. 62, No. 3, pp. 397-418.
- Taylor, E., 1992. *Remittances and Inequality Reconsidered: Direct, Indirect and Intertemporal Effects*, Journal of Policy Modelling 14:187-208.
- Wahba, S. 1991, *What Determines Workers' Remittances*, Finance and Development 28 (4):41-44.
- Wiest, R. 1979. *Implications of International Labor Migration for Mexican Rural Development*. In *Migration across Frontiers: Mexico and the United States*, edited by Fernando Camara and Robert Van Kemper, pp. 85-97. Albany, NY: Institute of Mesoamerican Studies, State University of New York
- Yang, D., 2006. *International Migration, Remittances, and Household Investment: Evidence from Philippines Migrants' Exchange Rate Shock*, NBER Working Paper 12325.
- Remittances in the Republic of Moldova: Patterns, Trends, and Effects*. 2007. Report prepared for International Organization for Migration, available on-line at <http://www.iom.md>
- Migration and Development Brief. Outlook of Remittance Flows 2008-2010*. World Bank Group, available on-line at <http://www.worldbank.org/projects/migrationandremittances>.

## APPENDIX

Figure 1. Evolution of net FDI and net remittances in the Republic of Moldova.

