

The Determinants and Consequences of Remittances: With Special Reference to Kosovo

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Abstract

The aim of this thesis is threefold: to investigate, from the viewpoint of the home country, the effects of macroeconomic variables and policies on the flow of remittances; and to investigate the microeconomic foundations of the effects of remittances on both household expenditure and the labour force, with a specific application to Kosovo. For the macroeconomic determinants of remittances, a unique dataset is assembled using World Bank data with policy variable data collected from individual countries in the sample. For the implications of remittances on household expenditure and the labour force the United Nations Development Program Remittances Survey is used.

The estimates suggest that the key determinants of remittances/GDP and remittances *per capita* are real living standards in both the home (negatively) and the main host country (positively). The effect of GDP in the host country is not linear, but increases at decreasing rate. An original contribution of this section is the inclusion of specific policies applied to migrants and their remittances. However, despite the support for such policies in the literature, the policy variables modelled are statistically insignificant across several specifications.

In considering the effect of remittances on consumption, whether the household receives remittances or not is interacted with the log of income to examine if the spending of remittances is different from other sources of income. This variable is statistically insignificant for the share of expenditure on current consumption and education. However, the effect for the share of expenditure on durable goods is positive, albeit small. The model extends the literature by considering the migrant's involvement in various ways with the home family as possible control mechanisms for the use of remittances. The results give three significant effects suggesting that, compared to other households, when income increases: households who receive advice on spending remittances increase the share of expenditure on current consumption; households who get more visits decrease the share of expenditure on current consumption and increase the share of expenditure on education.

In addition, addressing the impact of remittances on the labour supply of individuals in Kosovo, the results suggests that remittances *per capita* are insignificant with regard to working age members being active in labour market and being employed for males and females. However, when the total value of remittances per household is used, the estimate suggests an increase in the probability of males becoming active in the labour market, though the effect is very small.

Overall, the findings suggest that the policies aimed at increasing remittances from migrants are not effective. Furthermore, there is little evidence that changes in income levels for households receiving remittances are spent very differently from the households not receiving them; small differences are found for the durable goods share and if the migrant has some direct involvement with the home family. Finally, contrary to expectations, remittances are not found to affect the labour supply in the majority of the empirical work in this thesis. Such findings may indicate that the policy relevance for

remittances is not as important as suggested by the literature for developing countries, especially for those with a similar profile to Kosovo.

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<< I dedicate this thesis to my parents >>

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List of Abbreviations

AH	Anderson-Hiaso Method
AME	Average Marginal Effects
AR (1)	Unobserved Component Model AR (1)
BOP	Balance of Payments
CBK	Central Bank of the Republic of Kosovo
CFR	Common Factor Restriction

CNLRM	Classical Normal Linear Regression Model
DLRM	Dynamic Linear Regression Model
EBRD	European Bank for Reconstructing and Development
EUR	Euro
FDI	Foreign Direct Investment
FE	Fixed Effect
GBP	The Pound Sterling
GDP	Gross Domestic Product
IMF	International Monetary Fund
IOM	International Organization of Migration
KPSF	Kosovo Pension Saving Fund
LFP	Labour Force Participation
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
MEM	Marginal Effects at Mean
MLSW	Ministry of Labour and Social Welfare
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
SAK	Statistical Agency of Kosovo
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Program
US and USA	United States of America

USD	U.S. Dollar
WDI	World Development Indicators
WOE	World Economic Outlook

CHAPTER I

INTRODUCTION

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1.1 Introduction

The continuous growth of cross border migration, which can be viewed as an inevitable feature of globalization, has raised many questions in economics and other related fields of inquiry. The United Nations estimate that nearly three percent of the world's population lives in a different country from the country of their birth. This is particularly relevant for many developing countries with geographical proximity to developed countries, which represent the main destination for migrants. Migration is often considered as one of the factors which improve people's lives, given that many have earned higher wages and more importantly, find the jobs which are often lacking in many developing countries. Furthermore, migration is often considered as one of the factors which ease the labour market pressure in migrant sending countries. An integral part of the migration is the flow of remittances, especially since 2000, given their substantial size for many developing countries, which in many cases surpasses the size of foreign aid. In this context, the flow of remittances is considered as an important development tool given that, in addition to the immediate effect on individual's lives, it also improves macroeconomic indicators such as the reduction of the current account deficit, poverty, inequality and provides consumption smoothing.

Remittances have often been viewed in the literature as a potential flow of income that can be used for development, suggesting that remittances and migrants can present an unexplored potential source of investment funds in the recipient country. In this context, the literature has proposed various policies and measures which can be applied to increase the flow of remittances and strengthen their effect on the economy (Carling, 2004; Agunias 2006; Martinez *et al.*, 2006). A substantial number of countries have

applied policies and to date, their empirical effect has not been fully investigated in the economics literature. Furthermore, the literature on the implications of remittances for the recipient households has been divided into three viewpoints. The first opinion suggests that remittances do not represent a source for development and, on the contrary, they end up being used for luxury goods and consumption, and in addition decrease the labour force participation incentives of those of working age in the home country (Chami *et al.*, 2005; Ratha, 2003). The second view is that remittances are often associated with improvements in education, durable goods ownership and home repairs and hence contribute the overall growth conditions (Osili, 2004). The third view is that remittances do not have any different effect from other sources of income (Adams *et al.*, 2008).

Accordingly, in this thesis, the aim is to explore the macroeconomic determinants of remittances for developing countries and the implications of remittances for households' expenditure and labour supply, with a special focus on Kosovo. More specifically, this thesis has three main objectives. The first is to estimate the impact of macroeconomic variables on the flow of remittances, including the impact of policy initiatives in the recipient country. This policy initiative evaluation makes this study the first to our knowledge addressing the question on whether such policies have been successful or not. Given the macroeconomic determinants of remittances and the effects of the policies, by exploring the factors affecting households' expenditure patterns in Kosovo, with special focus on remittances and migration characteristics, allows us to address the question of the difference, if any, of the effect of remittances from other sources of income. This indirectly assesses the appropriateness of the policies. In this context, the second objective addresses the role of remittances on household expenditure patterns. Finally,

the third objective is to investigate the implication of remittances for the labour force participation decision and the probability of being employed, given that the theoretically in the neoclassical framework non-labour income decreases the labour supply.

1.2 Research Questions

The importance of remittances is suggested by their size relative to Gross Domestic Product (GDP) in many developing economies and that remittances have grown faster than other types of private capital flows and faster than official development assistance funds in recent years (see section 2.2.1). Governments of different countries have applied different policies and there have also been private sector schemes to attract or orient the end use of remittances. A World Bank Survey of 40 central banks of developing countries identifies that 35 percent of these countries' governments have introduced incentives to migrants when they send remittances (Martinez, 2005). A World Bank (2006) report suggests that there has been some progress made through policies which aim at attracting remittances and shifting them from the informal into the formal sector, notably in Mexico and Philippines. However, depending on the type of policy, the effect on remittances may differ. Most importantly, no study so far has empirically investigated the implications of such policies for the flow of remittances.

In this context, the **first objective** is to investigate the macroeconomic determinants of remittances with special focus on the effect of policies. This research question is addressed in **Chapter III**. The macroeconomic determinants of remittances remain a relatively unexplored topic and to the extent that it has been explored, it was based on the seminal theoretical approaches of altruism and self-interest. The exploration has been

usually specific for a single combination of home-host countries (i.e. US-Mexico or Germany-Serbia flow of remittances) or for a relatively small number of countries. With the latter, the investigation was usually addressed solely from the viewpoint of home country, that is, by only being focused on the macroeconomic variables of the home country. This may be to some extent justified since for a wider region the inclusion of host country macroeconomic variables may be more problematic, in that some countries migrants' may be scattered across a considerable number of destination countries. However, more rigorous research of this aspect reveals that migrants from almost every country are oriented towards some major regions and in many cases, to predominately a single country. From this viewpoint, using the standard theoretical background of remittances, we introduce the macroeconomic variables of the main host country into the model.

Furthermore, in a rigorous review of the existing sources, for the first time, we introduce a policy initiatives variable as a potential determinant of remittances. The introduction of this variable seems important since the literature has noted that many countries have adopted policies in order to try to increase remittances flows, but whether these policies are effective is not known. Thus, we introduce policy variables, which add to the contribution to the literature given by the investigation of the macroeconomic determinants of remittances for a very large group of developing countries. The policy initiative variable is specifically designed for this chapter and it addresses the question of whether government policies and private sector initiatives designed for migrants have an impact on the flows of remittances. The research question to be addressed in this chapter is:

What are the main macroeconomic determinants of remittances, especially the role of macroeconomic variables of main host countries, and how are policy initiatives affecting the flow of remittances towards developing economies?

For the second and third research questions examined in this thesis, the special focus on Kosovo is justified by the lack of the literature for the region, but also its relatively large number of migrants, which is estimated to be at over 20 percent of the total population. At the same time Kosovo is one of the countries with the largest inflow of remittances in the region, which account for around 15 percent of GDP (see section 2.2.1 and 2.3.3). This importance is further enforced by the high unemployment rate and low labour force participation rate in Kosovo, especially amongst females (see section 2.3.2). However, how remittances are affecting household behaviour in terms of their expenditure patterns and labour force participation remains unknown in Kosovo.

It is often considered that the aggregate performance of macroeconomic indicators is as a consequence of the behaviour of individuals within an economy. From this perspective, the literature is largely inconclusive in terms of the role of remittances for recipient economies and it is split into three possible outcomes, as discussed in section 1.1. The first, a negative view, is that remittances mainly finance consumption and are oriented towards non-productive purchases, such as luxury goods and hence, do not generate growth. The second, a positive view, considers remittances as means of financing home improvements, education and other investments. Finally, the third neutral view, considers remittances as having the same effects as any other source of income (see section 4.1). Given this, in **Chapter IV** we raise the question of how remittances are affecting the expenditure behaviour of households in Kosovo, which is the **second objective** of this

study. The investigation covers three expenditure categories, the expenditure on current consumption, durable goods and education. However, in addition to the effect of remittances on expenditure patterns, we further extend the standard Working-Leser model by including characteristics which have generally been neglected in the literature. This extension is specially focused on migration characteristics such as the role of the migrant in the household decision-making process and the potential for moral hazard by households, characteristics which may affect the household behaviour. Consequently, the questions addressed in this chapter are:

What is the effect of remittances on the household expenditure patterns for current consumption, durable goods and education? Is there a role from the migrant in the decision-making process for expenditures by the recipient households and, does the frequency of the visits decrease the potential for moral hazard by remittance recipient households?

Another relatively unexplored aspect of migration and remittances is their effect on the labour force participation. Despite being discussed in the literature as a potential factor driving down the labour force participation for recipient individuals and countries, this topic has not been studied thoroughly empirically. Given this lack of empirical studies (see section 5.2.1), it appears that the debate has been driven by the theoretical foundations of labour force participation, which in general concludes that non-labour income affects negatively labour force participation and search efforts as a consequence of increasing the reservation wage. In this context the **third objective** of this thesis is to investigate the implications of remittances for labour force participation and employment, presented in **Chapter V**. The reason for distinguishing between labour force participation

probability and employment relies on the relatively unclear distinction in the literature between labour supply and participation. This is because the widely used of hours of work either neglects those who are not in the labour market, or treats them in the same way with those who are in the labour market looking for a job. This also treats as the same two different types of individuals: those who supply zero hours but are looking for a job and those who are supplying zero hours but not looking for a job. It seems to be important to distinguish these cases given the structural nature of the labour market in Kosovo which is characterized by amongst the lowest participation rate in the region and beyond, but also, a high unemployment rate. So, the question aimed to be addressed in this chapter is:

Are individuals who receive remittances more likely to drop out of the labour market?

Then this question is followed by the question which aims at finding whether:

Do remittance recipients have a higher or lower probability of being employed?

These two questions allow addressing the participation and employment question directly, while in considering the employment probability, we may indirectly consider if remittances are increasing the reservation wage.

In the initial stage of this research process, the investigation of labour force participation from the viewpoint of hours of work and the investigation of reservation wage was considered as another approach which could provide answers to rather unexplored questions. However, given the lack of data for these two variables, this alternative was dismissed. It appears that not only is there a lack of data for transition countries,

especially in the Balkans, but also the type of existing data limits the further investigation of this topic. These severe data limitations are hence leaving some gaps in the literature on the explanations for structural unemployment and low participation rates in the region.

In this thesis, various data sources are used to address the research objectives. For Chapter III, the World Bank, International Monetary Fund and central banks of the respective countries have been used to compile the data set. The data set includes 52 countries for periods ranging from 5 years up to 30 years of time series. Regarding the second and third objective, we used the survey funded by the United Nations Development Program (UNDP) and supported by the International Monetary Fund (IMF) and the Central Bank of the Republic of Kosovo (CBK). This survey was conducted with households in Kosovo.

1.3 Structure of the thesis

This thesis is organized as following. A summary of the characteristics of developing countries' migration and remittances is provided in **Chapter II** as a background for the later chapters. In second part of this chapter a more focused description of the economy of Kosovo is provided. It includes description of the structure of the economy, labour market characteristics such as labour supply, unemployment rate and gender differences. Aspects of the history of migration, the aggregate data on the flow of remittances and the characteristics of household with migrants are also presented. In **Chapter III**, the theoretical foundations for explaining remittances flows are presented, followed by a review of literature. Given the continuous debate, a review of the policies that were proposed and applied in different counties is presented. It also presents and estimates

models which focus on the effect of policies, but also include other macroeconomic factors affecting remittances flows. **Chapter IV** presents the literature which investigates the impact of remittances on household consumption. This chapter as well as presenting a review of the literature which focuses on the effect of remittances also goes back to the theoretical models used for the investigation of expenditure patterns models. This is in order to develop a more complete model which is then the basis if the empirical study of consumption, durable goods and education expenditure. The third objective investigation is presented in **Chapter V**, which reviews the literature on labour force participation in the presence of remittances. It also reviews the theoretical foundations while, given the data limitations, it uses the standard neoclassical work-leisure model to investigate the effect of remittances on labour supply and employment for Kosovo. Finally, **Chapter VI** concludes by presenting the main findings and policy implications of this research. It pays attention to the original contribution of this work for the literature of remittances, but also addresses the limitations and presents some suggestions for further research.

This chapter has introduced the topic of this thesis and set the research questions. The next chapter will provide important background information on migration and remittance flows to developing countries, and the economy of Kosovo as a basis for later chapters in the thesis.

CHAPTER II

BACKGROUND INFORMATION ON MIGRATION AND REMITTANCES WITH SPECIAL REFERENCE TO KOSOVO

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2.1 Introduction

Cross border migration is one of the structural features of globalization, along with increasing economic integration amongst nations around the world through trade and financial flows (IMF, 2000). The cross-border migration has been one of the most contentious policy issues for migrant recipient and sending countries. The topic of migration has gained attention in recent years due to its estimated size and the implications for economies that receive substantial remittances. The traditional view is that migration is driven by the lack of economic opportunities in home countries and the hopes for economic benefits in other, mostly developed, countries (Freeman, 2006). The World Bank (2006) notes that migration has generated enormous improvements in people's lives given that many have earned higher wages in the destination countries and also the sending country experienced less pressure in their labour markets. An integral part of the migration is considered the flow of remittances. However, the migration process is often associated with the movement of skilled labour from developing countries towards developed countries, and hence, reducing the human capital in poorer countries.

Nevertheless, it is often that the skilled labour moves to other countries as a consequence of lacking opportunities rather than simply income differences. The benefit for the major migrant sending countries is the substantial amounts of remittances, which are one of the main economic implications of migration. This is because remittances help to narrow the gap of their countries' current account deficit, reduce poverty and inequality in both income and consumption, as well as many other aspects in recipient economies (World Bank, 2006). Such effects of remittances are also observed at the household level, given

that they reduce poverty and improve consumption and education in the households (World Bank, 2006; Petreski *et al.*, 2013), which contributes to the overall improvement in living standards of the recipient households. However, the implications of remittances are often considered to be short-lived given that they are primarily used for consumption and only to a very limited extent for investment or entrepreneurship activities. In this context, the effect of remittances on employment generation is considered to be relatively moderate and is often considered as a potential discouragement for job-seekers.

This chapter aims at presenting a general overview of migration movements from developing countries and the recipients of remittances in these countries. In addition, it also focuses specifically on the characteristics of the economy of Kosovo with a focus on migration, remittances and labour market characteristics. It is organized as follows: Section 2.2 presents some background information on migration, such as the main sending and recipient countries. It is then followed by a section which describes the flow of remittances at the global level, specifically describing the major remittance recipient regions. Section 2.3 is dedicated to a description of the economy of Kosovo which starts by providing some background information on the structure of the economy and GDP, followed by a detailed description of the labour market developments, migration and remittances and finally, section 2.4 provides the concluding remarks of this chapter.

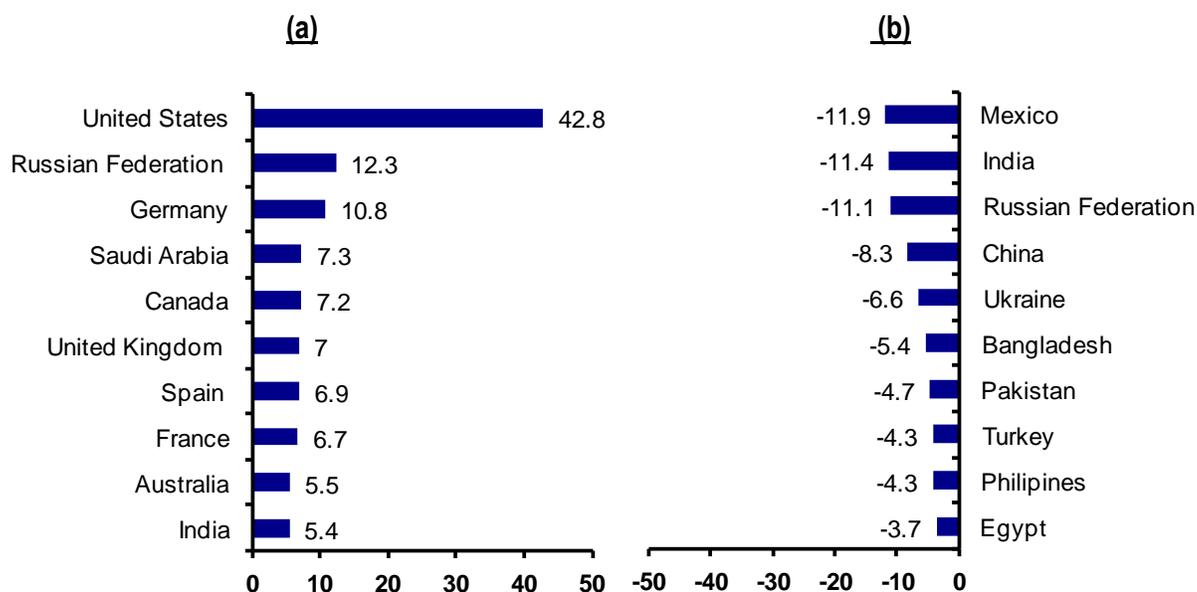
2.2 Trends in Migration and Remittances in Developing Countries

Migration affects the lives of both migrants and the home country households but also the development of the regions affected by the process, especially the migrant sending countries (IOM, 2013). The main drivers to migrate are, firstly, the economic factors (pull factors), that is, the growing gap in wages between the sending and recipient

economies; secondly, governance and public services which are known as push factors and result from lack of good quality public services and the presence of corruption; third, the demographic imbalances which may be due to the changes in life expectancy and changes in supply and demand for labour, with host countries often attracting labour supply from countries that have higher unemployment rates, and finally, conflicts which results in displaced persons or refugees and hence, they affect the labour market of host countries as well (IOM, 2013).

With the continuing growth of international migrants, the estimated stock of international migrants as of 2012 stood at around 215 million, or around 3 percent of world population (World Bank, 2014a). Furthermore, the trend is expected to continue given the growth of the youth population in major migrant sending countries and also the widening income gap within some of the emerging economies (OECD, 2011). Figure 2.1 presents the main destination countries in part (a) and the part (b) of the figure presents the main migrant sending countries.

Figure 2.1 Major migrant recipient countries (a) and major migrant sending countries (b), data are as of 2010 and represent the stock of migrants in millions



Source: World Bank (2011a)

As presented in part (a) of the figure, it is the group of developed countries such as United States (US), Germany, Canada, and the United Kingdom (UK) that receive substantial numbers of migrants. However, other countries also receive substantial number of migrants as well. As figure 2.1 suggests,¹ countries such as the Russian Federation, Saudi-Arabia and India are amongst the main migrant host countries. For many of the major migrant host countries (except India), the migration population represents a substantial part of the total population of the host country, in most of the cases, exceeding 15% of total population. The domination in terms of migration towards these countries is often explained by the level of economic development, but also much of the migration is often explained by gravity models which suggest the importance of

¹ Migration figures have been presented in absolute terms because their importance in the literature is frequently viewed from this perspective. If relative figures of migration are used, the list will change substantially given that other small countries such as United Arab Emirates or Singapore will be the top migrant recipient countries due to their small population.

geographical proximity between home and host countries (Ramos and Surniach; 2013; Leuth and Ruiz-Arranz, 2006). Developing countries represent the main source of migrants and, as presented in the part (b) of figure 2.1 such countries include Mexico, India, the Russian Federation and China. The movement of migrants from developing countries towards OECD countries, is often referred as South-North migration, while movements from developing towards neighbouring developing countries is known as South-South migration, which is the case with former soviet member countries migrants moving to the Russian Federation or movements from Bangladesh towards India. The main migration corridors are between Mexico and the US, Ukraine and Russia, Bangladesh and India, Turkey and Germany, China and the US, and Philippines towards the US.

2.2.1 Remittances Flows to Developing Countries

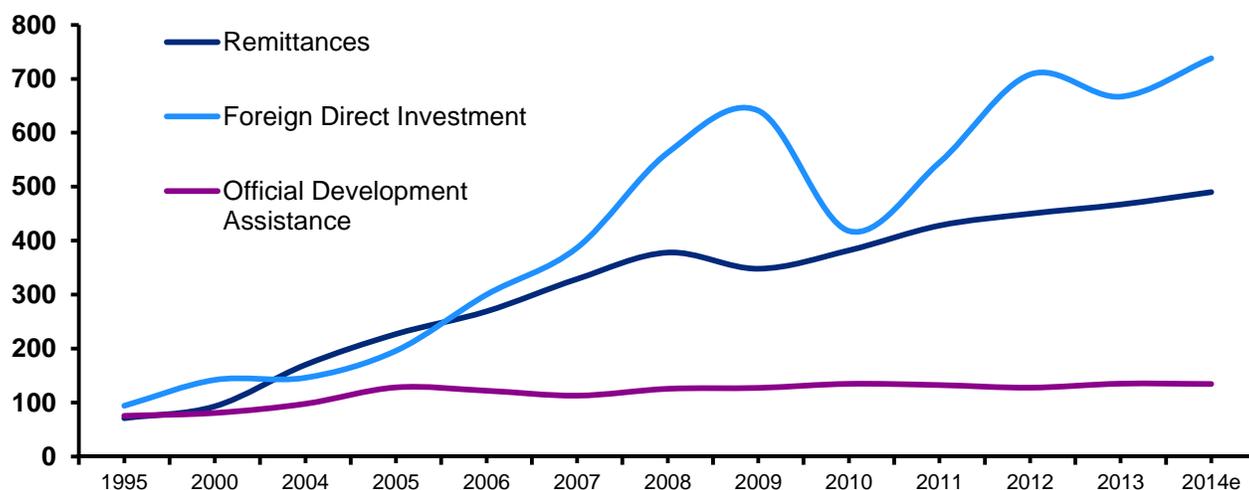
The remittances component in the 5th edition of IMF Balance of Payments Manual, consists of current private transfers from migrant workers who are residents in a host country. The World Bank Remittances Factbook (2011) in their data estimates includes in addition to migrant transfers, the compensation of employees. The most comprehensive data set is considered to be the one published by the World Bank, who obtain the data from the IMF Balance of Payments but combine this with information from the central banks and national statistics agencies of respective countries, and the World Bank country desks. The World Bank notes that that there are three different categories of countries with respect to the way remittances are considered in terms of statistics. The first is the group of countries that do not report data on remittances to the IMF (i.e. Afghanistan, Cuba, Turkmenistan, Uzbekistan and Zimbabwe), although the migration

data suggests that remittances flows towards these countries are high. The second is the group of countries who only report remittances based on estimates from formal channels (banks, money transfer agencies, post offices *etc.*). The data from this group is considered to have a weakness because it does not consider the informal channels. The third group represents the countries which make substantial efforts to provide more accurate statistics on remittances. These are countries who, in addition to the estimates based on the formal channels, undertake surveys to capture information on informal transfers. Based on the various methodologies used to estimate remittances, Kosovo belongs to the third group (see figure 2.12 and the methodology presented for Kosovo).

In this context, one of the caveats in the literature of remittances is that the quality of data is problematic due to differing methods of estimation of these remittances transfers, and most importantly the treatment of informal channels (mostly in the second group of countries), but also because of the handling of irregular migration and the ambiguity across countries in the definition of migrants. Furthermore, the methodologies are not in all cases made public.

Kosovo also reports its data to the IMF, however, so far, these data have not been published by the World Bank. The methodology used by the Central Bank of the Republic of Kosovo includes information from registered sources from formal channels such as commercial banks, money transfer agencies and money declared to the Customs of Kosovo. In addition to the formal channels, Kosovo also addresses the issue of informal channels by including information from surveys (see section 2.3.3 and 2.12 for more discussion on estimation procedures for Kosovo).

Figure 2.2 Remittances flows to the developing countries, compared with other resource flows, data are as of 2014, in billions of USD

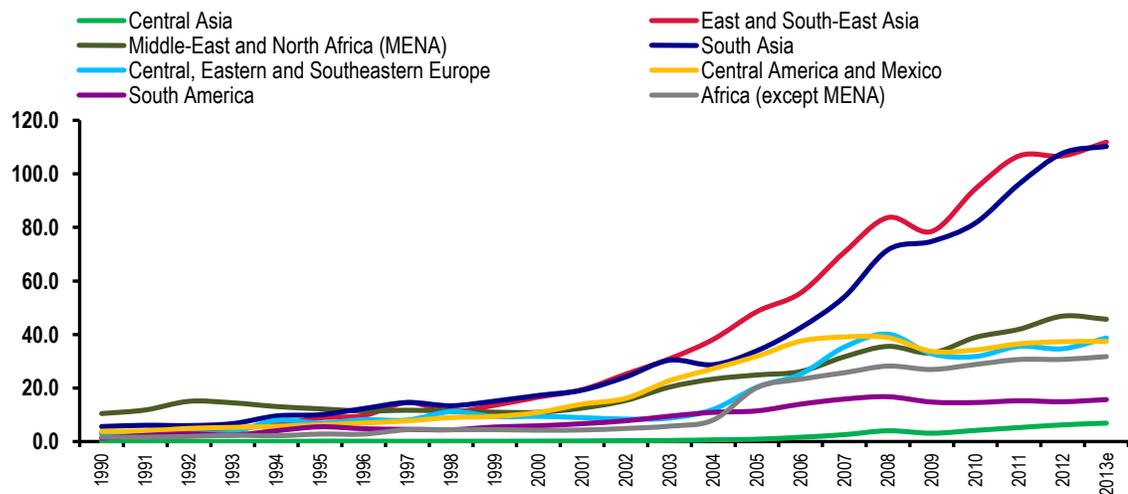


Source: World Bank (2014) and OECD (2014)

An integral part of the migration is considered to be the flow of remittances. Remittances have attracted considerable attention in recent years as they have increased rapidly, especially since 2000s, surpassing the size of foreign aid in many developing countries (World Bank 2006; World Bank Dataset 2014). As presented in figure 2.2, in 1995, remittances towards developing countries amounted to around 55 billion US dollars, while by 2005 they had increased to 192 billion US dollars. Remittances towards developing countries decreased only in 2009 and since 2010 have continued to increase at a steady rate. In some individual developing countries, in addition to being among the most stable sources of financial flows, remittances surpassed even FDI (Chami and Fullenkamp, 2013). According to the World Bank, international migrants sent nearly 600 billion USD in 2014, of which nearly 500 billion (Figure 2.2) were remittances towards developing countries (World Bank 2014). As presented in figure 2.2, remittances have been more stable compared to FDI in the presence of financial crisis such as the one in

2008-2009; while FDI dropped substantially during the crisis years. In some individual developing countries, in addition to being among the most stable sources of financial flows, remittances surpassed even FDI (Chami and Fullenkamp, 2013).

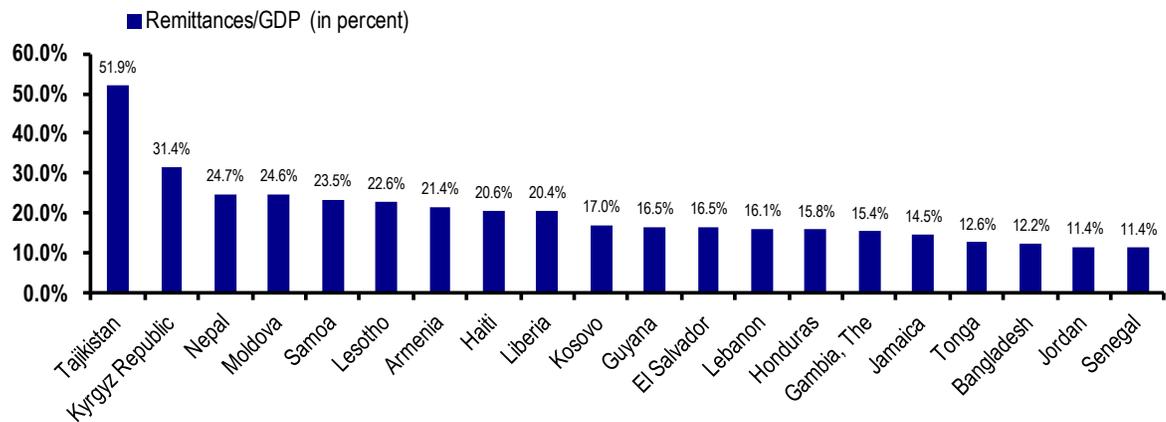
Figure 2.3 Remittances flows to the main recipient regions, 2013, in billions of USD



Source: World Bank (2014)

Figure 2.3 presents the main recipient regions of remittances. The East and South East Asian region receives most remittances (over 100 billion US dollar in 2013), followed by Southern Asia with similar level of over 100 billion US dollars (mostly India with nearly 70 billion US dollars). The Middle East and North Africa region receives around 40 billion US dollars, while Central America receives around 37 billion US dollars (with Mexico itself receiving 22 billion US dollars) and Central, Eastern and Southeastern Europe around 38 billion US dollars.

Figure 2.4 Remittances as a share of GDP for selected developing countries, 2013



Source: World Bank (2014)

Remittances are particularly important for countries where the level of development is low and there is high unemployment. This is particularly important for countries experiencing high poverty rates, given that remittances ease the position of unemployed families and reduce the poverty level. In this context, Figure 2.4 presents remittances as a share of GDP in less developed countries; using the World Bank income classification, most of these countries belong to the low-income countries group while a few belong to lower-middle income countries. Remittances share to GDP is higher than 10 percent in 24 countries, while in 15 countries have a share of remittances to GDP at over 15 percent. Tajikistan leads at world level in this indicator with a share of remittances to GDP at over 50 percent (Figure 2.4). However, poorer countries are generally not able to generate more migrants and according to Adams (2007) this could be as a result of the cost associated with the process of migration.

A reason why remittances remain very important for the developing countries is their stability. Given that remittances are sent by the cumulated stock of migrants and not just

new migrants, they are expected to be persistent and to continue to flow and increase as long as the flow of migration is increasing. This is also likely to be the case even in the presence of income shocks to the migrant income given that they are usually sent in small amounts and compose only a fraction of the migrants' incomes (World Bank, 2011). Furthermore, as discussed in section 2.2, migration is expected to increase which will ensure the stability of remittances (OECD, 2011; World Bank, 2011).

2.3 General Characteristics of Kosovo's Economy

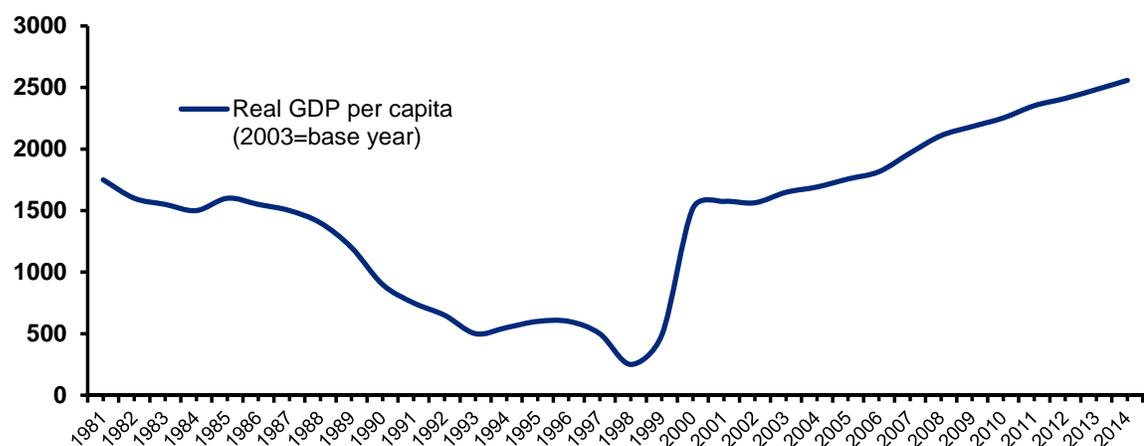
With the fall of the command economy system, Kosovo undertook its first steps in the transition process. However, the transition process in Kosovo was further delayed because of the political instability that characterized the former Yugoslavia, of which Kosovo was a part until the War in 1999.² The transition to a market economy for most of the former Yugoslavian countries was characterized with similar features, given that the change in the political system and emergence of new countries was accompanied by wars. These wars, in addition to destruction of industries and many other economic aspects reduced cross-country cooperation. This process was further enforced by the economic restructuring process and privatization, which disrupted the production process in the immediate years of the transition process. Hoti (2004) using the EBRD data illustrates how the pre-transition GDP levels for Central and Eastern European countries were only achieved 9 years after the transition process started. The transition process is mostly believed to have affected the production process and the labour market given that the movement from a centrally planned to market economy disrupted the production

² The War of Kosovo represents the armed conflict from February 1998 until June 1999 between Yugoslav Armed Forces and Kosovo Liberation Army (KLA) with the air support from North Atlantic Treaty Organization (NATO).

process and many people lost their jobs as a consequence. In addition to the labour market, the sudden change from centrally planned economies to market economies and the aforementioned disruption of production process, led to a heavily deteriorated the trade balance. Consequently, the major problems that most of the transition countries faced were a decline in GDP, a high trade deficit and most importantly, high unemployment rates. An outcome of such changes was the significant migration rates that characterized many of the transition countries, especially from South-east Europe and former Soviet countries.

The situation was similar in post-war Kosovo, with dramatic changes in the economic system and consequently many people living in Kosovo were affected. Although pre-war data do not exist, estimates by Moalla-Fetini *et al.*, (2003) suggest that Kosovo's real GDP *per capita* was continuously declining in the pre-war period; it reached its lowest level in 1998 during the war in Kosovo (Figure 2.5). There were no underlying methodology in their research, nor does any evidence exist in the Statistical Agency of Kosovo that could explain these fluctuations in the Real GDP *per capita*, or the later ones they identified. They consider that the 1981-1998 changes were caused by a continuous decrease in Federal Funds for Kosovo when it was part of Yugoslavia, with the sudden drop in 1998 a result of the war.

Figure 2.5 Real GDP *per capita* in Kosovo, in EUR

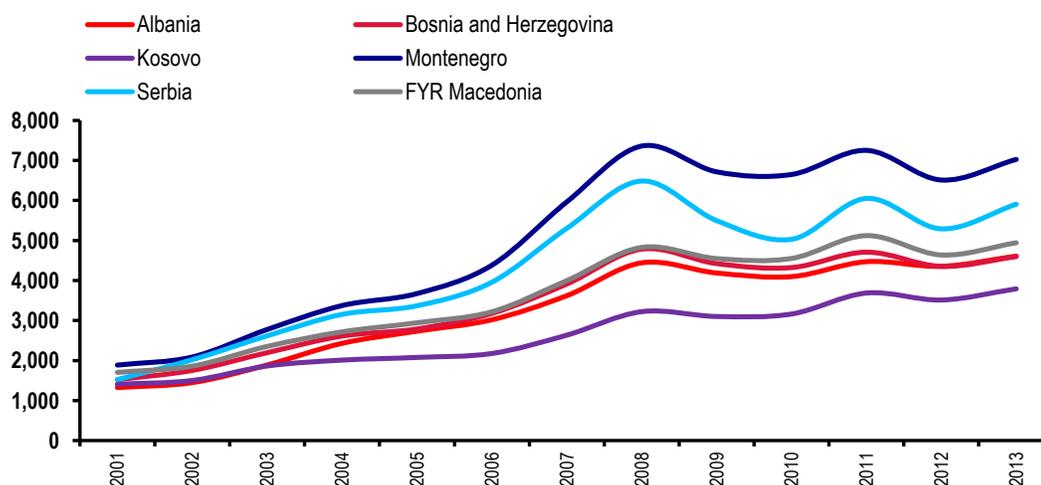


Source: Moalla-Fetini *et al.*, (2003*) and SAK (2013a**) * Estimates are for the period 1981-2003, **Author's estimates for the period 2003-2012 based on Statistical Agency of Kosovo and IMF data.

In the immediate post-war years, Kosovo enjoyed a relatively strong economic growth which was generally in line with other countries in the region. In addition to the general positive trends in economic growth in the region in the post-war years, the immediate increase of real GDP *per capita* is also attributed to the post-war reconstruction which was supported by donors. Estimates by Moalla-Fetini *et al.* (2003) suggest that the support from the donor sector for 2000-2003 was equivalent to over 40 percent of the GDP, while the GDP for the period was from 2.2 billion USD in 2000 and 3.3 billion USD in 2003. However, since 2003 Kosovo's growth has not been sufficient to keep pace with the other countries in the region and there has been a growing gap in GDP *per capita* (Figure 2.6) which is linked to an up to 20% decrease in donor funds which started after 2002. Furthermore, the Kosovan economy's unexpected strong early performance led to the introduction of restrictionary fiscal policies in 2001 which are likely to be a factor in the reduced growth. The growth rate in Kosovo was largely driven by foreign

aid until 2004, followed by private-sector driven growth in the 2005-2008 period. However, with the global financial and economic crisis since 2008 the growth in Kosovo has been led by the continuous growth of government expenditure (SAK, 2013a, page 3).

Figure 2.6 GDP *per capita* in Western Balkan Countries, in USD



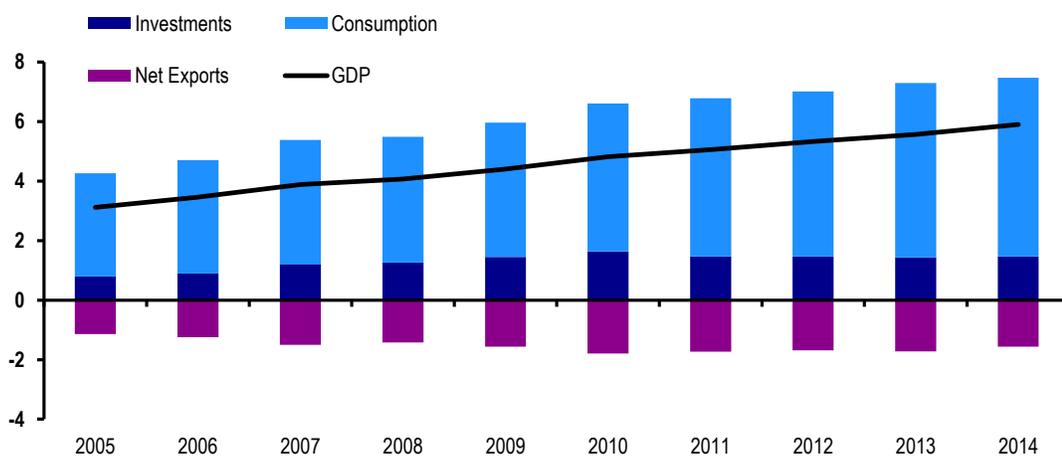
Source: IMF (WOE April 2014)

Despite the positive growth rates in the post-war period, the problem of disrupted production meant that high unemployment remained in place and this is still limiting the capacity of Kosovo's economy for growth. Such problems have been further enforced by the lack of competitiveness, resulting in a high dependence on imported goods (IMF, 2013; CBK 2013). These structural constraints faced by Kosovo, apart from other development since the breakup of Former Yugoslavia, have been present and were reinforcing the migration pressure. Consequently, labour market problems such as low participation, especially for females, but also persistent unemployment, remain the main challenges for the economy. To some extent, these problems are considered to be mitigated in part by the relatively large number of migrants and the continuous inflow of remittances.

2.3.1 The Structure of Kosovo's GDP

The GDP structure is dominated by the consumption category which is over 105 percent of GDP (SAK, 2015a). Consumption is heavily dominated by the private sector which accounts for around 80-90 percent of consumption over these years. One of the important sources of financing the consumption component in Kosovo was the substantial flow of remittances.

Figure 2.7 The structure of Kosovo's GDP, in billions of EUR



Source: SAK (2015a)

Investments have been relatively equally divided between the public and private sectors with the initial years being dominated by the donor sector and with the private sector gaining pace after 2004 (SAK, 2013a). From 2008 until 2014 it was the public sector investment which kept the investment component at a ratio of 29 percent to GDP (SAK, 2015a) and the expansion of government expenditure was enabled by previous years' accumulated surplus. Private sector investment has been partly funded by the level of

Foreign Direct Investment which accounted on average for 5 percent of GDP (CBK, 2014). As presented in Figure 2.7, one of the categories where Kosovo's economy has lagged far behind countries in the region was the net exports component of the GDP (SAK, 2015a). This is because Kosovo in the post-war period has faced a persistent wide gap in trade in goods, although the trade in services has a positive balance. The trade deficit in goods was due to the very high level of imports of goods (nearly 50 percent of GDP) and the very low coverage of imports by exports (imports/exports ratio for goods varied from 8-15 percent). Such performance in the trade sector is generally considered to be as a result of a dysfunctional manufacturing sector due to the lack of investment since the 1990s. This is particularly important because Kosovo was considered as a country with potential to develop heavy industry, which was an important employer before the 1990s. However, as a result of the 1991-1999 Yugoslav wars, since that period almost all of the large companies, which employed the vast majority of labour force, were closed down and the economy has been heavily dependent on imports (SAK, 2015a).

2.3.2 Labour Market

Kosovo's population is the youngest in the Europe and still growing (SAK, 2014a). As a result of this structure, new entrants to the labour market are estimated to be at around 25,000 on an annual basis (CBK, 2007). Despite moderate growth rates, and stable financial and fiscal sectors estimates suggest that the number of jobs created annually is below 10,000 (MLSW, 2012). Consequently, the main challenge for the economy remains the high unemployment and poverty rate. With the loss of jobs as a result of deindustrialization, poverty levels increased in Kosovo in the post-war period. The World

Bank and SAK (2011) study suggests that 34 percent of population lives at the poverty line while 12 percent of population lives in extreme poverty. The definition used for poverty in this study is the World Bank's absolute poverty line of 1.25 US dollar per day.

Table 2.1 Characteristics of Kosovo's Labour Market based on LFS for 2014

	Male	Female	Total
a) Labour Force Participation Rate (% of working age population)	61.8	21.4	41.6
b) Employment Rate (% of working age population)	41.3	12.5	26.9
c) Unemployment Rate (% of LF)	33.1	41.6	35.3
d) Discouraged Workers (% of working age population)	8.2	13.1	10.7

Source: SAK (2015b)

Table 2.1 gives details of the labour market based on official statistics from Labour Force Survey of Statistical Agency of Kosovo (SAK, 2015b). Although there have been some questions about the reliability of the labour market data in Kosovo, we will present the official figures. We are interested in the approximate levels and trends rather than their details which are suspect. This lack of reliability of the labour market data can be illustrated by the significant inconsistencies between the SAK (2015b) data and Kosovo Pension Saving Fund (KPSF) data. This comparison is possible given that contribution to the KPSF is mandatory for all employed individuals. However, the informal sector, which is considered to be relatively large (IMF 2013a) in Kosovo, is excluded as they do not report their income to the tax administration and hence, do not contribute to the pension fund. Based on LFS data, the number of employed persons in Kosovo is just over 320 thousand of which 248 thousand are males and 75 thousands are females. However, based on the KPSF data, the number of employed females is higher at 87 thousand and

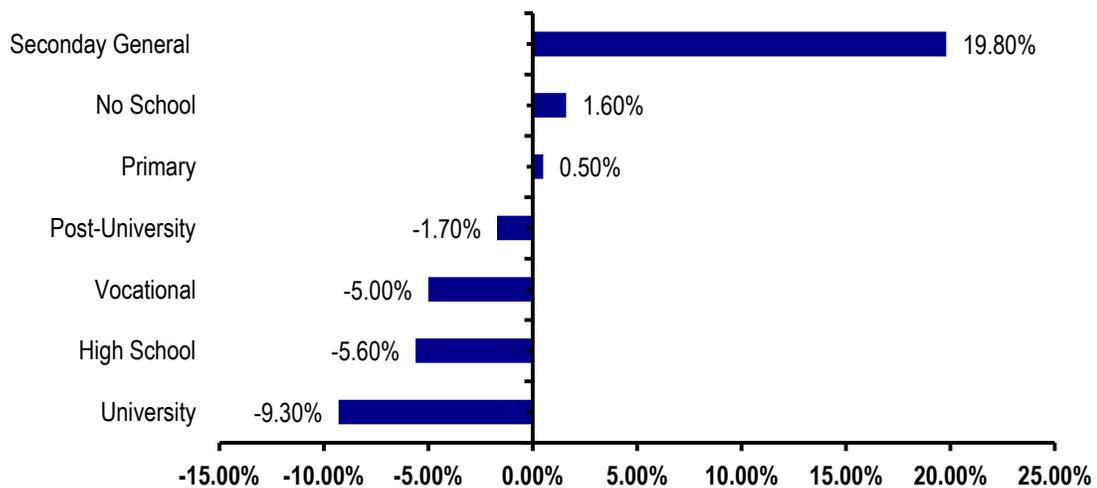
this only represents the formal employment. Given the 30 percent informal economy, the number of females employed should arguably be much higher than that provided by the SAK (2015b) LFS survey, especially given that SAK survey does not address specifically whether the employed are formally reporting their income to tax agencies or not.

Regardless of the statistical problems, it is clear that the unemployment rate in Kosovo remains one of the highest in the South Eastern Europe (standing at 35 percent according to SAK). This unemployment is also persistent given that 73 percent of job-seekers have been unemployed for longer than 12 months (SAK, 2015b). In addition to the high unemployment rate another characteristic of the labour market is that the labour force participation rate (LFPR) is also low, but urban areas generally have a higher participation rate. According to the SAK (2015b), the high inactivity rate, amongst other reasons such as personal and seeking educating, is also caused by the lack of confidence that the individual will find job. Around 10 percent of those in the working age population belong to the discouraged workers given that they do not believe they will find a job and hence are out of labour market as they are not actively looking for jobs. There are also significant gender differences in labour force participation and this is also the case for unemployment, with the rate for females standing at 41 percent, while for males it is 33 percent. The highest unemployment rate by age cohort is for the youngest age group of 15 and 24 at 61 percent (SAK, 2015b).

By education level, the unemployment rate is highest for those with no education obtained (over 64 percent) followed by the individuals who only completed primary education (nearly 46 percent unemployment). Those with secondary vocational education face an unemployment rate slightly over 35 percent, while those with general secondary

education over 41 percent. As expected those with university education face the lowest unemployment rate, at over 18 percent. From this viewpoint, based on a survey with enterprises in Kosovo, Loxha (2014) describes the structural nature of unemployment by presenting the jobs in surplus/deficit by the education level as reported by the firms. According to this survey, as presented in Figure 2.8, firms report that there is a surplus in many occupations related to services, but there is a shortage of workers educated with tertiary and vocational education.

Figure 2.8 Education levels in excess/deficit in Kosovo for 2013



Source: Loxha (2014)

Furthermore, the number of firms reporting the inadequacy in the education of the workforce as a constraint in developing their business increased in 2013, reaching nearly 25 percent compared to 10 percent in 2009; though this may be as a result of improvements in other aspects such as infrastructure, which may have raised the workforce problem up the list. Furthermore, Loxha (2014) cites the International Financial Corporation survey which finds that the main concern of foreign investors

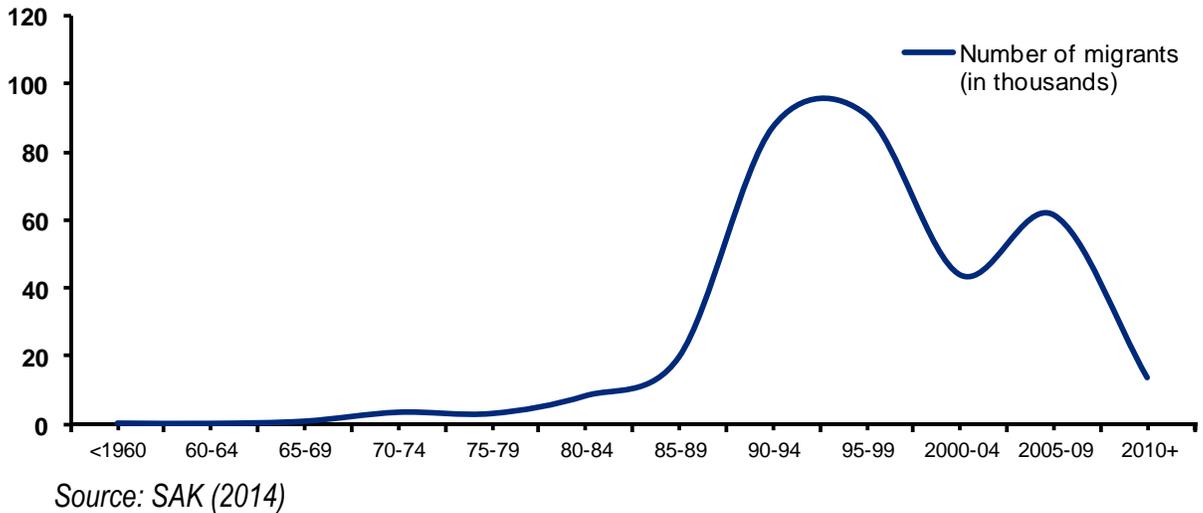
worldwide is the availability of skilled labour (as reported by over 85 percent of potential and current investors).

In terms of working hours per week, 83 percent of individuals work over 40 hours of work per week, 1 percent works between 35 and 39 hours per week, while only 16 percent work less than 34 hours a week. However, the Labour Force Survey also identified that of those individuals who work part time, 70 percent do so because there are no available jobs in the market to work longer hours. Given the lack of jobs availability, but also the lack of choice in terms of work and its conditions, migration is often perceived as a viable choice for many households in Kosovo.

2.3.3 Migration and Remittances

Migration has become a structural feature of Kosovo's economy, with the stock of migrants from Kosovo surpassing 30 percent of Kosovo's resident population. However, the motives behind migration were different for the different waves of migration. Before the 1970s, migration from Kosovo was considered as negligible. However, the 1968 a "Guest Worker" agreement between Germany and Yugoslavia paved the way for a more significant number of migrants (Oezcan, 2004). The Statistical Agency of Kosovo in its migration report identifies that for nearly 80 percent of the migrants until the early 1970s the dominant reason for migration was employment. However, in the mid-1970s this has started gradually to decrease with family union becoming an important driver until the late 1980s (SAK, 2014).

Figure 2.9 . Major migration waves from Kosovo, in thousands of migrants

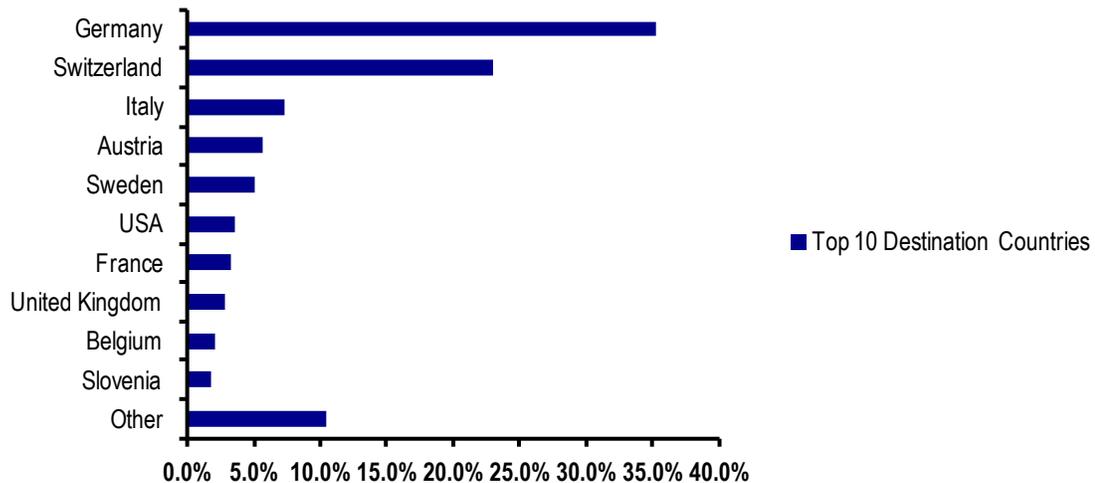


The largest surge of migrants from Kosovo was in the 1997-1999 period, the years of the War of Kosovo (SAK, 2014). During this War almost one million inhabitants were deported from the country (UNHCR, 1999). A significant number of refugees from Kosovo have settled in Western Europe (Figure 2.9). Many of these one million refugees returned to the country in the post-war period, but a significant number became economic migrants given the large income differences between the developed countries and Kosovo. According to the SAK (2014) report, more than 50 percent of the migrants currently living abroad left in the 1990s.

The emigration of Kosovans is still continuing, however at a lower level compared to the 1990s wave (Figure 2.9). Migration is still a very serious option for many households in Kosovo. The SAK (2013b) study on remittances and migration suggests that around 15 percent of the households in Kosovo have at least a member who is considering

migration. Of those willing to migrate, 80 percent are now driven by economic motives, while the remaining 20 percent are driven by family union and educational motives (similar findings are presented in UNDP 2012 survey where 15 percent of those interviewed, have specific migration plans because of scarce employment opportunities in Kosovo). These new economic migrants often use historical networks with other former migrants to countries such as Germany and Switzerland (Figure 2.10).

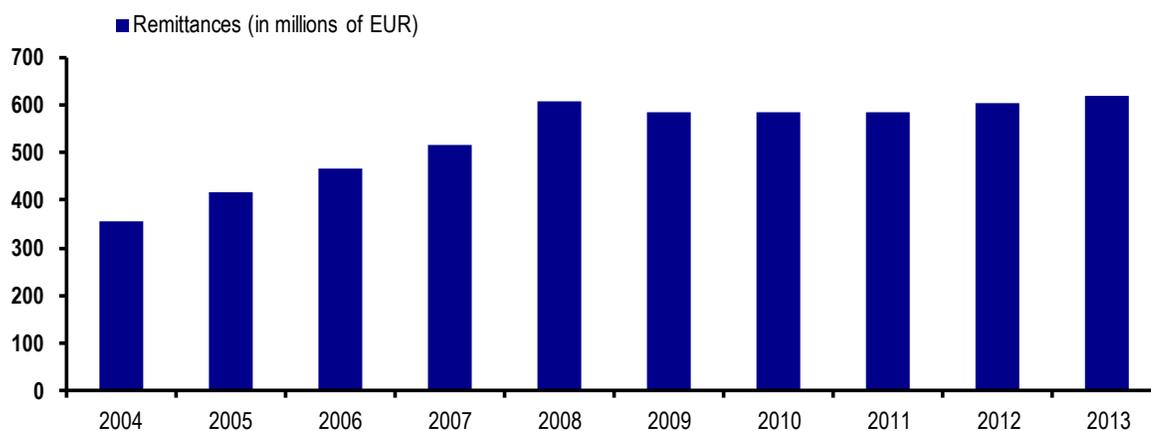
Figure 2.10 Main destination countries of Kosovo's migrants, 2013, percent of total migrants



Source: SAK (2014)

Remittances are one of the major implications of the large migrant stock from Kosovo. With the exception of 2009 and 2010, remittances have continuously increased and in 2012 and 2013 they reached over 600 million euros (Figure 2.11), which is just over 12 percent of Kosovo's GDP using the World Bank calculation method which includes the compensation of employees (which will be used across this study), this reaches 17 percent of GDP.

Figure 2.11 Remittances inflows in Kosovo, in millions of EUR

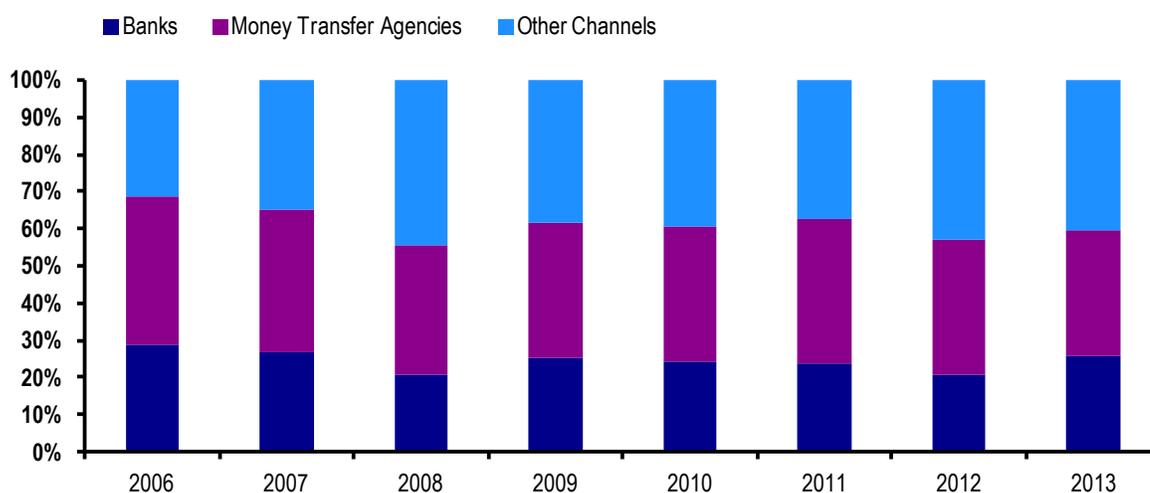


Source: CBK (2014)

Around 20 percent of households in Kosovo receive remittances and for nearly 40 percent of these households remittances are their main source of income. Various surveys (UNDP, 2012; SAK, 2013b) suggest that the vast majority of remittances are used to finance current consumption, while smaller amounts are used to purchase durable goods and for education financing. These surveys suggest that only around two percent of all remittances inflows have been used for business start-ups. However, it must be noted that the direct financial implications of migration are larger than just remittances for the Kosovo's economy. This is because around 100 million of euros (5 percent of GDP) of annual Foreign Direct Investment (FDI) comprises of capital from migrants, while the travel component³ of the balance of payments is also relatively large due to the large diaspora. The source of remittances to Kosovo is dominated by Germany and Switzerland and is very similar to the distribution of migrants across countries as presented in Figure 2.10.

³ According to the Balance of Payments Manual (5th Edition), the Travel Component in the Balance of Payments includes goods and services which have been purchased by the non-residents in the country during their visits (IMF, BOPM5).

Figure 2.12 Methods of transferring remittances, in percent of total



Source: CBK (2014)

The methods through which remittances are transferred are predominately through banks and money transfer agencies (Figure 2.12). However, in addition to the banks and money transfer agencies, remittances in Kosovo are also transferred in person and partially declared to the Customs of Kosovo, and the declared amounts are considered as formal transfers (in the figure 2.12, such transfers are in the category of Other Channels). Furthermore, the formal channels have been supplemented by including a model to estimate the cash withdrawals in local ATMs by the remittance recipients using credit cards provided by the migrant. This has been identified to function in the following manner: the migrant supplies his personal bank card to the recipient household. On a regular basis, the migrant deposits the amount of money they want to transfer into that account, hence, enabling the recipient household to withdraw them in the home country. In addition to this, informal channels are also estimated and such estimations are based on various surveys that are conducted on frequent basis with households. The informal channels, identified from surveys, are represented in the 'Other Channels' category in

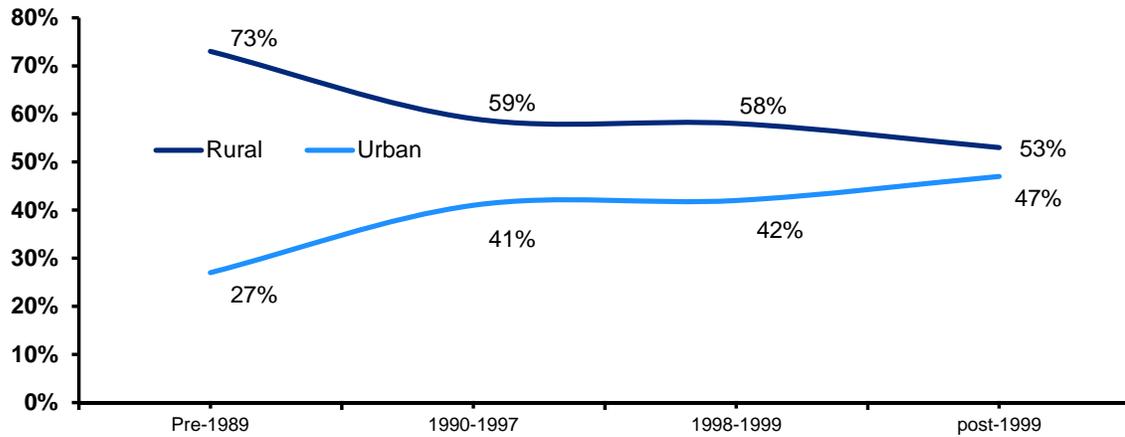
figure 2.12. Therefore, the Other Channels category in figure 2.12 includes both formal transfers from the above explained transferring methods as well as informal transfers identified from surveys.

2.3.4 Profile of Kosovan Migrants

This section is based on the UNDP (2012) remittances study for Kosovo. In this survey the replies for migrants are as reported by the relatives in Kosovo. In considering households, what follows distinguishes the household in Kosovo from which the migrant came (home country household) and the migrant's household in the host country.

Kosovan migrants, as presented in Figure 2.9, typically migrated in the 1990s, with the largest wave in 1998-1999 when the war broke out. A majority of migrants originally came from the rural areas, but this trend has changed over the years with a narrowing of the difference in terms of origin. As presented in figure 2.13, the pre-1989 years were characterized with over 70 percent of migrants from rural areas, but this dominance changed substantially in the 1990s when many people in the public sector lost their jobs and migrated (UNDP, 2012).

Figure 2.13 Emigrants residence prior to migration, in percent, 2012



Source: UNDP (2012)

The UNDP (2012) remittances study for Kosovo suggests that, in terms of gender of the migrants, the majority of migrants are men (67.5%). With regard to the age of migrant (that is head of the household in the host country), according to the survey, the average age is 40 for both men and women (UNDP, 2012).

The average migrant (head of the household in the host country) is married and the average size of the household in the host country is 4 members, including the head of the household. Typically, the migrant is employed in the private sector in the host country. The education level of the majority of the migrants' head of the households in host country is secondary; 70 percent of men and 57 percent of women have attained secondary education. Only 9 percent of male migrant head of the households in host countries have attained university or higher education level, while for women, this percentage is much higher at 19 percent (UNDP, 2012).

With regard to employment, the vast majority of the migrant head of the households in the host country are employed (93.8%). There is a difference in terms of employment with regard to men and women given that 95.4 percent of men are employed while for women, this is 84.4 percent. The UNDP study shows that 68 percent of the migrants are employed in the private sector and 19 percent are employed in public sector. However, it is reported in the study that, on average, one member of the household in the host country is a jobseeker (UNDP, 2012).

Migrants seem to have relatively strong links to Kosovo given the frequency of their visits. Various surveys report that about 60-70 percent of migrants visit their home country relatives at least once a year (UNDP, 2010; UNDP, 2012).

2.4 Conclusions

The process of transition from the centrally planned to open market economy created structural changes in transition countries. These structural changes were in many cases accompanied by disruptions in the production process and privatization. With the privatization process, many changes were brought to these companies including new technologies and hence, many of the skills used in the centrally planned economy became obsolete. This created the problem of structural unemployment for many countries, including Kosovo. A consequence of such developments was the rapid increase of migrants from most of the countries, although migration was also driven by political factors.

Migration itself is considered to have been beneficial for many countries given the improvements that it brought in lives of migrants but also the home country households.

The improvements in the lives of migrants are as a result of more opportunities in host countries and their jobs, while for home country households, it is the flow of remittances that increase the stability of financing their consumption and other economic activities. In fact, remittances became one of the major sources of financial flows towards the developing economies, surpassing official aid flows and in many cases surpassing the FDI. Such developments in the remittances flows have increased the awareness of academia and policy makers and led to an increased interest in the topic and potential policies towards migration and remittance flows.

For Kosovo, the developments were slightly different from many transition countries, given that the War of 1998 was the major cause of migration. However, in the post-war period, despite the relatively sound economic growth, which was generally in line with other countries in the region, Kosovo is still lagging behind in terms of economic development and unemployment reduction. The unemployment rate in Kosovo was estimated to be at 31 percent in 2012 and there are further problems in the labour market such as very low participation rate, especially among females, long-term unemployment, and unemployment remains high for young jobseekers. However, it is believed that many of the socio-economic problems in the country are mitigated by the relatively large flow of remittances which have been growing in the post-war years. In 2012 and 2013 they reached over 600 million of euros, which is just over 12 percent of Kosovo's GDP, while adding to this the compensation of employees, this grows to 17 percent of GDP. With regard to migration, the patterns have changed over years given that now almost half of migrants are from urban areas, but migration is still dominated by men.

The issue of migration and remittances is important from both the macro and microeconomic perspectives of recipient countries. In this context, this chapter described the background information for developing countries in general and for Kosovo in particular and serves as a scene setting for the next chapters. Identifying some these characteristics for developing countries will allow us to have a clearer approach into investigating the macroeconomic determinants of remittances, including the effects of policies. The background information on Kosovo sets the scene for investigation of the implications of remittances for households' expenditure and their implications for the labour market.

CHAPTER III

**MACROECONOMIC DETERMINANTS OF
REMITTANCES**

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3.1 Introduction

Migration is considered as a pre-condition for remittances inflows to developing countries. However, as expectation of remittances flows is viewed as a major motive in the decision to migrate there is no debate on the link between the two (Carling, 2008). Discussion is to a large extent focused on the determinants of the variation in remittance flows between countries. This research question remains important in the literature and the debate is split between the two main theories of the determinants, that is, altruism and self-interest. In spite of these distinct theoretical motives for remittances flows, a difficulty remains in the measurement and separation of these motives, which in turn have contributed to the complexity of this research question. In addition, this question has gained attention given the important role of remittances in the economies of developing countries.

This chapter investigates the remittances flows to developing countries from the macroeconomic point of view, that is, the aggregate flow of remittances as a function of various country level indicators. Although altruism and self-interest theories have been developed from the microeconomics viewpoint, this chapter is based on the macroeconomic level data and uses the assumption that macroeconomic behaviour of remittances, that is the aggregate flow, is an outcome of individual decisions. In addition to the standard theoretical and empirical foundations, this chapter takes a wider perspective compared to the existing literature. Many countries have adopted policies in order to try to increase remittances and their impact, but little is known about the effect of these. Thus this chapter contributes by investigating the macroeconomic determinants of remittances using a relatively large group of developing countries which give a large

panel dataset, with special attention paid to the evaluation of such policies. For this reason, the policy variables are specifically designed for this chapter and as such it is a contribution to research in this area. Using the policy variables, this chapter investigates whether the government policies and private sector initiatives designed for migrants have an impact on the flows of remittances.

The structure of this chapter is as follows: Section 3.2 is dedicated to a review of the theory of the macroeconomic determinants of remittances. Section 3.3 reviews the literature on the macroeconomic determinants of remittances, followed by Section 3.4 which considers the policy initiatives undertaken by different countries. Section 3.5 is dedicated to the development of the model to investigate the macroeconomic determinants of remittances, based on the review of the literature and including the policy initiatives. Section 3.6 describes the data and methods to be used for the estimation of the econometric model and the results are presented in section 3.7. Concluding remarks are drawn in Section 3.8.

3.2 Theory on the Macroeconomic Determinants of Remittances

The International Monetary Fund (IMF) defines remittances as international transfers which “may consist almost entirely of funds sent by individuals who have migrated to a new economy and become residents there’ (IMF, 2009 page 75). The World Bank (2006) defines remittances as the sum of migrant transfers and compensation of employees to their home country as discussed in section 2.2.1. Furthermore, as described in the World Bank (2006) report, a problem with remittance data is the inconsistency between countries in reporting them. Before reviewing the current literature and what the theory suggests for the macroeconomic determinants of the remittances, it should be noted that

the term remittances in this chapter applies to the aggregated data, that is the amount of migrant transfers and compensation of employees into one country for a particular year; this also implies that the term remittances in this case applies only to the international transfers. In addition, the data on the remittances collected by many countries include only the amount of remittances transferred through formal channels, while only few countries tend to estimate the informal remittances (Martinez, 2005). In fact, the improvements of the data recordings in recent years have resulted in significant increases in recorded remittances statistics in many cases (World Bank, 2006). As a consequence of this data collection, in some cases the increase of remittances flow towards formal channels from informal may be recorded as an increase in remittances.

In recognition of the potential role of migration in improving the welfare of migrants, their countries of origin and the destination countries, the World Bank (2006) points out two core factors related to migration and remittances. First, it is the economic factors in both the home and host countries that affect the migration decision, and second, it is the stock of migrants that determines the size of remittances to particular countries. Economic factors such as high unemployment and a lack of opportunities in the home country are often considered among main factors driving migration, and consequently, remittances become one of the motivations to migrate (Carling, 2008). Migration in the ‘new economics of labour migration’ is considered either as an individual strategy/investment to maximize income or as a household strategy/investment to diversify the households’ income risk (Gupta, 2006; Carling, 2008; Stark, 1985). Depending on the motivation to migrate, i.e. maximizing individual income or household income risk diversification, the remittance decisions may differ. If the motivation is

maximizing individual income, it would be expected that migration will result in a lower remittances towards households in the home country compared to the situation where the motivation is diversifying the households' income. However, there is no clear distinction between these two strategies of migration and some degree of altruism may, for instance, exist even if the individual is largely concerned with their own lifetime earnings and wealth.

In cases when the unemployment level and wage differential between the countries of origin and destination is high, there is tendency for migration to increase, leading members of the labour force to move towards developed countries (Freeman, 2006). However, as a result of the restrictions on migration to developed economies, not all who want to will be able to migrate and hence generate income in the host countries.

Consequently, such prospective migrants will remain in home country and are potential remittance recipients, while those that manage to migrate are potential remitters. In addition, there are persons who are not active in the labour force and therefore, are less likely to migrate, and hence, they also represent potential remittance recipients. Therefore, remittances flows depend on the stock of migrants (World Bank 2006, Gupta, 2006 and Leuth and Ruiz-Arranz 2008). In addition, remittances may behave differently with the duration of stay in the host country. This is because the new migrants are expected to initially increase the amount of remittances with their duration of stay, but at some point in time start to decrease them, suggesting an inverse U shaped function over time (Lucas and Stark, 1985; Funkhouser, 1995).

The reasons why migrants send remittances to the home country are reflected in the two main approaches in the new economic of labour migration theory; **the altruism theory**, that is the economic support of the home country household members; and **the self-interest theory** or exchange motive of the migrants who aim to accumulate savings and investments or hope to inherit, in the home country (Lucas and Stark, 1985; Funkhouser, 1995; Agarwal and Horowitz, 2002; Osili, 2007; Leuth and Ruiz-Arranz, 2008; Carling, 2008). These motives are discussed further in the sections 3.2.1 and 3.2.2. In addition to the standard theoretical foundations on migrants' decision to remit, remittances are also explained by other non-measurable factors, such as what Carling (2008) identifies as 'normative settings'. Normative settings include the moral values and the pressure from the home country households on the migrants to send remittances. Often migrants may face difficulties in integrating in the host country and this makes them to want to retain the links with their country of origin. It is often suggested that remittances are used as a way for the migrant to maintain links with the home country relatives and in the absence of remittances they may lose the social assets (that is the close relationship with the family and other relatives) in the home country (Carling, 2008; Lucas and Stark, 1985). It is considered that home country households perceive that they are entitled to receive remittances on a regular basis. Such normative settings are also related to the aim of migrant of achieving a higher social status in the home country. Such normative settings may lead to criticism of the migrant from the home country household for not helping them, either through remittances or to support further migration. Since such normative

settings are problematic to measure and could vary across different countries and cultures, this adds to the difficulties in establishing the determinants of remittances.

3.2.1 Altruistic Motives

Altruism is the behaviour of the migrants who gain utility by sending money to their relatives in their country of origin, believing that this will improve their relatives' welfare. This behaviour is because the migrant considers the utility (welfare) of the home country household as well as their own consumption (Lucas and Stark 1985, Funkhouser 1995, Agarwal and Horowitz 2002 and Rapoport and Docquier, 2006). Funkhouser (1995) expressed the relationship of the altruism model using the following migrants' utility function (U) which includes also the utility of members (U_h) left in the origin country, hence,

$$U = \sum_t U \left\{ C_t^m \left(\frac{1}{(1 + \delta_u)^t} \right) \right\} + V \{ U_h (Y_t^h + R_t + N_t^h \bar{R}_t), Z \} \left(\frac{1}{(1 + \delta_v)^t} \right) \quad 3.1$$

where the migrant's utility takes account of both their own consumption and the home household's welfare. This is separated into two components which are functions of: (a) their own consumption over time, C_t^m discounted by $(1/(1 + \delta_u)^t)$; and (b) the utility the migrant gains from the welfare of the home household, discounted at the home household's discount rate. The home household's utility depends on the total income of the household, which is the sum of any home member's earnings (Y_t^h), and remittances (R_t) they receive from the migrant. To this, is added the number of other migrants (N_t^h)

from the same household and the average level of remittances the household receives per other migrant (\bar{R}_t). The utility gained by the migrant from sending remittances affected by the relationship between the migrant and the household members in the home country, which is represented by the vector Z .

Altruism is often argued to be the main factor driving remittances since the flow of the money is usually undertaken between family members, especially in the case of migrants who have their close relatives in the home country household, such as their spouse, children or parents. The altruism motive based on the equation 3.1 is expected to be important in the cases where home country households have low income and hence, their utility (which is part of the utility function of the migrant) is considerably improved by remittances. In this context, altruism may be testable if remittances increase as the home country household income decreases, *ceteris paribus*. In the case where remittances flows are driven by the altruistic motives, the flow of remittances is expected to remain largely stable in developing countries *ceteris paribus*, given that the home economic conditions are unlikely to experience sudden improvements which would improve the living conditions of the home country households before remittances.

The above utility function is maximised subject to the income (Y_t^m) that migrant generates from all sources.

$$C_t^m + R_t + S_t^m = Y_t^m \quad \text{-----} \quad 3.2$$

The income is equal to their own consumption C_t^m , the portion of their earnings sent as remittances R_t and the savings of the migrant in host country S_t^m (Rapoport and Docquier, 2006).

Consequently, the altruistic motive suggests potential macroeconomic variables that will have an effect on remittances at country level. Vargas-Silva and Huang (2006) and Castillo-Ponce *et al.* (2011) established models which explicitly take into account the relationship between remittances and the macroeconomic conditions in the home and host countries and the models are developed using the theoretical foundations of both altruism and self-interest. These authors assume that a fraction of households' income is sensitive to macroeconomic conditions and suggests that improvements in the home country economy are positively related to improvements in the home country households' income so that a deterioration in macroeconomic conditions in the home country results in lower income for such households. They theorized that such a deterioration in the home country will result in lower income (the sensitive part of the income to macroeconomic conditions) and hence lower the total home country households' income. Using the altruism equation 3.1, this deterioration in the home country households' overall income would affect the utility of the households (U_h) in home country, therefore, affecting the utility of the migrant (equation 3.1). As a consequence of the macroeconomic shocks and lower income, the migrants' utility would improve if they send increased remittances to increase the utility of the households in home country (the implications of macroeconomic shocks for the self-interest motives of remittances are explained in section 3.2.2).

Similar to the behaviour of the household income in the home country, the migrants' income depends on the macroeconomic conditions of the host country. This situation is reflected in the flow of remittances because migrants' income is the main determinant of remittances from the microeconomic view (Lucas and Stark, 1985; Funkhouser, 1995;

Havolli, 2010). Modelling migrants' income from the macroeconomic point of view tends to be more difficult compared to microeconomic models; however, the host country's economic performance is in some cases in the literature used as a proxy for this. In cases when economic performance improves, it is hypothesised that it will positively affect migrants' income and hence improves the availability of income to be remitted and vice versa. Given diminishing marginal utility of income, this will lead to both more consumption by the migrant and increased remittances. A similar argument relates to unemployment in host country, especially when economic performance deteriorates and unemployment increases. This is of particular importance given that unemployment often has its largest impact on migrants and therefore, in this case, the available funds to be remitted are lower (Vargas-Silva and Huang, 2006 page 12; Fleischmann and Dronkers, 2010 page 338).

3.2.2 Self-Interest Motives

Self-interest motivated remittances represent the situation when migrants send remittances where their utility depends only on their own discounted consumption they receive. Remittances driven by self-interest motives are sent for another reason rather than just to improve the utility of the home country household, as migrants' utility is not considered to be affected primarily by the home country household utility. They occur because migrant aims at benefiting from other services/capital by sending remittances. Remittances sent for self-interest motives serve as payment for services such as taking care of other family members (usually elderly and/or children), caretaking and/or managing the assets of the migrant in the home country, and also reflect inheritance aspirations of the migrant. A model to express this behaviour developed by Cox (1987)

assumes that remittances are sent to buy a fixed quantity of services in home country denoted by \bar{X} . In his model, Cox (1987) defines the migrants' utility function (U^m) as:

$$U^m = f(C^m, \bar{X}) \tag{3.3}$$

where, U^m represents the utility of the migrant depending on its own consumption (C^m) and the services (\bar{X}) that the migrant receives.

The utility of home country households is negatively affected when they provide the service, having in mind their effort given to provide the service and therefore they require some benefits in exchange for the service (\bar{X}). Such benefit is provided by the remittances sent by the migrant. The equation 3.4 implies that the utility of the home household (U^h), depends on their income and the remittances they receive, and the efforts they make in providing services. Rapoport and Docquier (2006) suggest that a households in the home country would accept to provide the service (\bar{X}) if their utility is higher than the situation when they do not provide the service as presented in equation 3.4. The equation implies that the utility of households (U^h), which depends on their income and the remittances they receive and the efforts they make in providing services.

$$U^h(Y^h + R, \bar{X}) > U^h(Y^h, 0) \tag{3.4}$$

The reaction of these remittances to the households' exogenous non-remittance income is ambiguous (Rapoport and Docquier, 2006, page 14) which theoretically makes it different from the altruistic motive where remittances decrease as the income of the household in home country increases.

Similarly to the exchange of services motive, the inheritance seeking motive is expected to lead the migrant into sending remittances to relatives in home country. The inheritance seeking motive, however, is a result of mostly informal arrangements between the home household and the migrant. This is because migration is financed frequently by the household and as a result of this it is expected to generate additional income for the household in form of remittances. However, if these arrangements are not well defined but if the frequency and the amount of remittances decreases or ceases, it is expected to drive the household (mostly parents) into informal punishment such that the migrant may not inherit the household's assets in the home country or by signalling that the return of the migrant to the family home may not be encouraged, hence weakening the links between them. In cases when the economic conditions are good in the home country, the behaviour of the migrant towards home households should be in emphasizing the willingness to be part of the society as well as to have the right to inherit assets in country of origin. A desire to inherit the assets is expected to increase remittances even when the macroeconomic conditions are considered positive, having in mind that macroeconomic improvements in origin country may increase the value of such assets (Lucas and Stark, 1985; Hoddinot, 1994; Rapoport and Docquier, 2006).

When there are self-interest motives, various factors at the macroeconomic level affect migrants' decisions to remit and the amount of remittances. For instance, migrants motivated by the investment motives to send remittances are largely affected by the business and macroeconomic environment in the home country which may affect the value of their investment in the future (Leon-Ledesma and Piracha 2004, World Bank 2006). General government policies (not directly targeting remittances) may be also an

important factor in driving the flows of remittances. Indicators of governance such as corruption, level of political stability and the implementation of rule of law could be a signal to the migrants about the business environment in home country.

However, as mentioned in the introduction (section 3.1), there are difficulties in making a clear distinction between self-interest and altruistic motives. Although a migrant will most likely send remittances towards households driven primarily by one of these motives, it is possible that even if self-interest is the main motive, some degree of altruism will always be present in the relationship between migrants and the home country households and vice-versa.

3.3 Literature Review on the Macroeconomic Determinants of Remittances

Following the influential work of Lucas and Stark (1985) highlighting altruism and self-interest as the two main motives of remittances, the literature evolved into identifying which variables belong to each of the theories and their effect. Recently, the debate has shifted, having taken into account the difficulties in splitting the two motives since often both affect remittances in the same direction. Table 3.1 presents a summary of main findings of several studies with regard to remittances determinants as well as to what theory they address for each variable.

As it can be noticed from the Table 3.1, many potential variables that could influence remittances have not been included in many of the studies. For instance, as discussed in section 3.2, an increasing unemployment level in the host country is expected to negatively affect remittances, having in mind the remitting capacities of migrants.

Alternatively, increasing unemployment rates in the home countries are expected to result in higher remittances as a result of the altruistic behaviour of the migrants towards their households in home country.

Table 3.1 Summary of the main findings in Macroeconomic Determinants of Remittances

Author	Title	Positive Impact	Negative Impact	Insignificant results	Supported theory
Adams (2007)	International Remittances and the Household: Analysis and Review of Global Evidence	GDP <i>per capita</i> of home country	GDP <i>per capita</i> ² of home country		Depends on level of GDP
		Gini Coefficient		Gini Coefficient	Self-Interest
				Poverty Headcount Rate	Self-Interest
				Country Credit rating	Self-Interest
Gupta (2006)	Macroeconomic Determinants of Remittances: Evidence from India	Stock of migrants			
		Earnings of Migrants			Altruism
			GDP Growth of home country		Altruism
Leuth and Ruiz-Arranz (2008)	A Gravity Model of Remittances	GDP of home and host country	GDP <i>per capita</i> of home country		Altruism
		GDP <i>per capita</i> of host country			Mixed
		Shared border	Distance		Mixed
		Common language			Mixed
				Earthquake	Non-altruism

		Dependency Ratio	Dependency Ratio	Altruism
Schiopu and Siegrid (2006)	Determinants of Workers' Remittances: Evidence from European Neighbouring Region	GDP Differential		Altruism
			Interest rate differential	
		Income inequality		Altruism
		Informal Economy		Self-Interest
Chami et. al. (2008)	Macroeconomic Consequences of Remittances	GDP Differential		Altruism
Kumar and Teele (2009)	A View from Above: Macroeconomic Determinants of Mexican Remittances	GDP Growth Rate in host country	GDP Growth Rate in home country	Altruism
Alleyne et al., (2008)	Short-run macroeconomic determinants of remittances to Jamaica: a time varying parameter approach	Host Country Income		Altruism
		Home country income		Self-Interest
Coulibaly (2009)	Macroeconomic Determinants of Migrants' Remittances: New Evidence from a Panel VAR	GDP of host country		Altruism
		GDP of home country		Self-Interest
		Interest rate differential		Self-Interest

Source: Author's Creation

The home country's GDP or GDP *per capita* have been found in literature to affect remittances, and in many cases (Table 3.1), the evidence suggests that an increase of these affects remittances negatively. An explanation for this sign is related to the altruistic behaviour of migrants. In the cases where the opposite sign is found, this suggests self-interest motives (section 3.3.3) are prominent. It is not clear why there are differences in the findings in the empirical literature. It could be, for instance, because this varies between countries or over time, but also could be because of the different specifications and estimation methods applied.

The current empirical literature has two views on the effect of economic growth and GDP *per capita* of home country on the flows of remittances. The first suggests that positive growth rate has a positive impact on remittances (Vargas-Silva and Huang, 2006; Leuth and Ruiz-Arranz, 2008; Catrinescu *et al.*, 2009) implying self-interest motives are dominant, while the second is that remittances decrease or are not affected by the rate of growth (Gupta, 2006; Castillo-Ponce *et al.*, 2011; Chami *et al.*, 2008; Giuliano and Ruiz-Arranz, 2009), supporting the altruism theory.

Adams (2007) empirically investigates this relationship, finding a non-linear relationship between *per capita* GDP at home and remittances. Remittances increase as *per capita* GDP of home country increases; however, this increase is at decreasing rate. This appears to support the view the self-interest motives lead to remittances. However, such a relationship is argued to exist because of various reasons, among them are that remittances flows are oriented towards lower-middle income countries and less towards lower income countries. However, from the viewpoint of motivations of sending remittances, it could be argued that in this paper, remittances are primarily driven by self-

interest motives. However, the explanation by Adams (2007) is that the lower-middle income countries are those who can bear the cost of migration, while low income countries cannot afford migration. However, Adams (2007) findings suggest that the level of poverty does not have any effect on the flow of remittances *per capita* towards developing countries. Such results could reaffirm the interpretation that migrants remittances are not driven by altruism but could also indicate that poor countries cannot afford migration in the first place.

Gupta (2006) finds that increases in migrants' earnings increase the flow of remittances, whereas if the home country has an improving economic performance, where the overall income and the standards of living continuously improve, remittances decrease. Such results support the view of the altruistic behaviour of migrants.

One of the few studies that find a positive relationship between remittances and home country GDP is that of Coulibaly (2009). Such a result suggests that migrants are remitting for their own self-interest, believing that the home country has become attractive for future investment plans and where the assets to be inherited have a higher market value.

The level of financial development has an impact on the remittances flows, suggesting that fewer restrictions on transactions lead to a larger flow of remittances. However, more important than the transferring restrictions is the financial stability of the home country to the migrants. Related to the financial sector development, interest rates are suggested to affect remittances, mostly because of self-interest (investment opportunities) motives. The financial sector might become an attractive investment opportunity for the migrants

in the case where deposit interest rates are high enough. Several authors find a positive effect of financial development on remittances flows (Leuth and Ruiz-Arranz, 2008; Gupta *et al.*, 2009, Catrinescu *et al.*, 2009). Mookerjee and Roberts (2011) find that financial sector development, measured by the bank branches per 1000km² has a significant impact on remittances.

Remittances are dependent on the stock of the migrants. However, the geographical location of the country been argued as an important pre-condition for larger number of migrants. In this context, countries located near developed economies (i.e. European Union, United States of America and Persian Gulf) are those who receive greater amounts of remittances, given that a closer proximity of countries could create the conditions for cheaper migration, easier transfers and a higher tendency of link maintenance to the home country. Leuth and Ruiz-Arranz (2008) provided evidence that the largest variation of remittances can be explained through gravity models which take into account factors such as distance, border-sharing countries and language. In addition, as discussed in section 3.2, the duration of stay in the host country affects remittances since migrants who stay for longer periods will be likely to remain in country of migration. Moreover, migrants that are likely to remain in the host country are also likely to have their spouse accompany them. As a result, there may not be anyone left in the home country to whom to remit, or if parents remain, at some point of time, the remitting will cease if the parents pass away (Carling, 2005). New migrants are likely to increase remittances for a period as they become established in the host country, however, this is likely to be at a decreasing rate over time and at some point fall as ties to the home country loosen. In this context, the migrant's duration of stay gives an inverse U shaped

function with remittances which has been often found in the literature (Lucas and Stark, 1985; Funkhouser, 1995; Havolli, 2010). However, studies taking into account the duration of migration typically use microeconomic data because the data on duration of stay are observable only for individuals.

Vargas-Silva and Huang (2006) in investigating the macroeconomic determinants of remittances find that host country economic conditions are the most important factor for the flow of remittances. They suggest that when host country economic variables are included, the home country variables are insignificant. In their study of the USA, they found a positive effect on the flow of remittances of the stock of broad money in circulation, as a measure of income level in host country and, although not expected a priori, a positive relationship was also found between host country unemployment rate and the flow of remittances towards home country. Inflation, on the other hand, was found to decrease migrants' real income and hence, remittances.

Many of these studies often end up proposing measures and policies in order to increase the flow and the use of remittances. However, to date, no study has been undertaken with the aim of evaluating the effects of such policies directly given that no policy variable has been included in the empirical models.

3.4 Review of Policy Initiatives for Remittances

In this section, the policy initiatives are defined as any action which has been undertaken by the public institutions of the home or host country, NGOs and private companies in order to affect the flow of remittances. This approach includes any initiative aimed at facilitating the methods for transferring remittances, increasing them, shifting remittances

into investment, as well as other policies which aim at increasing migrants' investments into the home country economy.

Despite the continuous debate on the impact of remittances on the recipient economy, institutions, NGOs and private companies in many countries have launched policies and initiatives aimed at increasing the development impact of remittances. Agunias (2006) emphasizes that there are two broad trends in these policies and initiatives applied by institutions and companies of home countries. The first one is mostly addressed by the public institutions of home countries whose target is to increase the remittances flows and channel remittances from the informal to formal sector. Also, these involve policy initiatives targeting the use of remittances, in particular policies that attempt to switching remittances from consumption to investment and raise the attractiveness of the home country for migrants' investments (Schipou and Siegfried, 2006; Agunias 2006). The second, private sector led schemes, are mostly services developed especially for remittance recipients; such services aim at being profitable for the firms while at the same time beneficial for the remittance recipients. Such schemes include the presence of home country banks in the host country markets especially targeting migrants. Also the provision of services such as deposit schemes for migrants and special loans for migrant investment have been developed in a few major remittance recipient countries.

Policy initiatives aiming at facilitating remittances are considered those that target the reduction of the cost for remittances transfers, switching remittances from the informal to the formal sector as well as those addressing the problems in remittance transfers such as the ease with which the recipient can collect the remittances. One of the main consensus in the literature is that competition would improve the achievement of these

goals (Agunias, 2006). Moreover, analysing several cases in a survey with 40 central banks, Martinez *et al.* (2006) suggests that the legislation of recipient countries should be reviewed and designed in a way which would enhance competition, allow access to non-bank financial institutions into the clearing system and hence reduce the cost that non-bank financial institutions face while executing transfers through banks. Such a move would increase the role of smaller private firms in the industry.

By allowing a more flexible financial market in terms of regulations, there would be an opportunity for innovative products for remittance transfers, especially given technological advancements. For instance, in the market of remittances transfers there exist many creative products such as mobile phone remittances, debit cards as well as many other products which offer online transfers. Most of these products are related to bank accounts in the recipient economy, suggesting that financial literacy should also be at a satisfactory level. Moreover, it is important also to ease access to banking services in certain regions of the recipient countries where remittances are most often sent to (Ratha, 2003; Agunias, 2006; Martinez *et al.*, 2005).

In the remittances market, it is also important to shift remittances from informal ways of transferring into formal ones. In addition to the improvement of statistics and the avoidance of money laundering problems, especially in developing economies, there are other important reasons to target and promote the use of formal sectors in transferring remittances. This is because where banks are used as channels (such that remittances are sent but also saved by being deposited) the overall liquidity of banks is higher and hence the potential for credit creation in the home country is increased, thus contributing to economic development (Schipou and Siegfried, 2006; Siegel, 2007; Catrinescu *et al.*,

2009). Several countries have undertaken policies and initiatives which target the use of the formal sector for remittance transfers. These policies and initiatives include bilateral agreements between countries to promote the use of financial instruments in both home and host countries. Among the most known case is the USA-Mexico agreement which allows all Mexican migrants (legal and illegal migrants) in the US to obtain a special identity card through which Mexicans working in USA can have bank accounts and access to financial services (World Bank, 2006; Ratha, 2003; Martinez, 2005). Moreover, the USA has also undertaken several policies towards other countries such as the Philippines and Columbia, mostly targeting remittances transfer fee reduction as well as access for migrants to financial services. Similarly, Germany and Canada have also undertaken several actions towards Turkey and India respectively, mostly dealing with taxation issues as well as fee reduction for remittances transfers. Interesting examples of channelling and increasing the liquidity of banks are the UK-India initiative and the Germany-Croatia one. The first offered a product to Hindu migrants to send remittances to India at no cost, using one local bank. However, it is mandatory for the recipients to maintain a minimum of 150 GBP in their accounts, thus in this way the liquidity of the second largest bank in India is increased. The Croatian case was developed also by a local bank which offered potential investors and migrants from Germany cost-free transfers and remittances and funds to Croatia using its accounts. This product was offered through the branch of this bank in Germany. What this bank did was accumulated funds in its branch in Germany, while funds in Croatia were used to allocate into recipients' accounts. After the accumulation reached a certain level a single transfer was conducted and hence instead of thousands of transfers there was only one; hence the

higher transfer fees were avoided for each individual transaction (Agunias, 2006; Martinez *et al.*, 2006).

These policies contribute to the increasing range of financial instruments in the markets and also contribute to the reduction of transfer costs and increase the use of formal transferring methods. Such products make it easier for migrants as well as recipients to conduct the transfers of remittances. However, in order to implement these products and services, the financial literacy of migrants should also be at a level such that the target groups can use these services. In order to reach this, banks need to target the problem by introducing user-friendly services for low income groups and migrants as well. Agunias (2006) suggests that there is a common agreement in the literature that a great contribution of the responsibility for the problem of un-banked remittances rests with the banks themselves. This is because banks have not shown any interest in targeting this group of people and as Agunias (2006) suggests that this is as a result of lack of incentives for the banks to conduct research and development into user-friendly products which would make it easier for migrants, as well as the overall poorer population, to obtain a bank account. It has been suggested that costs of using such bank accounts need to be low, in this way making them more attractive for this group of potential customers (Agunias, 2006). The interest rate on deposits could make such accounts an attractive product for migrants, as well as a way of increasing liquidity by the banks. This is because migrants often generate considerable amounts of savings (especially migrants planning to return to their home country). Therefore, a higher interest rate for migrants' deposits could bring their accumulated savings into the home country banks (Orozco and Lapointe, 2004; Carling, 2005; Agunias, 2006; Ratha, 2003).

Policy initiatives for the final use of remittances are considered as actions which aim at switching remittances from consumption to investment as well as raising the attractiveness of the home country for migrants' investments. However, the literature considers that there are great difficulties in switching remittances from consumption to investment. This is mainly because remittances are often funds which are transferred to households in order to cover costs of basic living needs, while there remain either none or very small amounts for other activities such as investment or savings. Several countries have attempted to control the flows and the use of remittances and hence through the controlling policies to affect directly the use of them. Nevertheless, it is argued that when the government attempts to control the flows of remittances it only encourages them to be transferred through informal systems and hence to be unrecorded. Policies attempting to control and affect the use of remittances have been present in Brazil and Vietnam and the condition in both cases was that it was mandatory for the migrant to invest for a fixed period of time a percentage of the remittances received into in the foreign exchange reserves of the country. Some other countries, such as Columbia, Ecuador, Georgia, Peru and Poland applied taxation policies to remittances.

There has been a shift in such policies to an approach of promoting policies which encourage recipients to invest and generate self-employment and business activities, rather than directly controlling the use of remittances (Martinez, 2005; Agunias, 2006; Lucas, 2005). However, having in mind the problem that recipients often receive remittances which only cover the basic living needs, this approach is not without difficulties. The latest approach focuses more on migrants, rather than remittance recipients. For instance, several countries have adopted policies which aim at easing

procedures for doing business for migrants by creating several benefits for them in the case where they decide to invest in their home country. Amongst these policies, the most used is the import of capital goods by migrants, at limited level, customs free. For instance, Egypt encourages its migrants to invest through offering tax breaks for up to 10 years, as well as allowing them to import a limited amount of capital goods without paying customs fees. Similarly Tunisia, Guatemala, Pakistan, Turkey and Vietnam offer migrants the possibility of importing once a year a limited amount of goods without paying the customs fees. Moreover, some countries tried to initiate an investment attraction for the migrants by offering them land in preferential areas either for business or housing investments at lower prices. Among the policies for increasing migrants' investment in the home countries, some countries have also initiated a business advisory services and fairs for migrants who want to invest in the home country. Through this they aim at orienting and avoiding the long procedures that are usually faced in the process of opening a business, as well as informing migrants about the potential to invest in the home country. Another programme that has been applied in Mexico is the Hometown Association. This form of organization, initiated by the government, encourages migrants to invest in their home country region. This is done by creating a hometown association for migrants in the host countries, where they contribute to infrastructure projects in their home region. For every dollar invested in public infrastructure by migrants, the government invests another two dollars in these projects (World Bank, 2006; Martinez, 2005; Agunias, 2006; Orozco, 2004).

Carling (2004, page 6) provides a summary table of possible policy measures that the literature has proposed and could be used for various aspects of remittances. It separates these measures into six categories:

- 1) Increasing the share of remittances for development by adopting specific taxation policies for migrants, reducing transaction costs *et cetera*.
- 2) Stimulating transfers through formal channels by offering remittance bonds, allowing foreign currency accounts in the banking sector, offering premium interest rates on deposits, allowing and promoting transfers through microfinance institutions and improving the financial literacy.
- 3) Stimulating the investment of remittances, by increasing the outreach of microfinance institutions, migrants service bureaus, tax breaks on imported capital goods, small and medium enterprises schemes and training programmes.
- 4) Migrants collective community investments, such as matched funding, public-private ventures, competitive bidding for development projects *et cetera*.
- 5) Influencing consumption patterns of home country households that receive remittances, promoting the consumption of domestic goods.
- 6) Securing future remittances by promoting further migration.

Carling (2004) suggests that this summary of policies represents a tentative list of possible options to affect remittances. However, given that some of these proposals have been implemented in various countries, it is necessary to undertake a research into

evaluating the effects of such policies and to identify whether such policies are changing the remittances patterns in the home country as well as make it easier for migrants to send remittances.

3.5 Model Specification

The purpose of this model is the investigation of the determinants of remittances at a macroeconomic level considering home and host country variables. Among the first attempts to investigate the determinants of remittances at this level was Straubhaar (1986), and with increasing interest in more recent years it has been studied by El-Sakka and McNabb (1999), Gupta (2006), Vargas-Silva and Huang (2006), Ruiz-Arranz and Leuth (2008) and Adams (2008). A major difference between this research and most of above mentioned studies is that they focused on remittances flows to a single country; the exceptions are Leuth and Ruiz-Arranz (2008) with their gravity model on bilateral flows for 11 countries and Adams (2008) with its cross-country model for 62 countries. However, these studies did not take into account the policies applied to increase remittances. Another important characteristic of this investigation is the number of countries and the longer time span of observations for each country included, which makes this data set in this study larger and more inclusive than those currently in the literature.

The specificity of the model developed here is that it contains variables that have not been previously included in the literature. In effect, this represents the first attempt in designing and including policy initiatives variable(s). In addition, Governance Indicators have also been largely neglected by the literature, though they may represent important determinants of remittances.

Considering the review of the literature on the macroeconomic determinants, the policy initiatives that have been undertaken, as well as other variables that have not been included in the current literature, the following model is proposed:

$$\frac{R_{it}}{GDP_{it}} = \beta_0 + \beta_1 X_{it} + \beta_2 Y_{it} + \beta_3 P_{it} + \beta_4 G_{it} + \alpha_i + \varepsilon_{it} \quad \text{3.5}$$

Since model 3.5 is developed based on a panel data set, the term i represents the individual country while the term t represents the year.⁴

The dependent variable $\frac{R_{it}}{GDP_{it}}$ represents the share of remittances in GDP of country i at time t . The remittances share to GDP was used in order to be able to limit the variation in the dependent variable since the group of countries included in the data set is relatively large (see section 3.6) and there is a substantial difference in terms of the size of these countries given that it includes countries such as China that receives nearly 50 billion USD of remittances, but as a share to GDP these are not quite 1 percent. Hence, remittances may not be as important as in countries like Moldova or Bosnia and Herzegovina where remittances varied around 1-2 billion USD and their share to GDP is as high as 35 percent.

The home country variables are presented by X_{it} and consist of home country GDP *per capita* at purchasing power parity (PPP) and its squared value, the unemployment rate. The host country variables are represented by Y_{it} and are the host country GDP *per capita* at purchasing power parity (PPP) and its squared value and the unemployment rate.

⁴ Time dummies are included and presented in respective appendices.

Given that migrants could be scattered across different countries, the variables were defined by using information on the main host country. For example, for Mexico as the main host country was the U.S given that the largest share of Mexican migrants is settled there. In order to properly identify the main host country, various reports and research papers have been used to define this (mostly World Bank Remittances Factbook). As an indicator of the overall environment of home country, the World Bank Governance Indicators (G_{it}) are included in the above model, given that this may serve as a risk assessment of the countries by migrants. The main objective of this analysis, the effect of policy initiatives, is depicted by P_{it} . This variable is developed from research undertaken for all the countries on their policies and initiatives to increase the remittances (details on the creation of the variable are presented in section 3.6.1 and Appendix 3.2).

Another specification, which has remittances *per capita* as the dependent variable, is also investigated, while the set of independent variables remains similar. This definition of the dependent variable is because in some countries the growth of nominal GDP may mean that remittances as a share to GDP does not increase.

$$\frac{R_{it}}{Population_{it}} = \beta_0 + \beta_1 X_{it} + \beta_2 Y_{it} + \beta_3 P_{it} + \beta_4 G_{it} + \alpha_i + \varepsilon_{it} \quad \text{3.6}$$

Theoretically a dynamic model would seem appropriate given that the previous values of remittances may affect their current value (see section 3.7.1 for the intuition behind the dynamic model for remittances).

The expected effect on remittances of changes in the independent variables, according to the discussion of the theory and literature, will be discussed next. In this context, the

deterioration of a home country economic variable such as unemployment or GDP *per capita* should result in higher remittances as a result of altruistic behaviour of the migrant towards the households, but the opposite can happen if the remittances are driven by self-interest, so the sign is indeterminate. In case of a deteriorating economic environment in the host countries, and consequently the economic position of the migrant, this should lead to lower remittances given the lower availability of income to be remitted. If remittances increase as the governance indicators improve, this could be related to self-interest motives, while if governance deteriorates and remittances increase, it could be related to altruism.

Table 3.2 The expected effect of independent variables on the flow of remittances

Variables	Altruism	Self-Interest
Unemployment in Home Country	+	-
Unemployment in Main Host Country	-	+
GDP <i>per capita</i> in Home country	-	+
GDP per capita in Home country-Squared	-	+
GDP <i>per capita</i> in Main Host Country	+	+
GDP per capita in Main Host Country-Squared	?	?
Policy Variable	n/a	n/a
Governance Indicators (World Bank)	-	+
Home Country Inflation	+	-
Home Country Population	n/a	n/a

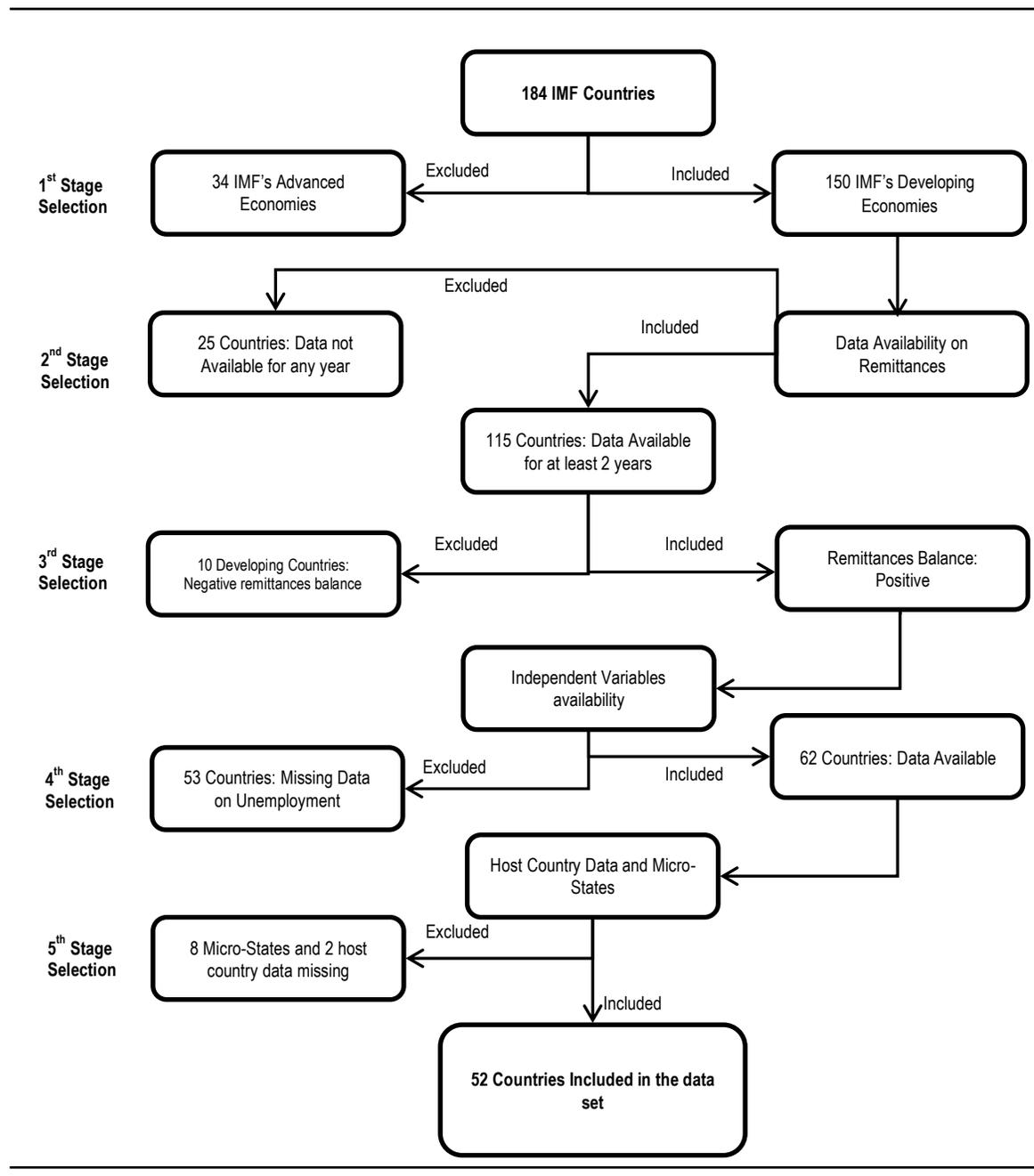
Regarding the policy variable, given that it is not included in the current empirical models in the literature, it is not immediately apparent if it is altruism or a self-interest variable. However, as the literature recommends implementation of policy initiatives to increase the flow of remittances, the policies are in most of the cases designed to make the home country attractive for migrants' investments and addressing other aspects which could be of interest for migrants. Hence, the existing literature indirectly treats the policy options as means of increasing the remittances flows based on self-interest motives for the migrant. This is because they have been typically designed to attract the interest of migrants for investments in the home country, either in terms of durable goods and education, but also business investments. However, there have been government driven policy initiatives which aim to increase remittances in a similar manner to their behaviour under the altruism motivations. An example of this could be the schemes such as the aforementioned Home Town Associations in Mexico which aim at improving the local infrastructure, hence the altruism of the migrant for the area of origin (see Table 3.4 for the types of policies and a wider discussion of them).

3.6 Data Description

Many uncertainties remain in the literature on remittances and their determinants. One of the main reasons for this is the lack of data and especially the problem of recording the remittances transferred through informal channels. In recent years, by recognizing the importance of remittances, many countries have increased their efforts to get higher coverage and record the flows of remittances. Hence, it is often perceived that remittances have increased; however, this could be a result that the improved statistics on remittances in recent years (World Bank 2006). This situation gives a particular need to

include time dummies in the estimation. Despite the difficulties in recording, the existing data are an important basis to identify what determines remittances at aggregate level for countries over years. For this purpose, a data set of around 50 developing countries has been compiled with the data obtained from various sources, but mostly from World Bank, IMF, OECD and institutions of respective countries. Figure 3.1 shows the sample selection method and the criteria and constraints in including the current number of countries.

Figure 3.1. Sample Selection Procedure for the data set



Source: Author's Creation

The first criteria for selecting the countries to include in this research are based on the IMF World Economic Outlook definitions of the developed and developing countries. IMF defines the level of development for the world economies based on the GDP *per capita* (IMF WOE, 2010). Therefore, as the first criteria to include the countries in the research was the IMF and using this criterion, the advanced economies were removed from the analysis. Out of 187 IMF members, 33 advanced economies were removed from the analysis. This is because advanced economies are migrant recipient countries and remittances to these countries are negative. Moreover, there are several other countries which are not in the IMF's definition of advanced economy but were excluded from the research. This is because they are important migrant recipient countries and therefore, remittances from these countries are continuously negative (2nd stage in the Figure 3.1). In addition, several other micro-states⁵ where remittances are negligible were excluded from the research. The third stage of the selection results from the lack of data for some countries and hence represents a constraint. This is the case mostly with the African countries where there is a significant lack of data for many variables. Among the main missing variables in these countries is the unemployment rate which was the main constraint, applying to nearly 20 countries. Moreover, some migration destination countries (especially in Middle East region) also lacked unemployment data (e.g. Saudi Arabia) which was another constraint to including few countries in the data set. It should be pointed out that for many of these countries the data were missing for all years.

⁵ The group of micro-countries is: The Bahamas, Barbados, Belize, Brunei Darussalam, Dominica, Sao Tome and Principe, Seychelles and Surinam.

The data that will be used to investigate the specified model are from various sources. The main source is World Bank (2011a) with its Development Indicators (WDI), while IMF World Economic Outlook (WEO) is another important source for variables such as GDP of home and host countries. The inflation rate is also from the IMF WEO. Table 3.3 presents the descriptive statistics of each variable and the number of available observations. As presented in Table 3.4, the Governance Indicator lacks the number of observations because the World Bank compiled these indicators since 1996. Consequently, when this variable is included in the model, the number of observations will be reduced.

Table 3.3 Descriptive Statistics of the Variables

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Remittances/GDP	870	4.6	5.6	0.0	34.7
Remittances <i>per capita</i>	870	12.4	27.0	0.000004	375.4
Unemployment Rate in Home Country	870	10.7	7.5	0.8	55.0
Unemployment Rate in Main Host Country	870	7.7	3.2	1.4	30.4
GDP <i>per capita</i> of Home Country	870	5656.7	3647.6	402.7	20961.3
GDP <i>per capita</i> of Main Host Country	870	24729.2	11000.5	1058.6	47155.3
Inflation	870	28.1	158.2	-9.5	2947.7
Population	870	69.8	204.3	1.0	1334.7
Any Policy Variable	870	0.19	0.39	0.00	1.00
One Policy Variable	870	0.05	0.22	0.00	1.00
Two or More Policy Variables	870	0.08	0.27	0.00	1.00
Taxation Policy Variable	870	0.09	0.28	0.00	1.00
Other Government Policy Variable	870	0.11	0.31	0.00	1.00
Private Sector Policy Variable	870	0.08	0.28	0.00	1.00
Government Effectiveness	610	-0.21	0.55	-1.85	1.25

3.6.1 Policy Initiatives Variable

A number of research articles such as Leuth and Ruiz-Arranz (2008), Adams (2007 and 2008), Agunias (2006), Mundaca (2005), Jongwanich (2007), Gupta *et al.*, (2009), Carling (2004), suggests that measures and policies should be undertaken by the

institutions in home countries in order to increase remittances and their effects on the home economies. To date, despite the conclusion by these authors that policies are important, no study has undertaken empirical research to investigate whether those policies that are recommended in the literature and, as a consequence, applied by several governments of developing countries, are successful. As a result, little is known about the size of the effect of the policy initiatives on remittances.

To our knowledge, this is the first study which attempts to collect and categorize the policies that have been applied in various countries with regard to remittances. In the extensive process of data collection, in order to identify the policy initiatives, various sources were consulted and used as references such as official web-sites and publications of the institutions of home countries, journal articles and other publications which have described partially or in detail the policy initiative. For this reason, a database has been compiled to identify these policies that have been undertaken by each country and during the periods they have been active. Table 3.4 provides a summary. Across a group of nearly 52 developing countries in the sample, 21 countries have applied at least one policy for the benefit of remittance senders and recipients while 11 of them applied multiple policies.

Table 3.4 presents the main policies and initiatives undertaken by governments as well as private sector for the benefit of migrants. As presented, public institutions are those mostly engaged in facilitating the general environment and also providing larger benefits to migrants in order to increase their role into their domestic economies. The focus has largely been on improving the financial services which are an important means of transferring the remittances into the formal system as well as increasing their

development impact in the recipient economy. Governments, recognizing the importance of diaspora, have also established institutions at high level, ministries, in 13 countries. Special government programmes have been designed in order to allow migrants to import a limited amount of goods duty free, especially focusing on goods which could have positive impact on the overall economic conditions. Nevertheless, an important role is also played by private sector companies, notably commercial banks.

Of the 52 countries in this dataset, eight of them have a presence of their own banks in the host countries' economies, mostly targeting their migrants. Furthermore, there are banks in home countries which have designed special loan packages for migrants willing to invest in their home country, as well as special deposit schemes for the migrants willing to save their money into the home country's banking sector. In this context, the policy initiatives are represented by qualitative variables, in three ways.

Table 3.4 Types and number of countries applying policies

	Type of the policy initiative	Number of Countries Applying the Policy
Government Policies and initiatives	Legal support	4
	Invest. Policies	6
	Exchange rate policy	4
	Financial Services	20
	Import support (tax reduction)	8
	Business advisory services	6
	Fee reduction	4
	Ministry for Diaspora	13
	Other Government incentive	10
Private Initiatives	Remittances through phone	1
	Banks in Host Country	8
	Loans for investment	5
	Deposit scheme	3

Source: Author's creation (information as of October 2010).

First, the policy variable consists of one dummy variable indicating whether the country applied any policy taking the value of 1, and the value of 0 for countries that do not apply any policy.

Secondly, two dummy variables are used to indicate the number of policies applied in country i :

- a) a dummy taking the value 1 if the country i applied any policy, otherwise 0

- b) a dummy taking the value 1 if the country i applies more than one policies, otherwise 0.

The third way of modelling policy variables is based on the three general types of policies which take into account the main aim of the particular policies, with dummy variables as following:

- a) If the country i applies any taxation related policies=1, otherwise 0
- b) If country's i government applies other policies=1, otherwise 0
- c) If private sector schemes exist in country i =1, otherwise 0.

In the third definition, the taxation policies are usually related to a reduction of taxes on capital goods imported by the migrants into their home country, tax breaks for several years for migrants' investment, fee reductions for transfers and other specific investment policies which aim at benefiting migrants' investments. Such policies have often been recommended by the literature as having more potential to increase migrant transfers. Given this, these policies were placed in a separate dummy variable. Other government policies includes programmes such as legal support, advisory services, financial services *et cetera* as presented in Table 3.4 for the types of policies. Private sector schemes are usually related to the banking sector products such as credit and deposit schemes with special conditions for the migrants *et cetera*.

3.7 Estimation Method and Results

Considering the models presented in equation 3.5 and 3.6 (section 3.5), and the data set which contains yearly observations over different countries, the estimation method used in this chapter is a panel data regression. The reason for the use of this kind of data to

identify the macroeconomic determinants of remittances, including the impact of policies on the remittances inflows to developing countries, relies on the several properties of the data. Firstly, given that only recently (*i.e.* the past two decades for many countries), the issue of remittances has emerged in the literature and that flows are mostly towards developing economies, the statistical history of these countries is not long enough for time series analysis. Secondly, panel data have cross-section characteristics as well as time series. This provides higher variation of data (*i.e.* across countries and over years). Also, using panel data estimation, one avoids some of the risk of obtaining biased results which may be caused by the variables which are not measurable. Such variables may include socio-cultural, economic and religious differences across countries which may affect migration and remittances and be approximately constant over time. In time-series and cross-section studies the heterogeneity across countries, if not taken into account, runs the risk of obtaining biased results (Baltagi, 2005). Panel data are characterized with more information on the data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency. They also often represent a better measure for issues that are not detectable in cross-section or time series (Baltagi, 2005 pages 5-7) for example the effects of policies on macroeconomic variables.

As presented in the figure 3.1, the data set includes 52 countries with a time series ranging from 6 to 30 years. This makes the data set with a relatively large number of countries (N) and also large number of time series (T). The characteristics of the data, in particular the size of the panel, influence the choice of an optimal estimator for panel data models (Judson and Owen, 1999).

The dynamic panel model will be estimated using fixed effects (FE) estimation method given the large number of countries (52) from different regions and large differences in the size of the economy. Therefore, using FE the differences across countries will be captured in differences in the constant term (Greene, 2003). Even though the conclusions drawn from the FE are restricted only to the sample, this is not the chief concern because the aim in this chapter is to draw conclusions within the sample, especially given that the data set covers a relatively large number of countries. As presented in the selection procedures (Figure 3.1) there are a relatively large number of countries excluded due to lack of data on dependent and some independent variables, mostly countries in the African Continent.

The intuition behind the lagged effects for remittances models relies on generic reasons: the habits created in sending remittances and the expectations by the remittance recipient households who build their expectations based on the previous events. That is, they build habits and expectations of receiving remittances based on the previous flows of remittances and this affects their consumption patterns. Moreover, given that one of the variables designed in this section attempts to take into account the policies applied by the home country, this may be an additional argument for the dynamic nature of the model since the full response to the policies and also to macroeconomic changes may take several years (Greene, 2003; Pugh, 2011), which makes the longer time-series applied in this chapter important into obtaining the effect of policy variables. In static models, it is strictly assumed that the effects take place during the immediate time period and estimates of a dynamic model using static methods is misspecification and gives biased estimates (Greene, 2003). The literature mostly uses dynamic specifications, recognizing

Where all the variables presented are identical with those presented in equation 3.5, but excluding dummy variables for simplicity since they disappear in the CFR test given that they are not time varying, while the error term is composed of:

$$\varepsilon_{it} = \rho\varepsilon_{it-1} + v_{it} \dots \dots \dots 3.7.2$$

Where ε_{it} represents the error term containing the dynamic effect which is taken into account by (ρ) which lies between 0 and 1

Introducing one lag, the model becomes:

$$\frac{R_{it-1}}{GDP_{it-1}} = \alpha_1 + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_4 G_{it-1} + \varepsilon_{it-1} \dots \dots \dots 3.7.3$$

Solving for the lagged error term ε_{it-1} :

$$\varepsilon_{it-1} = \frac{R_{it-1}}{GDP_{it-1}} - \alpha_1 - \alpha_2 X_{it-1} - \alpha_3 Y_{it-1} - \alpha_4 G_{it-1} \dots \dots \dots 3.7.4$$

Equation 3.7.4 is substituted into 3.7.2, which gives:

$$\varepsilon_{it} = \rho \left(\frac{R_{it-1}}{GDP_{it-1}} - \alpha_1 - \alpha_2 X_{it-1} - \alpha_3 Y_{it-1} - \alpha_4 G_{it-1} \right) + v_{it} \dots \dots \dots 3.7.5$$

Substituting 3.7.5 into 3.7.1 gives the following equation:

$$\frac{R_{it}}{GDP_{it}} = \alpha_1 + \alpha_2 X_{it} + \alpha_3 Y_{it} + \alpha_4 G_{it} + \rho \frac{R_{it-1}}{GDP_{it-1}} - \rho\alpha_1 - \rho\alpha_2 X_{it-1} - \rho\alpha_3 Y_{it-1} - \rho\alpha_4 G_{it-1} + v_{it} \dots \dots \dots 3.7.6$$

Collecting the intercept terms gives:

$$\frac{R_{it}}{GDP_{it}} = (1 - \rho)\alpha_1 + \alpha_2 X_{it} + \alpha_3 Y_{it} + \alpha_4 G_{it} + \rho \frac{R_{it-1}}{GDP_{it-1}} - \rho \alpha_2 X_{it-1} - \rho \alpha_3 Y_{it-1} + \rho \alpha_4 G_{it-1} + v_{it} \dots \dots \dots 3.7.7$$

As presented in 3.7.7, this equation has four coefficients ($\alpha_2, \alpha_3, \alpha_4$, and ρ), excluding the constant term (α_1), while the dynamic linear regression model in 3.7.8 has seven coefficients excluding the constant term (α_1):

$$\frac{R_{it}}{GDP_{it}} = \alpha_1 + \alpha_2 \frac{R_{it-1}}{GDP_{it-1}} + \alpha_3 X_{it} + \alpha_4 Y_{it} + \alpha_5 G_{it} + \alpha_6 X_{it-1} + \alpha_7 Y_{it-1} + \alpha_8 G_{it-1} + \varepsilon_{it} \dots \dots \dots 3.7.8$$

Comparing equation 3.7.7 and 3.7.8 it can be observed that:

- a) In both 3.7.7 and 3.7.8, there is one coefficient on $\frac{R_{it-1}}{GDP_{it-1}}$ (ρ from equation 3.7.6 and α_2 from equation 3.7.7).
- b) In 3.7.7, the coefficient on X_{it-1} is $-\rho\alpha_2$, which is the negative product of the coefficients on $\frac{R_{it-1}}{GDP_{it-1}}$ and X_{it}

Therefore, the dynamic linear regression model (DLMR) can be transformed into 3.7.7 only if these CFR hold. If these CFR hold, it can be assumed that there is “pure” serial correlation in the residuals. However, model presented in 3.7.7 must be estimated using non-linear models given that CFR is non-linear. This can be done using the Cochrane-Orcutt method. Given that the model presented above may contain non-measurable or unobserved components (hence known as the unobserved component model), it may follow an AR (1) process, meaning that it is the CFR which suggest that something may

be missing in the specification, most likely the autoregressive structures which are typical for time-series data. As suggested, the first test undertaken is the CFR for the continuous variables individually, which is presented in Table 3.5.

The results presented in Table 3.5 suggest there is insufficient evidence to reject CFRs for the FE estimation with the tests conducted for each variable. In addition, the CFRs hold also when jointly tested for all the continuous variables; therefore, the unobserved components model is estimated as the preferred one. This applies to both specifications, that is, remittances to GDP and remittances *per capita* as dependent variable (Table 3.5 and Appendices 3.3.1, 3.3.3 and 3.5.1 and 3.6.1). The CFR tests have been conducted for all specifications which differ in terms of continuous variables (for specifications that differ only by dummy variables the same tests apply since the CFR test is on the differenced variables and dummy variables are not time varying).

Table 3.5 Common Factor Restrictions from FE estimation of DLRM of AR(1)

Independent Variables	Remittances/GDP		Remittances/capita in USD					
	Excl. Governance	Incl. Governance	Excl. Governance	Incl. Governance				
Home Country Unemployment	F(1, 771) =	1.29	F(1, 526) =	0	F(1, 773) =	0.98	F(1, 528) =	0.06
	Prob > F =	0.257	Prob > F =	0.9852	Prob > F =	0.3221	Prob > F =	0.808
Host Country Unemployment	F(1, 771) =	2.59	F(1, 526) =	2.61	F(1, 773) =	1.74	F(9, 526) =	0.23
	Prob > F =	0.108	Prob > F =	0.1066	Prob > F =	0.1879	Prob > F =	0.6313
Population	F(1, 771) =	2.64	F(1, 526) =	0.29				
	Prob > F =	0.104	Prob > F =	0.5891				
Inflation	F(1, 771) =	0.29	F(1, 526) =	0.21	F(1, 773) =	0.05	F(1, 528) =	0.38
	Prob > F =	0.5933	Prob > F =	0.6474	Prob > F =	0.8193	Prob > F =	0.538
Government Effectiveness			F(1, 526) =	0.68			F(1, 528) =	2.01
			Prob > F =	0.4112			Prob > F =	0.1570
GDP per capita of home Country	F(1, 771) =	1.06	F(1, 526) =	0.38	F(1, 773) =	2.23	F(1, 528) =	1.77
	Prob > F =	0.3045	Prob > F =	0.5402	Prob > F =	0.136	Prob > F =	0.18
GDP per capita of Host Country	F(1, 771) =	0.01	F(1, 526) =	0.56	F(1, 773) =	1.30	F(1, 528) =	0.07
	Prob > F =	0.9378	Prob > F =	0.4537	Prob > F =	0.2552	Prob > F =	0.7889
GDP per capita of home Country ²	F(1, 771) =	0.77	F(1, 526) =	0	F(1, 773) =	0.01	F(9, 526) =	0.01
	Prob > F =	0.3815	Prob > F =	0.9767	Prob > F =	0.9322	Prob > F =	0.918
GDP per capita of Host Country ²	F(1, 771) =	0.01	F(1, 526) =	0.2	F(1, 773) =	0.38	F(1, 528) =	0.24
	Prob > F =	0.9379	Prob > F =	0.6574	Prob > F =	0.5354	Prob > F =	0.3225
Joint Common Factor Restriction	F(8, 771) =	0.82	F(9, 526) =	0.7	F(7, 773) =	0.83	F(8, 528) =	0.66
	Prob > F =	0.5838	Prob > F =	0.7073	Prob > F =	0.5598	Prob > F =	0.725

3.7.2 Results of the Estimated Model

Given that the unobserved component model of AR (1) is the preferred estimation method, the results are presented in Table 3.6 (note that year dummies are included in the model and the full results are presented in Appendix 3.3.2). The interpretation of the results in this chapter is *ceteris paribus*. The results of the model are presented in the Table below with the first column representing the estimated regression of the specification with the dependent variable Remittances/GDP, while the second column is specified using Remittances *per capita*. Given that the data available for the governance variable is more limited (Table 3.3), results excluding this variable are presented first.

In the remittances as a percentage of GDP model, GDP *per capita* (PPP) of the home and host countries are statistically significant. The squared term of the GDP *per capita* (PPP) of the home country is statistically insignificant, but for the host country is significant. Remittances are estimated to decrease as the GDP *per capita* of the home country increases, suggesting a countercyclical behaviour of remittances. It is often argued in the literature that when remittances have a countercyclical behaviour, that they are primarily driven by the altruistic motives given that when economic conditions in home country (*i.e.* GDP in our case) improve, the economic conditions of the households improve as well, and hence migrants remit less. Additionally, behaviour by remitters under the same circumstances could be driven by the informal contractual arrangements between the migrant and the household and also the decision on migration since this might be driven and financed by an intra-household agreement thus, resulting in higher remittances during the times when economic conditions worsen (income risk diversification).

Also, the results suggest if the GDP *per capita* of the home country increases by 100 USD at PPP, this decreases the remittances/GDP by only 0.03 percentage points. This home country GDP variable is statistically insignificant in the column 2, where the dependent variable remittances *per capita*.⁶

⁶ The results of Table 3.6 based on Stata printouts are presented in appendix 3.3.2 and 3.3.4

Table 3.6 Estimated Regression of Macroeconomic Determinants of Remittances

VARIABLES	(1) Remittances as % of GDP	(2) Remittances <i>per capita</i> in USD
Home Country Unemployment	0.0388 (0.196)	-0.295 0.247
Host Country Unemployment	0.131* (0.065)	1.471** 0.016
Inflation Rate	-4.91E-05 (0.774)	-2.05e-05 0.991
Population	0.00575 (0.896)	
GDP <i>per capita</i> of Home Country	-0.000326** (0.022)	0.000326 0.720
GDP <i>per capita</i> of Home Country ²	1.12E-07 (0.337)	4.22e-07 0.563
GDP <i>per capita</i> of Main Host Country	0.00107*** (0.000)	0.00403** 0.032
GDP <i>per capita</i> of Main Host Country ²	-6.87e-09*** (0.008)	-3.03e-08 0.103
Policy Variable	-0.314 (0.521)	-0.150 0.970
Constant term	-22.72*** (0.000)	214.3*** 0.000
Observations	870	870
Number of id	52	52

P-Values in parentheses

*** p<0.01, ** p<0.05, * p<0.1. Note: GDP *per capita* is based on Purchasing Power Parity (PPP)

For host country GDP *per capita*, the squared term is significant. Remittances increase towards the recipient economy as the GDP *per capita* of the main host country (sending economy) increases, but at decreasing rate. The results suggest that remittances will increase until the GDP *per capita* (PPP) of the main host country reaches 73,099 US dollars, which is considerably above the maximum in the data of 47,155 USD. However,

despite being in line with expectations, the results of the GDP *per capita* of host country should be taken with caution given that there is no single country of destination for any migrant sending country. In this model the estimate is that an increase in the GDP *per capita* of the host country of 500 USD (by about 2 percent at the mean) will increase remittances *per capita* by approximately 2 USD. The squared variable of host country GDP is statistically insignificant in the column 2.

The unemployment rate in the home country is statistically insignificant in both models. This could suggest that it is the GDP *per capita* (*i.e.* potentially wages which may be connected to the GDP) variable that is taking effect of the home country economic conditions. The host country unemployment rate is significant, although only at the 10% level in the remittances as a percentage of GDP. Although the literature suggests that migrants could be mostly affected by the increasing unemployment rates in host countries (Vargas-Silva and Huang, 2006; Gupta, 2006; World Bank, 2006), leading to lower remittances, in our attempt to measure such effect we obtain a positive estimate. This is the case in all specifications presented in this chapter. However, similar to the GDP of host country, such results should be taken with caution given that there is no single destination country for migrants, while this variable captures the unemployment rate of the main (single) destination country.

Even though many of the developing countries have experienced a relatively high inflation rate, the effect of this variable on the share of remittances to GDP is statistically insignificant. The expectations are that inflation results in higher remittances if the altruism motive is the primary goal of remitting by the migrants or if the income risk diversification theory holds for migration.

Despite the general recommendations in the literature that policies should be undertaken by the home country in order to increase remittances and their effect in the recipient economy and despite a considerable number of countries' application of such policies, to our knowledge, this thesis is the first attempt to investigate the impact of policy initiatives on remittances share to GDP (or *per capita*). The results do not support the recommendation in the literature, given that the impact of policy initiative variable is statistically insignificant. Nevertheless, the results of this variable should be taken with caution because despite the efforts to compile a comprehensive data set inclusive of all policy initiatives, the search for them is also challenging. However, given credible sources have been used and data collection was based on the best available data online, this estimation attempted to provide a wide coverage. The second attempt at policy evaluation was the specification with two dummy independent variables for the policy initiatives and these results are presented in Table 3.7. This specification contains one dummy variable for applying only one policy regarding migrants and remittances (Country *i* applies only one Policy=1) and one variable which represents the countries applying two or more policy initiatives for migrants (Country *i* applies more than one Policy=1).

The results of this specification are not in line with the expectations. In the specification in the column labelled (3) in Table 3.7,⁷ the results suggest that the share of remittances to GDP decreases when a country applies one policy, while in other cases the remittance dummies are insignificant. For the other variables, the signs and significance are similar to the previous estimations in Table 3.6. Given that the type of the policy implemented

⁷ Stata Printouts are presented in Appendix 3.4.1 and 3.4.2

may matter, the third specification which includes the type of the policy has been specified. However, the results are also insignificant for all the policy variables in this specification (Table 3.8)⁸.

Table 3.7 Estimated Regression of Macroeconomic Determinants of Remittances by the number of policies

VARIABLES	(3) Remittances as % of GDP	(4) Remittances <i>per capita</i> in USD
Home Country Unemployment	0.0386 (0.195)	-0.293 0.252
Host Country Unemployment	0.121* (0.087)	1.455** 0.017
Inflation Rate	-4.97E-05 (0.769)	-2.96e-05 0.987
If Country Applies One Policy	-1.391** (0.016)	-2.242 0.650
If Country Applies two or more Policies	0.854 (0.251)	-1.290 0.822
Population	0.00442 (0.921)	
GDP <i>per capita</i> of Home Country	-0.000313** (0.028)	0.000349 0.701
GDP <i>per capita</i> of Home Country ²	1.12E-07 (0.335)	4.23e-07 0.562
GDP <i>per capita</i> of Main Host Country	0.00104*** (0.000)	0.00400** 0.034
GDP <i>per capita</i> of Main Host Country ²	-6.55e-09** (0.011)	-2.97e-08 0.112
Constant term	-22.28*** (0.000)	214.5*** 0.000
Observations	870	870
Number of id	52	52

P-Values in parentheses

*** p<0.01, ** p<0.05, * p<0.1 Note: GDP *per capita* is based on Purchasing Power Parity (PPP)

⁸ Stata Printouts are presented in Appendix 3.4.3 and 3.4.4

Table 3.8 Estimated Regression of Macroeconomic Determinants of Remittances by type of policy

VARIABLES	(5) Remittances as % of GDP	(6) Remittances <i>per capita</i> in USD
Home Country Unemployment	0.038 (0.205)	-0.299 0.244
Host Country Unemployment	0.130* (0.066)	1.469** 0.016
Inflation Rate	-4.74E-05 (0.781)	-2.66e-05 0.988
Population	0.00519 (0.905)	
GDP <i>per capita</i> of Home Country	-0.000326** (0.022)	0.000336 0.712
GDP <i>per capita</i> of Home Country ²	1.12E-07 (0.333)	4.24e-07 0.561
GDP <i>per capita</i> of Main Host Country	0.00109*** (0.000)	0.00407** 0.031
GDP <i>per capita</i> of Main Host Country ²	-7.02e-09*** (0.007)	-3.05e-08 0.102
Taxation Policies	0.563 (0.437)	0.0391 (0.995)
Other Government Policies	-0.573 (0.325)	-1.692 0.730
Private Sector Schemes	-1.049 (0.180)	-1.049 0.869
Constant term	-23.07*** (0.000)	213.3*** 0.000
Observations	870	870
Number of id	52	52

P-Values in parentheses

*** p<0.01, ** p<0.05, * p<0.1, Note: GDP *per capita* is based on Purchasing Power Parity (PPP)

In addition to the policies supporting imports or investments, there are other policies which aim to develop transfer methods, increase the use of formal channels and reduce the transaction cost. Although our specifications controlled for these policies as well (mostly falling into the category of private sector schemes) the results again suggest that they are statistically insignificant.

Given that the literature recommends the inclusion of governance quality in home country (Catrinescu *et al.*, 2009), we added the World Bank Governance Indicators, specifically, the Government Effectiveness indicator into the specification (Table 3.9). However, the results for the policy variables are insignificant across all but one specification. That specification, in the column labelled 9, gives an unexpected effect, suggesting that holding other variables constant, the application of one policy by the country *i*, results in lower remittances. The results for this variable are consistent with that in the column labelled 3 in Table 3.7; however, such results do not make much sense.

The inclusion of governance indicators affects the significance of other variables across the specifications, although not the sign. For instance, in the specification where Remittances to GDP is the dependent variable, the home country GDP is insignificant. However, it is significant in the specifications where the variable remittances *per capita* are used as dependent variable, which was not the case in the specification in columns 1-6.

Table 3.9 Estimated Regression of Macroeconomic Determinants of Remittances including governance indicator

VARIABLES	(7) Remittances as % of GDP	(8) Remittances <i>per capita</i> in USD	(9) Remittances as % of GDP	(10) Remittances <i>per capita</i> in USD	(11) Remittances as % of GDP	(12) Remittances <i>per capita</i> in USD
Home Country Unemployment	0.0509 (0.185)	0.152 0.368	0.0509 (0.182)	0.149 0.376	0.0499 (0.195)	0.141 0.405
Host Country Unemployment	0.154* (0.072)	-0.377 0.336	0.144* (0.092)	-0.417 0.288	0.151* (0.080)	-0.413 0.293
Inflation Rate	0.000576 (0.523)	0.000308 0.955	0.000567 (0.527)	0.000342 0.95	0.000587 (0.516)	0.000483 0.929
If Country Applies One Policy			-1.239** (0.040)	-3.081 0.281		
If Country Applies two or more Policies			1.197 (0.134)	-1.420 0.662		
Population	-0.0441 (0.677)		-0.0539 (0.614)		-0.0504 (0.636)	
GDP <i>per capita</i> of Home Country	-0.000229 (0.164)	0.00211*** 0.000	-0.00021 (0.201)	0.00210*** 0.000	-0.000228 (0.167)	0.00210*** 0.000
GDP <i>per capita</i> of Home Country ²	1.19E-07 (0.381)	-1.94e-07 0.601	1.22E-07 (0.364)	-2.02e-07 0.585	1.20E-07 (0.375)	-2.02e-07 0.585
GDP <i>per capita</i> of Main Host Country	0.00131*** (0.000)	0.00261** 0.035	0.00127*** (0.000)	0.00255** 0.041	0.00132*** (0.000)	0.00266** 0.032
GDP <i>per capita</i> of Main Host Country ²	-8.62e-09*** (0.003)	-1.41e-08 0.179	-8.18e-09*** (0.004)	-1.33e-08 0.209	-8.69e-09*** (0.002)	-1.45e-08 (0.296)
Policy Variable	-0.35 (0.564)	0.370 0.893				
Taxation Policies					0.515 (0.578)	1.006 0.819
Other Government Policies					-0.553 (0.427)	-1.934 0.575
Private Sector Schemes					-0.891 (0.285)	-2.483 0.501
Government Effectiveness	-0.605 (0.164)	-2.499 0.257	-0.636 (0.140)	-2.205 0.319	-0.568 (0.192)	-2.053 0.356
Constant term	-24.73*** (0.000)	-62.78*** 0.000	-23.89*** (0.000)	-60.98*** 0.000	-24.54*** (0.000)	-62.91*** 0.000
Observations	610	610	610	610	610	610
Number of id	52	52	52	52	52	52

P-Values in parentheses

*** p<0.01, ** p<0.05, * p<0.1, Note: GDP *per capita* is based on Purchasing Power Parity (PPP)

However, why the policies regarding the migration and remittances do not affect remittances to GDP or remittances *per capita* may be related to the nature of the remittances and their definition which is:

“Remittances represent household income from foreign economies arising mainly from the temporary or permanent movement of people to those economies

(IMF, 2009 page 272).

In many developing countries remittances are mostly used for consumption purposes, while such policies are more likely to impact migrants' investments. Hence, given that the policies applied by the recipient countries are mainly oriented towards attraction of migrants' capital either through ensuring better investment environment or allowing specific items to be imported duty free (mostly capital goods), it is likely that such policies would affect other categories of the Balance of Payments (BOP) such as Foreign Direct Investments (FDI) and Imports. According to the IMF (1993) and OECD (1996) definition of the Foreign Direct Investments (FDI), it is understood that migrants' investments should be treated as FDI in the BOP. According to the manuals:

“...a foreign direct investor is an individual, an incorporated or unincorporated public or private enterprise, a government, a group of related individuals, or a group of related incorporated and/or unincorporated enterprises which has a direct investment enterprise operating in a country other than the country or countries of residence of the foreign direct investor or investors...”

(OECD, 1996 page 7-8; IMF, 1993 page 86).

Therefore, given that migrants are treated as non-residents, their investments would fall in the FDI category, not in the category of remittances. Also, policies supporting the import of capital goods would be reflected in the import category. The imports of capital goods and their potential transfer to the households as in kind remittances, are likely to reflect in the private investment, but not necessarily as remittances in the recording of data. In the context of remittances, it is important that the definitional aspects of Balance of Payments be considered. This is because various policies are recommended to increase remittances, however, many of these policies have larger implications for other Balance of Payments items, such as imports of goods and services, foreign direct investments or other categories and not necessarily in the recorded flow of remittances.

3.8 Conclusions and Implications

Using a wide data set for 52 countries with time series of up to 30 years it was aimed to identify macroeconomic determinants of remittances with a special focus on policy evaluation. The motive for this research question is based on the current literature investigating the determinants of remittances given that it widely recommends implementation of policies in order to attract more remittances and also to attract migrants' investments. In order to evaluate whether the policies implemented are affecting remittances an extensive research of the literature to identify the policies undertaken by each country was undertaken. Such policies include both government and private sector schemes. The most notable policies identified in the literature are those which aim to attract migrants' investments such as creating favourable investment conditions, imports of capital goods, legal support, a ministry for diaspora but also

policies aiming to support the transfer of remittances, fee reduction and improvement of payment systems. Using these policies identified in the literature dummy variables were created to take into account these policies. Despite the very extensive research for the policies employed in the different countries at different times, the results should be taken with caution given that there is a possibility of not covering all of them.

Given the data set which is considered to have a moderately large cross section and also a moderately long time series, the estimation method was based on AR (1) using Cochrane-Orcutt method. This is because the nature of the macro variables is suggested to be dynamic, while the AR (1) represented as a dynamic regression with non-linear common factor restrictions and uncorrelated disturbances. The crucial test of CFR holds for this regression and this estimation was used.

As expected the results generally suggest that the *GDP per capita* of the home country (at purchasing power parity) affects negatively remittances, suggesting a counter-cyclical behaviour of remittances towards the home country. Its squared term is statistically insignificant. The *GDP per capita* of the host country estimates on the other hand, suggests an increasing function, but at a decreasing rate. Unexpected results were found regarding the unemployment rate in host country, suggesting that as unemployment increases, remittances to GDP and *per capita* increase as well. One of the main contributions of this chapter was the policy evaluation variable. The results do not support a positive effect of such policies on remittances as a percentage of GDP or remittances *per capita*. A robustness check using different measures for the policy variables gave similar results.

Thus the evidence suggests that for home countries that want to increase remittances, these type of policies are not effective. These results should be taken with caution given that it is possible that not all the policies have been covered and such policies may affect other items of the BOP such as FDI and imports (especially capital goods). In this context, further research with regard to policy evaluation is necessary, especially investigating whether these policies are affecting the aforementioned BOP items.

CHAPTER IV

THE IMPACT OF REMITTANCES ON HOUSEHOLD

EXPENDITURE PATTERNS

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4.1 Introduction

An important and previously under-investigated topic in the literature of migration and remittances is the impact of remittances on the economy of the home country, especially having in mind the relatively large share of remittances to GDP for many developing countries. The literature remains inconclusive and divided into three viewpoints on the effect of remittances. The first suggests that remittances do not differ from other sources of income (Adams *et al.*, 2008). The second view is that remittances mainly finance consumption and are oriented towards non-productive purchases, such as luxury goods and hence, do not generate growth (Chami *et al.*, 2005; Ratha, 2003). The third approach considers that remittances are used to finance human capital investments such as education and health and also to establish enterprises and generate employment (Osili, 2004; Adams *et al.*, 2008; Adams, 2010; Taylor and Mora, 2006; Castaldo and Raily, 2007). From the macroeconomic point of view in Chapter III, the finding suggests that policies do not have any significant effect on the flow of remittances. However, in order to properly address the issue of policies with regard to remittances, it is necessary to identify their difference, if any, from other sources of income in terms of their effect on expenditure patterns of households, that is, whether remittances are spent differently from other income.

Considering the above mentioned views, and the evidence in the literature, this chapter aims to empirically investigate the effect of remittances on household expenditure. Studies such as Castaldo and Reilly (2007), Adams *et al.*, (2008) and Cattaneo (2012) have investigated the impact of remittances on households' expenditure using the Engel's Curve approach, which describes the households' expenditure given their level of income

(Chai and Moneta, 2010). This is considered as a successful approach by studies evaluating the effects of tax/benefit policy reforms which may affect expenditure patterns (Castaldo and Reilly, 2007; Muellenbauer, 1977; Leser, 1963). The Engel's Curve⁹ approach may be the appropriate method to investigate the impact of remittances on households' expenditure having in mind that additional sources of income often shift the household expenditure patterns and result in change the expenditure preferences (Blow *et al.*, 2007; Adams, 2008; Castaldo and Raily, 2007).

The reason why this particular approach is used in this study is because the primary interest in this chapter is the behaviour of households receiving remittances and their expenditure patterns. Moreover, having in mind that the literature (Adams, 2008; Castaldo and Raily, 2007) generally agree that remittance recipient households tend to change their expenditure patterns from food to non-food goods (especially education and durable goods), this approach allows identifying the policies which may be more effective. This is important since remittance policies (see Chapter III) are often oriented to the remittance recipient households, *i.e.* the policies aim to divert them from consumption to development projects and education.

The structure of this chapter is organized in the following manner: section 4.2 reviews the theory and the literature findings on the factors affecting the consumption patterns of households, with special focus on the impact of remittances. Based on the literature and the theoretical foundations, an empirical model will be designed in this section. Section

⁹ The Engel's Law suggests that consumers decrease the share of income spent on consumption goods as their income increases. However, according to this Law, the expenditure on consumption goods does not necessarily decrease, but it does not increase at the same rate as income, thus suggesting an income elasticity of consumption of between 0 and 1.

4.3 is dedicated to the description of the data and the methods that will be used to estimate this model. Section 4.4 presents the search for the appropriate estimation method and the diagnostics of the models, while the results are presented and interpreted in section 4.5. Concluding remarks and policy recommendations are drawn in section 4.6.

4.2 Literature Review

Several relevant views about the effect of remittances on households and the economy exist in the literature. This section attempts to describe these views and to identify the emerging points of remittances effects on household consumption patterns. It is important to start by considering why people migrate and the motivations for sending remittances (see Chapter III). This is because theories on migration and remittances and the use of remittances tend to reinforce each other (Chami *et al.*, 2005). In the Table 4.1 are presented the main findings of the literature for the implications of remittances to the expenditure patterns on recipient households.

Table 4.1 Summary of Literature Findings on the impact of remittances on households' expenditure

Author(s)	Title of the Study	Main Findings
Adams <i>et al.</i> , (2010): Country: Guatemala	Remittances, Household Expenditure and Investment in Guatemala	Remittance recipient households spend less proportionately on consumption goods compared to households that do not receive remittances. Households tend to view remittances as temporary streams of income; therefore they proportionately spend them more on housing, investment goods and education.
Adams <i>et al.</i> , (2008):	Remittances, Investment and	Remittances by households in Ghana are spent just like any other income from all sources.

Country: Ghana	Consumption in Ghana	
Acosta <i>et al.</i> , (2007): 11 countries from Latin America	The Impact of Remittances on Poverty and Human Capital: Evidence from Latin American Household Surveys	Remittances have positive impact on health and education.
Funkhouser (1992): Country: Nicaragua	Migration from Nicaragua: Some Recent Evidence	Remittances may reduce the labour supply; however, they have positive effect on self-employment.
Rodriguez and Tiongson (2001): Country: Philippines	Temporary Migration Overseas and Household Labour Supply: Evidence from Urban Philippines	Remittance recipient households use remittances to fund their consumption needs and choose leisure instead of work (hence generate lower earnings from local labour market).
Castaldo and Raily (2007): Country: Albania	Do Migrant Remittances Affect Consumption Patterns of Albanian Households	Households that receive remittances spend, on average, a lower share of total income on consumption goods and increase the share of expenditure on durable goods and education.
Cox and Ureta (2003): Country: El Salvador	International Migration, Remittances and Schooling: Evidence from El Salvador	Remittances increase the probability of leaving school, especially in rural areas.
Mioti <i>et al.</i> , (2010): Country: Migrants in France	Determinants and Uses of Remittances to Southern and Eastern Mediterranean Countries: Insights from a New Survey	Long-term migrants from North African countries send remittances and advise the households to invest them. Sub-Saharan migrations send remittances to finance consumption.
Guzman <i>et al.</i> ,	The Impact of	Female headed households who receive internal

(2007): Country: Ghana	Remittances and Gender on Household Expenditure: Evidence from Ghana	remittances spend a higher share on health, while female headed households who receive international remittances spend a higher share on durable goods and health.
Gyimah-Brempong and Asiedu (2014) Country: Ghana	Remittances and Investment in Education	Remittances have a positive effect on primary and secondary education enrolment. The effect of remittances on education investment is greater for female-headed households compared to their male counterparts.
Randazzo and Piracha (2014) Country: Senegal	Remittances and Household Expenditure Behaviour in Senegal	Remittances have no impact on expenditure patterns since they behave as any other source of income.
Ameudo-Dorantes and Pozo (2014) Country: Mexico	When Do Remittances Facilitate Asset Accumulation? The Importance of Remittance Income Uncertainty	When remittances are viewed as a non-sustainable source of income, they have a positive effect on asset accumulation.
Gounder (2014) Country: Fiji	Does Remittances Finance Welfare Development? Evidence from South Pacific Island Nation of Fiji	Overall positive effect of remittances on education attainment of children, but also on general human capital categories compared to durable and non-durable goods.

Source: Author's Creation

As explained in Section 4.1, even though there is a lack of systemic economic theory on the impact of remittances on households' expenditure behaviour, three viewpoints

emerge in the literature. The first view, proposed by Adams *et al.* (2008), considers that remittances behave just like any other income and the remittances recipient households do not change the expenditure patterns in the presence of remittances. This view suggests that an additional dollar from remittances will be used by the household just like an additional dollar from salary income or from the family farm and hence the contribution to the economic growth will be just like that of other sources of income (Adams *et al.*, 2008). The treatment of remittances as any other source of income may be particularly the case in low income countries and among poor households, whose income may entirely be used to finance consumption. This may have thus resulted in the findings that expenditure of remittances behaves the same as other sources of income (Adams *et al.*, 2008; Randazzo and Piracha, 2014). This study is focused on Ghana, which is ranked as a country with relatively high poverty rate (World Bank Development Indicators, 2011a). Therefore, the income elasticity of households in Ghana with respect to food consumption may be equal to 1. With this income elasticity, the increase in the households' income as a result of remittances will raise the demand for consumption goods proportionately with the overall income. As a result, the behaviour of remittances will follow similar patterns to other sources of income, financing consumption. Furthermore, in many cases the migrant may be sending remittances to elderly parents, to their spouse and their children, consequently, remittances often represent the sole source of income for the household in home country. Consumption is also often the primary reason why remittances are sent; this is consistent with the altruistic theory of why remittances are sent (see section 3.2.1). This view considers that remittances are sent to the home country mostly in cases when they are essential to maintain basic living

standards and therefore, they cannot easily be diverted to development projects (Chami *et al.*, 2005). Such a view is also in line with the income diversification strategy of the household where households minimize the income risks by diversifying their labour capacities, including sending one or some members in other countries. However, as suggested by Acosta *et al.*, (2007), even though remittances are consumed they may have long-term positive implications for the economy since the welfare and health conditions and overall human capital of the household members may improve due to better nutrition.

The second view considers remittances as having a negative effect on the economy, suggesting that they have a spoiling effect on households' expenditure behaviour and that remittances mostly finance luxury 'status' goods and consumption. This view considers that remittances expenditure take place under asymmetric information and economic uncertainty and therefore, there is a moral hazard problem since the use of remittances may be unobservable by the migrant (Chami *et al.*, 2005; Naiditch and Vranceanu, 2009). This problem is expected to result in increased of consumption with little or no investment. Moreover, this view considers that remittances may also reduce the labour supply (Funkhouser, 1992; Rodriguez and Tingson, 2001; Amuedo-Dorantes and Pozo 2006; Hanson, 2007; Kim, 2007; Amuedo-Dorates and Pozo, 2012).

The third view, also considered as the most optimistic view about the impact of remittances on development, suggests that remittances decrease the share of households' expenditure on consumption goods. Accordingly, the share of income spent on durable housing goods and human capital investments such as education and health increases. This view also supports the hypothesis that remittances have a positive effect on growth since remittances are used to establish enterprises and generate employment (Osili, 2004;

Adams *et al.*, 2008; Adams and Cuecuecha 2010; Taylor and Mora, 2006; Castaldo and Raily, 2007). In addition, remittances increase the probability of self-employment of the remittance recipient household (Funkhouser, 1992). This applies especially when the household views the remittances as a temporary stream of income. This encourages the household either towards savings (for future consumption) or towards investment and self-employment which promises future income generated from employment (Adams, 1991). In addition, an important role in deciding the final use of remittances maybe played by the migrant himself (see section 4.3).

In addition to the investigation of the effect of remittances at the household level, a number of papers have investigated the macroeconomic effect of remittances relating to the particular ways remittances may be spent. The overall macroeconomic implications are a result of aggregated behaviour of individuals and hence they represent an important indicator on how remittances are used at microeconomic level. At macroeconomic level, Ratha *et al.* (2011) finds that remittances increase the overall education level in the home country. This may imply that a share of remittances is used to finance education of recipients. Studies such as Bougha-Hagbe (2004) find that remittances increase the savings and investment in the home country at aggregate level. However, Chami *et al.* (2008) suggest that the increase of savings and investments as a result of remittances is very small. Similarly, Chami *et al.* (2005) also argue that remittances reduce the economic activity of a country and labour supply in the economy and households' consumption increases, suggesting that such behaviour is as a result of moral hazard problems by the recipients.

The IOM (2010) study “Remittances and Investment Opportunities for Egyptian Migrants” found several important factors which determine the impact of remittances. This study suggests that a significant negative role is played by government policies which do not provide favourable conditions for investment. Moreover, this investigation describes that around half of remittance recipient households are advised by the remitters (*i.e.* remittance senders) on how to use remittances. In addition, migrants often aim to invest in home countries and according to this study, the most desired investment opportunities of migrants are private businesses and real estate.

4.3 The Theoretical Model and Expected Signs

Following the review of the literature, a household-level model for Kosovo is developed to identify the effects of remittances on household expenditure behaviour. The model will be based on the Working-Leser model which extends Engel’s model (Working, 1943; Leser, 1963) by adding variables (*i.e.* household characteristics) which may have an effect on the expenditure patterns of the households. The Engel model suggests that the share of income spent on consumption goods decreases as the income of household increases. According to this approach, the expenditure on consumption goods does not necessarily decrease in absolute terms, but it does not increase at the same rate as income. The Working-Leser specification is a widely used approach in the literature studying household expenditure patterns (Deaton and Muellbauer, 1980a) and has recently been extended by including remittances (Adams, 2010, 2008; Castaldo, 2007; Guzman *et al.*, 2007; Zarate-Hoyos, 2004 etc.). However, the model developed in this chapter differs in terms of the dependent variable from the current literature investigating the impact of remittances on expenditure patterns. The model designed here uses the approach of

seminal work in the literature developed Working (1943) and Leser (1963) and later extended for systems of demand equations by Deaton and Muellbauer (1980b). The Working-Leser model relates linearly the share of expenditures in one category (w_i) to the logarithm of total expenditure ($\log x_i$) and various other control variables (x_n) as described in Deaton and Muellbauer (1980a):

$$w_i = \alpha_1 + \beta_2 \log x_i \dots + \beta_n x_n + \varepsilon_i \quad \text{4.1}$$

Where

$$w_i = \frac{\text{expenditure on category } i}{\text{total expenditure}} * 100$$

In the model 4.1 the w_i represents the expenditure on each category as a share of the total household expenditure (see Table 4.2 for the categories to be estimated). The unobserved factors in the model are represented by the error term (ε_i) in the equation. Estimating equation 4.1 for all categories of consumption should satisfy the constraint $\sum w_i = 1$, which is known as the adding-up restriction; the sum of the estimated expenditures on different categories being equal to total expenditures. Some of the research papers in the literature on the impact of remittances on household expenditure use *per capita* expenditure (Adams, 2010, 2006; Adams *et al.*, 2008) rather than the dependent variable in 4.1, (w_i), which is the share of expenditure in one category. Using the form used by Adams the adding up restriction cannot be imposed, indeed this approach in the general literature on consumption patterns by households is not discussed in Adams' paper.

It is actually the adding-up restriction which supports the use of semi-log function against other functional forms because using this functional form, it will also be possible to test

the change in consumption patterns for luxury, necessity and inferior goods (Deaton and Muellbauer, 1980b). The general literature of expenditure patterns models largely uses the natural logarithm of expenditure ($\log x_i$) as a proxy variable for income (Gujarati, 2004). This is because income data obtained from surveys is often underestimated and/or not reported, and the expenditure data are likely to be more accurately reported. Also, Ketkar and Ketkar (1987) referring to Friedman (1957) suggest that that consumption is dependent on permanent income and not necessarily by the actual level of current income. Given that consumption may be depend on permanent level of income, the household consumes even if they do not have immediate income by spending their savings or by borrowing (Gujarati, 2004). Thus total expenditure is arguably a better proxy of permanent income than current income.

Given this, an increase in $\log x_i$, representing the total household expenditure, is expected to have a negative effect on the share of expenditure on current consumption while the shares of expenditure of other categories are expected to increase. Given that expenditure here is used as a proxy of income, the assumption is that households have reached a level of income where the elasticity of income with respect to current consumption is less than one, suggesting that the share of expenditure in this category is falling (however, current consumption may not fall in absolute terms).

In addition to the budget, the expenditure categories are affected also by various household characteristics such household size, the age composition of household members, education level and other household characteristics (Deaton and Muellbauer, 1980a). Household size and the age composition of household members are among the most discussed variables in the literature (Muellbauer, 1977; Deaton and Muellbauer,

1980a). This is because it is argued that larger households tend to spend on consumption a larger share of their budget. Stone (1954) used the Amsterdam Scale to weight differently the number of household members according to their age. The Amsterdam Scale uses the food consumption requirements by a household considering the size and the age composition of the members. The weights are determined by nutrition experts suggesting that a household with two adult members has a value of 1.90 (if one member is male and the other female). The children under the age 14 have a value of 0.52 (both for males and females) while for children over 14, the males rate is 0.98, while for females is 0.90. The scaled value for the household size is from adding the values of the individual members. However, the using the Amsterdam (or nutritional equivalence) scaling is problematic. It does not account for economies of scale within the household as it assumes that for every additional household member the food consumption increases pro rata. Also, and most importantly, the Amsterdam Scale was introduced for developed economies in 1950-60s and it is expected that consumption patterns may vary for developing countries and over time. In this context, according to Deaton and Muellbauer (1980a), the number of household members can be taken into account by adding separate variables which account for the number of children and for adult household members.¹⁰ This approach allows for adults to consume more than young children, which is consistent with the Amsterdam Scale, however the numbers in each age group are used to estimate the consumption differences between households, rather than being imposed.

¹⁰ In the model the age groups that will be used are: up to the age of 15, and from 16 and over. The reason why the age groupings are different (in the second category from 6 to 15, instead of 6 to 16) is based on the law covering the right to join the labour force in Kosovo, which is over the age of 15. Following the approach used by Deaton and Muellbauer (1980a) the variables taking into account household members by age do not differentiate by gender. (The effect of gender overall on shares of expenditure is considered later in this section).

Moreover, in selected consumption categories, a higher number of household members may not necessarily increase expenditure. This is especially important for certain categories of durable goods. Furthermore, although households with more members may increase the share of current consumption goods to total expenditure, however this may be at a decreasing rate as a result of economies of scale within the household. This is because, it is theorized that larger households who could decrease the cost of consumption by using bulk purchases and focusing on discounts, therefore, with little extra cost to the total (Nielson, 1988; Lazear and Micheal, 1980).

Given the theoretical foundations and the specification, this may be expressed as

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \varepsilon_i \quad 4.2$$

where (*C15*) represents the number of children under the age of 15, while (*A*) is the number of adult household members, and $C15^2$ and A^2 their respective squared values, allowing for non-linear relationships.

Using expenditure *per capita* as the dependent variable (Adams, 2010; 2006; Adams *et al.*, 2008) instead of the share of total expenditure ignores any variation of expenditure with respect to age, for example, that babies consume less than adults, and possible economies of scale within the household, which is another reason for using the share in this investigation. Given the discussion above, it is expected that both more children and adults increase the expenditure share on consumption, though the rate of increase is expected to be lower for children. The squared terms are expected to be negative given

economies of scale. Similarly the proportion of expenditure on education may rise with increased number of household members, while that on durable goods fall.

The age variables ($AGEHH$ and $AGEHH^2$) represent the age of the head of household and its squared value. This relationship between age and consumption is built upon the hypothesis that younger individuals have a higher propensity for risk-taking behaviour, while at later ages, this risk propensity is likely to decrease. Consequently, with this hypothesis, it is assumed that at younger age, individuals attempt to accumulate capital for investment, hence reduce the share of expenditure on consumption (Giannetti and Simonov, 2004). On other categories such as education expenditure shares are also expected to be higher at younger ages, but also at a decreasing rate (inverse U-shaped function). Similarly are the expectations for durable goods, especially if they are considered an investment for future consumption, given that the attitude for risk taking changes with age. This behaviour may be expected as a result of a life-cycle behaviour given that individuals are more likely to invest in their education or other investments while younger.

Education as an important household characteristic may be a factor affecting the consumption patterns. The hypothesis is that education changes the expenditure patterns given the change of tastes for goods, for example, educated head of households may spend more on the education of their children and less on current consumption than other households. In this context, this variable is important for households whose members are currently in education. A variable for education has been included in expenditure models in various forms, such as the number of household members currently in education, the education level of household members of selected age groups and the education level of

the head of household (Adams, 2010; 2006; Adams *et al.*, 2008; Castaldo and Reilly, 2007; Guzman *et al.*, 2007). However, with few exceptions, the rationale for including these variables has been largely neglected in these studies. This is important, especially for education related expenditures of the household, having in mind that education expenditures may be viewed as a trade-off between the current level of household consumption and expected income and consumption in the future, given that earnings are related to education levels (Becker, 1964; Deaton and Muellbauer, 1980a). The inclusion of the head of household's education may reflect the long-term plans of the household (Deaton and Muellbauer, 1980a), which is expected to be as a result of improved human capital and due to the changes in tastes of the household and migration plans (Adams, *et al.*, 2008). It may also reflect the share of the human capital expenditure of the other household members. An education variable is therefore included in the model:

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \varepsilon_i \quad 4.3$$

where, the variable (*EDHH*) is the education level of the head of household. The number of household members attending each level of education is not included here, given that primary and post-compulsory secondary education in Kosovo is public funded and that most children go to a local school, there are only incidental direct costs related to this level of education. Given that higher education (*i.e.* university education) incurs larger costs for the household and also represents a more significant human capital investment, this variable is often included in expenditure models. However, in the model presented in this chapter, it is not included as a variable because one of the five categories of

expenditure examined here is the share of expenditure on education and being in higher education is the outcome of spending decisions, which is what is being modelled. The expected sign on the education variable is negative for current consumption share and positive for the shares of expenditure on education and durable goods, given their longer term positive effects for the household.

Regarding gender of the head of household, it has been argued by several studies that if the head of household is female, the expenditure proportion increases for education and the share of the current consumption category decreases (Guzman *et al.*, 2007). This has been explained as an indirect investment in children by the women, especially in societies where asset accumulation is controlled by men, hence, women try to ensure a smoothed long-term consumption through investing in children and health (Guyer, 1997; Quisumbing and Maluccio 2000). A similar argument for long-term investment could be considered for durable goods category when the head of household is female. The importance of the gender of the head of household has been found in empirical studies. In this context, a review of the literature suggests that when the household is headed by female, the share of expenditure on health and education increases (Haddat *et al.*, 1997; Quisumbing and Maluccio, 2000; Gyimah-Brempong and Asiedu, 2014; Gounder, 2014). Therefore, it is considered important to include the personal characteristics of the head of household in the equation and adding gender (G) to the equation (with expected positive sign for education and durable goods expenditure share and negative for current consumption share) to give the following model:

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2$$

$$+\beta_9EDHH_i + \beta_{10}G_i + \varepsilon_i \text{-----} 4.4$$

The behaviour of households where the head is self-employed is theorized to be different from households headed by employees. The hypothesis regarding self-employed individuals is that they face higher income risk or higher income volatility as opposed to the regular employed individuals (similar to those who work in the informal sector). In this context, the possible variations in income that the self-employed face is likely to increase the savings motive for such households which is likely to decrease the share of expenditure on the other categories such as the expenditure on durable goods and current expenditure (Albarran and Carrasco, 2009). Also, the inheritance practice in Kosovo, which in almost all the cases is characterized by transfer of the business and real estate to the children, may result in self-employed head of households expending less on formal education for their children, being more focused on the practice of running the small business. In this context, we included the variable of self-employment in the model, denoted by (SE).

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \beta_{10} G_i + \beta_{11} SE_i + \varepsilon_i \text{-----} 4.5$$

Even though the literature largely lacks a discussion on housing status and its implications for the expenditure patterns for developing countries, the model will be extended to include this variable. This is done so having in mind that various expenditure categories (*i.e.* durable goods) are expected to have a higher share in cases when the household has its own house/apartment. The importance of home ownership is that homeowners consider that their most valuable asset in their household's wealth portfolio

is their own home. Therefore, the overall wealth of the households is considered to be linked to the home ownership (Matha *et al.*, 2014). In developed countries, home ownership is expected to be associated with mortgage payments for many households and this may lead to a decrease in expenditure shares in the other categories (Ejarque and Leth-Petersen, 2009). However, for many developing countries, like Kosovo, the mortgage market is not widespread and fully functional, which means that if a household indicates they own a house this does not usually imply mortgage payments are being made. In this context, the share of expenditure on categories such as current consumption, durable goods and education could be expected to increase, being a reflection of the lack of expenditure on rent. The home ownership (HO) is included in the model.

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \beta_{10} G_i + \beta_{11} SE_i + \beta_{12} HO_i + \varepsilon_i \text{-----} 4.6$$

Remittances, in the context of their effect on household expenditure patterns, are presented in the literature with three views (Section 4.2.1). The first considers remittances as any other source of income and hence, the household does not behave differently in terms of expenditure in the presence of remittances and this is approach already modelled by including the log of expenditure. In order to model the other views, to capture the effect of remittances, beyond the general effect of expenditure, it is necessary to implement interaction terms. Remittances interacted with $\log x_i$ using the actual reported amounts of remittances would allow to investigate the different effect across different levels of remittances, however, an interaction term between remittances and $\log x_i$ would provide results which are not interpretable. Furthermore, transforming

remittances into logarithmic form is not possible given that a very large number of households receive zero remittances. Another method of capturing the effect of remittances is interacting a dummy variable for receiving remittances with $\log x_i$ and hence obtaining the effect of $\log x_i$ for the households who receive remittances as compared to those who do not receive remittances (given that $\log x_i$ includes the expenditure financed by remittances as well as other income sources). Although using the dummy variable does not capture the effect of the size of remittances, the dummy remittances interacted with $\log x_i$ provides interpretable results. Including remittances in the equation, it takes the following form:

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 \text{AgeHH}_i + \beta_4 \text{AgeHH}_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \beta_{10} G_i + \beta_{11} SE_i + \beta_{12} HO_i + \beta_{13} (D_rem_i * \log x_i) + \varepsilon_i \quad \text{4.7}$$

where the interaction term between dummy remittances and the logarithm of expenditure is represented by the term $(D_rem_i * \log x_i)$. It should be taken clearly into consideration that total household expenditure also includes the expenditure from remittances, therefore, the effect of the remittances variable is considered as a change to the general effect of $\log x_i$. The inclusion of interaction between whether the household receives remittances and the $\ln x_i$ expenditure variable allows investigating the differences across households in terms of marginal budget shares and expenditure elasticity between the categories of expenditure for the remittance recipient households and their counterparts (Castaldo and Reilly, 2007; Zarate-Hayos, 2004). The expected sign of the interaction term depends on which of the three views of the effect of remittances considered in 4.2.1 applies.

A significant contribution of this chapter to the literature on the impact of migration and remittances on expenditure patterns is the inclusion of migrant's characteristics in the model. Such characteristics are entirely neglected by the current empirical literature. The hypothesis and the rationale for inclusion are presented along with the variables.

The role of the migrant in the decision-making process for the expenditure of the household, especially in the spending of remittances, may affect the expenditure patterns. Migrants may advise the household on the spending of remittances, and hence affect households' expenditure patterns. Such behaviour of the migrants might be as a result of their intentions to return to their own home countries. In this context, migrants may advise on how to spend remittances, and if that is the case, this is expected to decrease the share of expenditure on current consumption, while it may increase the share of durable goods and education expenditure. This may be related to the inheritance aspirations of the migrant (*i.e.* self-interest motives discussed in Chapter III), which is also recognized as one of the motivations for sending the remittances. Since the concern is with the effect of this variable on the expenditure of remittances, this variable on migrants' advice to the household for their expenditures will be included in the model interacted with remittances. However, a similar argument applies as above (in relation equation 4.7) on the need to interact with expenditure. That is because migrants' advice is expected to alter how the remittance part of total expenditure (income) is spent. Therefore, the interaction between migrants' advice is implemented as a three-way interaction:

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2$$

$$+\beta_9EDHH_i + \beta_{10}G_i + \beta_{11}SE_i + \beta_{12}HO_i + \beta_{13}(D_rem_i * logx_i) + \beta_{14}(D_rem_i * logx_i * MA) + \varepsilon_i \text{-----} 4.8$$

where, $(D_rem_i * logx_i * MA)$ represents the triple interaction term between variables dummy remittances (D_rem), expenditure ($logx_i$) and whether the migrant advises (MA) the household on the use of remittances. It is expected to have a negative sign on the current consumption share and a positive signs for other categories of expenditure.

Moral hazard in the presence of non-labour income is suggested to exist by Chetty (2008). Given that for households remittances represent non-labour income, moral hazard is discussed as a potential consequence, especially in terms of the expenditure patterns in the presence of remittances, but also in the effect on labour supply. This moral hazard behaviour by the households is considered likely given the lack of control mechanisms by the migrant on the household expenditure. The lack of control allows the household to engage in a behaviour which would result in an expenditure pattern that may increase the short-term welfare of the household by spending a higher share on consumption goods, in particular on luxury goods. This is because, in most of the cases, there is no control mechanism by the migrant on the expenditure of the household. The moral hazard arises because of the lack of control mechanism and the variable (FV), which is the frequency of migrants' visits to the home country, represents a proposed control mechanism towards the potential moral hazard behaviour by the household. Remittances sending migrants may advise the household on expenditure for certain categories and during the visits the migrant may verify whether their advice has been fulfilled. Consequently, the higher the frequency of the visits by the migrant to the home country, the higher may be the control over the expenditure behaviour of the household. In this

context, the frequency of the visits is included in the model and similar to above, it is included as a three-way interaction. It is expected to have a negative sign on the current consumption share and a positive sign for other categories of expenditure.

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \beta_{10} G_i + \beta_{11} SE_i + \beta_{12} HO_i + \beta_{13} (D_rem_i * \log x_i) + \beta_{14} (D_rem_i * \log x_i * MA) + \beta_{15} (D_rem_i * \log x_i * FV) + \varepsilon_i \quad 4.9$$

The risk that households face on the sustainability of remittances may also affect their expenditure patterns. For example, if migrants' legal status in the host country is not resolved, the household in the home country perceives the risk that they may face a sudden stop of remittances flows. This is because the migrant may involuntarily be returned to the home country.¹¹ The considerations of the migrants' legal status, for the case of Kosovo, may have been more important during the 1990s when significant number of Kosovans migrated illegally, however, these patterns have changed significantly given that today many have obtained citizenships of the destination countries and this may not be so applicable. Another type of risk is the gradual decrease of remittances which exists as a result of the duration of stay of the migrant in host country. This is because, remittances flows towards the home country are expected to initially increase with the duration of stay of the migrant in host country, however, this increase is at decreasing rate and reaches the peak at some point of time (*i.e.* there is an inverse U-shaped function), and after this point remittances continue to decrease (Funkhouser, 1995; Havolli, 2010). In the theory of remittances, this approach is

¹¹ This is especially emphasized for migrants who have migrated illegally and those who use non-working visa permits to work in the informal markets of developed countries.

recognized as the link maintenance motive. This means that a migrant may have strong links in the first few years of migration and send more remittances, while later this may fade as a result of migrants' integration in the host country and the new social aspects which may characterize the migrant (*e.g.* marital status, children, work etc.). In perceiving this factor, the household may change their expenditure patterns, that is, using the remittances towards assets that may ensure long-term welfare such as durable goods and education, instead of current consumption in the early years of having a migrant who sends remittances (Ameudo-Dorantes and Pozo, 2014). Households expect a decrease of remittances after a period of time, *e.g.* 10 years, and as a consequence start to use them in a more productive way. Again years since migration (YSM) is modelled as a three-way interaction, including a squared term because of the expected non-linearity, with the signs expected to be positive for current consumption and negative for the education and durable goods for YSM and the opposite for the squared terms:

$$w_i = \alpha_1 + \beta_2 \log x_i + \beta_3 AGEHH_i + \beta_4 AGEHH_i^2 + \beta_5 C15_i + \beta_6 C15_i^2 + \beta_7 A_i + \beta_8 A_i^2 + \beta_9 EDHH_i + \beta_{10} G_i + \beta_{11} SE_i + \beta_{12} HO_i + \beta_{13} (D_rem_i * \log x_i) + \beta_{14} (D_rem_i * \log x_i * MA) + \beta_{15} (D_rem_i * \log x_i * FV) + \beta_{16} (D_rem_i * \log x_i * YSM) + \beta_{17} (D_rem_i * \log x_i * YSM)^2 + \varepsilon_i \quad 4.10$$

As discussed above, the literature is mostly focused on the changes in expenditure patterns on current expenditure, durable goods and education. These categories are also of importance in considering implications for economic activity in Kosovo and so are investigated in this study. The questionnaire (discussed further below and attached in Appendix 4.1) that provides the data on Kosovo for this investigation gives information

on the following seven sorts of expenditure: a) food, b) non-food (products such as alcohol and everyday household products), c) semi-durable goods (products such as clothes and shoes), d) durable goods (home appliances and machinery), e) housing (rent and public utilities), f) health (medicine and medical services) and g) education. Groups (a), (b) and (c) are included in current consumption, given that these products are consumed and used on a daily basis and differ from durable goods in their expected lifetime but also typically have a substantially lower price. Such expenses occur on a regular basis and as described in the System of National Accounts (SNA, 1993)¹². Group (d) is the separate durable goods category and (g) education. It was decided, following the practice in similar studies, to estimate these categories (which cover nearly three quarters of expenditure), in addition policy changes have affected expenditure in (e) and (f) in recent years in Kosovo, which means that policy recommendations could not be made from such estimates.¹³ Table 4.2 describes these categories.

¹² The System of the National Accounts is the United Nation's recommended manual on setting the international standard system to calculate national accounts, which aims to have a comprehensive method of providing national accounts in order to be internationally comparable.

¹³ There were structural changes in Housing Utilities (which includes public utilities) when the survey was undertaken. For example, the payment of energy, water supply and heating bills during the time when the survey was undertaken were at a very low rate and the debts to public companies had reached over 400 million euros. However, energy distribution was privatized and the collection of bills has substantially improved. Furthermore, in recent years there was a debt forgiveness initiative, which from a policy perspective may not make the investigation of this category relevant. Similarly, there were substantial changes in legislation for public and private hospitals. When the survey was undertaken, the expenditure outside of the country could have been more prevalent given that there were not many private hospitals. Furthermore, since then expenditure outside of the country has decreased, given that when it is necessary to go outside of the country for health treatment, a public fund that covers such expenses has been established and covers such expenses. Also, there are other significant policy measures which may make this category irrelevant for the study (increased list of public medicine and increased list of services provided by public hospitals).

Table 4.2 Description of the Expenditure Categories, dependent variable

Categories	Description of the Categories
1. Current Consumption	The share of expenditure on food, non-food products such as alcohol, cigarettes, household goods such as clothes, shoes, etc. in total household expenditure.
2. Durable Goods	The share of expenditure on home appliances and machinery and similar items in total household expenditure.
3. Education Expenditure	The share of educational expenditure in total household expenditure

Given the review of the literature and the theoretical framework on the household expenditure patterns, Table 4.3 presents the expected effect of the variables on the share of households' expenditure for these three categories of expenditure Table 4.2.

Table 4.3 Expected effect of the variables on the share of expenditure for each category

Variable	Current Consumption	Durable Goods	Education
Total household Expenditure (llogx)	-	+	+
Age of the Household Head (AgeHH)	-	+	+
Age of the Household Head ² (AgeHH ²)	+	-	-
Number of children up to 15 (C15)	+	-	+
Number of children up to 15) 2 (C15 ²)	-	-	+
Number of adult household members (A)	+	-	+
Number of adult household members ² (A) ²	-	-	+
Years of Schooling of the Head of the Household	-	+	+
Gender (G=1 if Female)	-	+	+
Self-Employed (SE=1 if self-employed)	-	-	-
Housing Status (HS=1 owner of a house)	+	+	+
Dummy of remittances*logx (D_rem*logx)	?	?	?
Migrants Advise on remittances*Rremit* logx (D_rem*MA* logx)	-	+	+
Frequency of visits*Rremit* logx (D_rem*FV* Log of Expenditurex)	-	+	+
Years Since Migration*Rremit* logx (D_rem*YSM* logx)	+	-	-
Years Since Migration*Rremit*logx (D_rem*YSM* logx) ²	-	+	+

The dataset which will be used to examine the impact of remittances on household expenditure behaviour was obtained from the 2010 UNDP Kosovo Remittance Survey. This dataset was compiled using the face-to-face method of interviews and was based on a random selection of households for the population of Kosovo. The sample was stratified based on size of the regions, cities and villages. The interviews were conducted with 4,000 households in the country and given the sample selection procedure it is considered to be representative of the country. This dataset contains detailed information on households' profile, such as size, housing status, education, employment, income, expenditure and head of household characteristics. Moreover, this questionnaire also contains detailed information regarding migration and remittances, such as the relationship of the household to the migrant, whether the household receives remittances or not and the amount of remittances, perceived reasons why migrant sends remittances, reasons for migration, frequency of visits by the migrant and a very detailed table which presents the share of remittances spent on the seven different categories discussed above. The data presented in this chapter are not weighted given the stratification in the survey since the primary interest here is in investigating the variables affecting expenditure patterns.

The data from this type of surveys, however, should be treated with caution having in mind the problems that may have occurred during the conducting of the survey. Such problems include the non-declaration of the households of information which they may consider sensitive. Such problems may arise as a result of fear of additional taxation, and hence this may lead to under-reporting for instance of income and remittances. However, it should be pointed out that there are no taxes applied in Kosovo on remittances and the

interviewers during the process described the interviewed as generally positive and cooperative with minor refusals to respond by a few interviewees.¹⁴ In some cases these refusals are on the income and expenditure data as they are missing in around 6 percent, or 240 observations. Furthermore, the income/expenditure balance is negative for over 35 percent of the observations, which may indicate that there were cases when the income data have been under-reported.¹⁵

The data structure for these expenditure categories are a consequence of the question used to obtain the information. The question was as follows:

“Approximately how much did your household spend on average for the last three months on each of the following items:”

The problem that arises from this type of question is that the length of the period the question addresses is relatively short and many types of expenditures, especially those related to durable goods, may not happen in high frequency over the year. The durable goods category is over 40 percent of total expenditure for two observations, while 76.2 percent of total 3760 observations in this category of expenditure are zeros. This reflects the low frequency of durable goods purchases by households and hence for questions of this nature a longer time-span may be more appropriate. A relatively large number of observations with zero values results in relatively low mean value for durable goods (2.85), while the mean value in the observations with positive values, that is, only the

¹⁴ During the process of interviews, it was clearly stated that the interviewer works for a non-governmental organization and that the survey was financed by UNDP.

¹⁵ In addition to the underreporting of income, previous research suggests that any difference between current income and expenditure by the tendency of household to spend based on long-term income rather than on current levels (see section 4.4.1).

households who spent on durable goods, is 12.0. Table 4.4 presents the descriptive statistics for this and the other variables in equation 4.10.

Over 92 percent of the households interviewed in this survey lived in their own house/apartment. The average age of the head of household in this sample is 49 years, while only 15 percent of the households are headed by females. On average, the years that the head of households attended education are 10.9 years. Around 90 percent of the families have family members under the age of 15, while the households who have children, the average number is 1.9. Around 13 percent of the head of households in this survey are self-employed.

The figures in Table 4.4 for variables refer to the sample mean values and there are a large number of observations where the remittances are zero. The data discussed in this paragraph is the values of these variables for households who receive remittances. Over 16 percent of households in the sample receive remittances; while the average amount of the remittances these households receive is 197.5 euros per month. Of the households receiving remittances, about 33 percent of them are advised on how to spend them. This means that in the total sample, just over 5 percent of households receive advice or migrants decide on how remittances are spent. Migrants on average visit Kosovo 1.6 times a year. The average time since the migrants migrated is 13.7 years, which is the period of 1997-8, when the war of Kosovo broke out.

Table 4.4 Descriptive Statistics of the Variables

	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variable: Expenditure share	Current Consumption	3760	62.92	16.58	6.5	100.0
	Durable Goods	3760	2.85	6.05	0.0	43.9
	Education	3760	7.02	10.28	0.0	70.0
	Log of Expenditure (logx)	3760	2.51	0.26	1.6	3.6
	Age of the HH	3760	49.11	14.25	18.0	91.0
	Age of the HH ²	3760	2614.17	1447.56	324.0	8281.0
	Children from 6 to 15 ²	3760	0.91	1.21	0.0	11.0
	Children from 6 to 15 ²	3760	2.28	5.09	0.0	121.0
	Number of Adults	3760	3.89	1.72	1.0	10.0
	Number of Adult ²	3760	18.11	15.93	1.0	100.0
	Years of Schooling of the HH	3760	10.91	3.88	0.0	25.0
Independent Variables	Gender (1= Female)	3760	0.15	0.36	0.0	1.0
	Self-Employed	3760	0.13	0.34	0.0	1.0
	Housing Status (1= Owns House)	3760	0.92	0.27	0.0	1.0
	Remittance*logx	3760	0.42	0.96	0.0	3.2
	Migrants Advise on remittances*Rremit*logx (D_rem*MA*logx)	3760	0.14	0.59	0.0	3.2
	Frequency of visits*Rremit*logx (D_rem*FV*logx)	3760	0.66	1.86	0.0	15.1
	Years Since Migration*Rremit*logx (D_rem*YSM*logx)	3760	5.63	15.15	0.0	120.5
	Years Since Migration*Rremit*logx (D_rem*YSM*logx) ²	3760	261.11	984.04	0.0	14522.7

Source: UNDP Kosovo Remittance Survey Dataset 2010

The household expenditure investigations in the literature in most cases use OLS estimation. This is the case also with the literature studying the impact of remittances on expenditure behaviour. The error term is assumed to be normally distributed and with equal variance according to the Classical Normal Linear Regression Model (CNLRM) assumptions (Gujarati, 2004). However, given that the dependent variable in the model 4.10 is share in total expenditure, its values are defined to be between zero and 100 percent of the total expenditure (that is possibly left and right censored at 0 and 100, respectively).

For some categories of expenditure, estimating the model in 4.10 using OLS may not generate fully efficient estimates, though they will still be unbiased and consistent (Maddala, 1983; Wooldridge, 2002), because given such definition of the dependent variable a considerable number of observations in the expenditure categories may be at zero or 100 values. The consequences of estimating the model with OLS in this case is that the estimates will be smaller in absolute value compared to maximum likelihood estimates (Greene, 2003) because of the negative fitted values. On the other hand, if the observations at zero or one hundred are excluded from the sample, important information will be lost (Wooldridge, 2006; Maddala, 1988). Therefore, the appropriate method to estimate the model in 4.10 is the Tobit corner solution, which assumes a normal distribution of the errors because it expresses the observed responses in terms of a latent variable where the latent variable satisfies the classical linear model assumptions, it therefore assumes that the error term (μ_i) is normally distributed and homoscedastic (equation 4.11).

$$\mu_i | x_i \sim \text{Normal}(0, \sigma^2) \quad \text{4.11}$$

Furthermore, equation (4.12) implies that the observed variable, $w = w^*$ when it is zero and over positive values, $w \geq 0$ (Wooldridge, 2006).

$$w = \max(0, w^*) \quad \text{4.12}$$

There is no top/bottom coding, but instead, it is that the dependent variable (w_i) has a number of observations is at zero and 100 (i.e. some households decide, for example, to spend zero percent of their total expenditure on durable goods or education or 100 percent on current consumption). Therefore, the data are fully observable on a range from 0 to 100.

Given the dependent variable (Table 4.2) and its descriptive statistics (Table 4.4), it may be necessary to use different estimation methods for different categories of expenditure. For instance in this study, as discussed in section 4.3, the share of expenditure on current consumption category is not left censored (at zero) but it is always positive (with only 26 or 0.6 percent of observations censored at 100). However, the data for the share of expenditure on durable goods is at zero for 75 percent of observations and the share of expenditure on education is zero in 53 percent of the total observations.

Given the type of the data in each expenditure category, the estimation technique differs:

- 1) **The share of expenditure on current consumption** is estimated using OLS because it is always over positive values and has few observations at the top limit.

- 2) **The share of expenditure on durable goods** is estimated by Tobit because over 75 percent of the observations are zero.
- 3) **The share of expenditure on education** is estimated by Tobit, given that more than half of the observations are zeros.

4.4 Estimation of Expenditure Categories

The estimation of the model given in equation 4.10 is the subject of this section. The appropriate method will be applied to each expenditure category as discussed in section 4.3: OLS will be used for category (I) the share of expenditure on current consumption; and Tobit estimation will be used to estimate (II) the share of expenditure on durable goods and (III) the share of expenditure on education. Since the estimations are of shares in the different categories of expenditure, if the share of one category of expenditure increases it decreases in at least one other, but this will not necessarily be reflected in the estimates here as they do not include all categories of expenditure, as noted in section 4.3. However, a mirroring effect is expected since the categories presented represent a large proportion of total household expenditure (73%), thus estimations for the three groups are presented together in this section.

4.4.1 Diagnostic Tests for the Estimated Models and the Specification Search

The estimation of the equation 4.10 for the first specification, that is, (I) expenditure on current consumption is carried out using OLS given that there was no observations at 0 and few at the upper bound. The estimated model for the Working-Leser specification presented in section 4.3 which includes $\log x_i$, and also $\log x_i$ interacted with remittances dummy gives diagnostic tests which are problematic. These are given in Table 4.5, in the

column denoted model Ia, with the regression estimates in Table 4.7 (appendix 4.2 provides the printouts).

Table 4.5 Diagnostic Tests for share of current consumption

Diagnostic test	Model	I a	I b P-value	I c
Skewness-Kurtosis test for Normality		0.000	0.000	0.000
Breuch Pagan test for Heteroscedasticity		0.000	0.000	0.000
Ramsey Reset Test for Functional Form		0.000	0.000	0.325

Normality itself is not a major problem having in mind that the dataset used is a large sample (that is 3760 observations). Lack of normality may be the result of large outliers in the regression, but using the Inner Quartile Range test for outlier identification outside the lower than the 25th percentile and above the 75th percentile, it is suggested that there are no severe outliers in the regression.

Table 4.6 Test for Outliers

	Ia	
	low	High
inner fences	47.14	78.69
# mild outliers	37	47
% mild outliers	0.0098	0.0125
outer fences	35.31	90.53
# severe outliers	0	0
% severe outliers	0	0

Using the Breusch-Pagan test for heteroscedasticity on specification (Ia) the results reject the null hypothesis that error variances are equal. In order to test whether the model has been correctly specified, the Ramsey RESET test will be used. This test adds the squares of the estimated dependent variable to the regression and is designed to examine possible functional form problems. The test suggests that the model is miss-specified. Consequently, the model is re-specified by using the level of expenditure (*exp*) and its squared value and the level of remittances and the square term of remittances (using the actual level of income, with a squared term allows the use of remittances and squared term, whereas using logs this was not possible given the large number of households receiving no remittances). Control variables are represented with (x_n).

$$w_i = \alpha_1 + \beta_2 exp + \beta_3 exp^2 + \dots + \beta_{n1} x_n + \beta_{n2} Remit + \beta_{n3} (Remit)^2 + \epsilon_i$$

_____4.13

However, with this specification, normality, homoscedasticity and functional form are again rejected (Table 4.5, model Ib).

Generally in consumption studies, expenditure is considered as a better measure for the income of the households given that income may be underreported. Moreover, expenditure is also suggested to be a better measure of long-term income, given that consumption may depend on permanent income. There are some reasons for thinking that this applied to our data since about 1/3 of households have a higher level of expenditure than income. The data set contains no information on the access to banking and other debt options by the households. The higher level of income compared to expenditure may be the outcome of income generated by informal economic activity (Dimova *et al.* 2006).

Studies suggest that the informal sector in Kosovo accounts for around 30 percent of the economy (Government of Kosovo, 2014), which is not so different to the share of households who have reported higher expenditure compared to the income. The income question in the survey asks for the same span of coverage as that of the expenditure variable: the average for the last three months, rather than weekly or monthly. Although the construction of the question does not fully overcome the argument that it is long-term income that is important into determining overall expenditure, it goes part-way there. Hence, the income variable was used in place of the expenditure variable, while other control variables are represented by (x_n).

$$w_i = \alpha_1 + \beta_2 \log(\text{income}) \dots + \beta_{n1}x_n + \beta_{n2}D_{\text{Remit}} * \log(\text{income}) + \varepsilon_i \quad \text{4.14}$$

Similar problems are again identified in this estimation of a non-normal distribution of errors and heteroscedasticity (Table 4.5, model 1c). However, the Ramsey RESET test provides no evidence that the model is incorrectly specified. As a result, given the diagnostic tests presented above, the preferred estimate model is based on equation 4.14 which uses income as an independent variable, estimated with robust standard errors.

Given that the new specification, some of the independent variables, those interacted with income, have changed. Therefore, in Table 4.7 we presented the descriptive statistics for those variables that have changed, while the remaining are the same with those presented in Table 4.4.

Table 4.7 Descriptive Statistics of the Variables interacted with log of income

	Variable	Obs	Mean	Std. Dev.	Min	Max
Independent Variables	Migrants Advise on Remittances*Rremit*logx (D_rem*MA*loginc)	3760	0.1	0.6	0.0	3.2
	Frequency of Visits*Rremit*logx (D_rem*FV*loginc)	3760	0.7	1.9	0.0	15.1
	Years Since Migration*Rremit*loginc (D_rem*YSM*loginc)	3760	5.6	15.1	0.0	120.5
	Years Since Migration*Rremit*logx (D_rem*YSM*loginc) ²	3760	261.1	984.0	0.0	14522.7

Source: UNDP Kosovo Remittance Survey Dataset 2010

Regarding the specifications (II) the share of expenditure on durable goods and (III) the share of expenditure on education, the Tobit corner solution model is used given that all the data are observable, but there is clustering at 0 in the dependent variable. However, this model does not have well-developed diagnostic tests, but a commonly suggested method to evaluate if Tobit is the appropriate method is dividing the estimated coefficient (β) with the standard error of the regression (σ) and to compare the results with the Probit coefficients (Wooldridge, 2002, 2009). The β/σ is expected to have a similar sign and size to the Probit coefficients. For the significant coefficients, in cases when the sign changes, this indicates a problem with the Tobit model (Wooldridge, 2002). Appendix 4.4 and 4.5 presents the β/σ and their comparisons with the Probit coefficients. Both for model (II) and (III), the sign and the size of the coefficients are relatively close. There is therefore, no indication that this model is inappropriate. The results of the estimated

regressions are presented in Table 4.8. Also, in the estimated Tobit regressions of the specification with the income variable is used for durable goods and education to keep the consistency across models (see Appendix 4.3).

Given the Tobit estimation for the categories of (II) durable goods and (III) education, there are four types of marginal effects which could be reported (Stata, 2011):

- a) The coefficients of the regression, which measure how the latent dependent variable changes with respect to the changes in the independent variables,
- b) The Conditional Marginal effects, which measure the change on the dependent variable, conditional on being positive, with the changes in the independent variables,
- c) The Unconditional Marginal effects, which measure the change in the dependent variable (unconditional at any given value) with respect to the changes in the independent variables, and
- d) The probability of being ‘uncensored’.

Out of the four different marginal effects presented above, in our case, it is the unconditional marginal effects of Tobit that will be emphasised. This is because the data set is composed of dependent variables (for durable goods and education) which for a non-trivial fraction of the population the value is zero, that is nothing is spent by the household, but for other households the variables take on a wide range of positive values (i.e. a corner solution outcome). In this model the latent variable is an artificial construct and is not of interest and although it is often referred to a ‘censored’ model in the

literature this terminology is not really appropriate (Wooldridge, 2002). This differs from the case where the variable values are censored, for instance where there is top coding, where the latent variable is of interest. The other 3 marginal effects (b), (c) and (d) do apply in this case, but the main concern is whether any of the independent variables is affecting the share of expenditure overall and for this it is necessary to interpret the unconditional marginal effects as they consider the change in expenditure for the entire range. Using conditional marginal effects the interpretation would be only for the part of the range of responses which are over positive values, while (d) is the marginal effect only on those with zero expenditure. Through the unconditional marginal effects, presented in Table 4.8, it will be possible to identify specifically the impact of independent variables on the dependent variable for any given value (the other marginal effects are presented in appendix 4.3 for completeness).

4.5 Interpretation of the results

Table 4.8 gives the results for current consumption for all three models (Ia, Ib and Ic) discussed above. The model presented in column (Ic) will be interpreted in detail given the diagnostic tests discussed in section 4.4. However, it should be noted that in most cases the signs and significance of the variables is the same in all three specifications (for the variables included in the same form in all three specifications the only difference is that the education of the head of the household is insignificant in the third model, though with the same sign). Table 4.9 gives the results (the unconditional marginal effects) for models II and III.¹⁶

¹⁶ Appendix 4.2 to 4.5 presents details of the diagnostic tests and also the output of estimation

The interpretation will be variable by variable, across the three different models (*i.e.* interpreting the impact of each independent variable on each of the three categories). This makes the interpretation easier to follow, having in mind that variables are usually expected to have a mirroring effect from one category to the other (as discussed in section 4.2). All the interpretation is *ceteris paribus* and on average. Given the major concern is with the effect of remittances the interpretation starts with the variables that estimate the changes in expenditure connected to receiving remittances.

Table 4.8 The estimated regression on consumption as a share of total expenditure

VARIABLES	OLS (Ia) Consumption	OLS (Ib) Consumption	OLS (Ic) Consumption
Log of Expenditure (logx)	-4.98*** (0.000)		
Expenditure		-0.0359*** (0.000)	
Expenditure^2		6.72e-06*** (0.000)	
Log of Income (loginc)			-1.062*** (0.008)
Age of the HH	-0.346*** (0.002)	-0.348*** (0.001)	-0.456*** (0.000)
Age of the HH^2	0.003** (0.012)	0.003*** (0.008)	0.00365*** (0.002)
Number of Children	1.770*** (0.000)	1.675*** (0.000)	1.655*** (0.000)
Number of Children^2	-0.025 (0.759)	-0.00708 (0.970)	-0.0263 (0.794)
Number of Adults	1.063* (0.067)	0.708 (0.215)	-0.590 (0.310)
Number of Adults^2	0.023 (0.705)	0.059 (0.336)	0.0973 (0.113)
Years of Schooling of the HH	0.284*** (0.000)	0.248*** (0.002)	0.0856 (0.325)
Gender (1=Female)	2.480*** (0.000)	2.221*** (0.001)	2.610*** (0.000)
Housing Status (1=Owns a House)	3.968*** (0.000)	3.837*** (0.000)	3.545*** (0.001)
Self-Employed	-1.498* (0.092)	-1.501* (0.085)	0.721 (0.426)
Advise on spending Remit*D_Remit*logx	0.635*** (0.003)		
Advise on spending remit*D_Remit*Expenditure		3.098e-06*** (0.699)	
Advise on spending remit*D_Remit*loginc			0.602*** (0.005)
Frequency of Visits*D_Remit* logx	-0.0225** (0.017)		
Frequency of Visits*D_Remit*Expenditure		-3.98e-06**	

		(0.290)	
Frequency of Visits*D_Remit*loginc			-0.281*** (0.002)
Expenditure*Remittances		0.00003** (0.034)	
(Expenditure*Remittances)^2		-2.21e-11 (0.209)	
Years Since Migration*D_Remit* logx	-0.013 (0.719)		
Years Since Migration*D_Remit*Expenditure		-6.33e-07 (0.599)	
Years Since Migration*D_Remit*loginc			-0.00586 (0.863)
(Years Since Migration*D_Remit*logx)^2	0.0003 (0.777)		
(Years Since Migration*D_Remit*Expenditure)^2		2.52e-08 (0.396)	
(Years Since Migration*D_Remit*loginc)^2			-2.72e-05 (0.863)
D_Remitt* logx)	0.048 (0.134)		
D_Remitt*loginc			0.295 (0.352)
Constant	90.86*** (0.000)	72.72*** (0.000)	76.43*** (0.000)
Observations	3,760	3,760	3,760
R-squared	0.175	0.175	0.035

P-Values in parentheses

Table 4.9 Tobit Unconditional Marginal Effects

Variables	Durable Goods (II)	Education (III)
	(dF/dx)	(dF/dx)
Log of Income (loginc)	1.381*** (0.000)	0.464*** (0.003)
Age of the HH	0.132*** (0.001)	0.211*** (0.000)
Age of the HH^2	-0.001*** (0.002)	-0.003*** (0.000)
Number of Children	-0.420** (0.017)	0.331* (0.075)
Number of Children^2	0.011 (0.816)	-0.043 (0.314)
Number of Adults	0.042 (0.845)	2.47*** (0.000)
Number of Adults^2	-0.015 (0.491)	-0.167*** (0.000)
Years of Schooling of HH	0.023 (0.413)	0.139*** (0.000)
Gender (1= Females)	-1.390*** (0.000)	-0.381 (0.235)
Housing Status (1=Owns a Hose)	2.001*** (0.000)	-1.419*** (0.002)
Self-Employed	-0.546* (0.090)	-2.182*** (0.000)
D_Remitt*loginc	0.235* (0.038)	-0.222 (0.139)
^a Frequency of Visits*D_Remitt*loginc	-0.042 (0.241)	0.105** (0.014)
^a Advise on spending Remitt*D_Remitt*loginc	-0.071 (0.362)	0.054 (0.583)
Years Since Migration*D_Remitt*loginc	-0.018 (0.132)	0.0116 (0.485)
(Years Since Migration*D_Remitt*loginc)^2	0.000 (0.100)	-0.0001 (0.836)
Constant	-15.6*** (0.000)	-38.5*** (0.000)
Observations	3,760	3,760

The Estimated Effects of Remittances

Remittances interacted with log (income)

Remittances interacted with the log of income captures the effect of receiving remittances on expenditure above the general effect of an increase in a household's income. Remittances interacted with the log of income is statistically insignificant in the estimations for the share of expenditure on current consumption, implying that with regard to the share of expenditure on consumption, there is no difference between the expenditure of households who receive remittances and the expenditure those who do not receive remittances, suggesting that remittances are treated as other sources of income. However, at the 10% significance level there is difference for durable goods expenditure. With regard to expenditure on durable goods, an increase of one percent in income of the remittance recipient households increases the share of expenditure on durable goods by an additional 0.0024 percentage points compared to non-remittance holders. The results above suggest that remittance recipient households spend their income in the same way as non-remittance households with respect to consumption and education, though there may be a slight difference for durable goods, albeit the results show a very small effect.

Given other things being constant, the estimates in this section are for the effect of becoming a remittance receiving household compared to a household not receiving remittances. It assumes that there is no change in the household receiving advice, in the number of visits from the migrant or in the years since migration. The effect of changes in these variables for remittance receiving households is in addition to the changes above and considered in the following three paragraphs.

Migrants' Advise on Expenditure

As explained in the theoretical section 4.3, the behaviour of the migrant towards the household may affect the households' decision-making process about the types of expenditure. In addition to allowing the effect of income (expenditure) on the shares to be moderated by receiving remittances, this was also modelled to allow different effects if the migrant has given advice on spending. The results provide evidence which is contrary to our expectations, suggesting that if the migrant advises the household on how to spend remittances, the effect of a one percent increase in income is an increase by 0.006 percentage points in the share of consumption expenditure, compared to households receiving remittances but not getting advice. The estimated additional effect for these households is not significant for shares of education and durable goods. It would have been expected that migrants would advise to spend on durable goods or education if they are driven by self-interest motives such as exchange of services, investment or inheritance seeking motives, but the variable is insignificant in these regressions. However, given that the advice is resulting in a higher share spent on consumption expenditure, it may be argued that altruism is the primary reason why migrants send remittances.

Frequency of Visits

The frequency of visits, which was proposed as a control mechanism variable on the expenditure of the households who receive remittances, does generate a significant positive additional effect on the share of expenditure on education. The result suggests that, as if a remittance sender visits once, the effect of a one percent increase in income is

an additional increase of 0.001 percentage points in the share of education expenditure, compared to households receiving remittances but not receiving visits. Such results may indicate that the frequency of visits may serve as control mechanism on the expenditure of recipient households, if we assume that spending on education is desired by the migrant. The frequency of visits affects also the current consumption category, suggesting that if remittance sender visits the country once this results in a decrease in the share of expenditure on current consumption by 0.0028 percentage points with an increase of income of by one percent.

Years since Migration

The years since migration variable, which was included to see if the households perceive the risk of decreasing remittances as a source of income and adjust their expenditure patterns, is statistically insignificant across all specifications.

The Estimated Effects of other Variables

Income

The income variable is highly significant and this result suggests that one percent households' income would result in 0.011 percentage points decrease of the share of expenditure on consumption goods to total expenditure. The results of the variable are in line with the literature, as in most empirical studies an increase in income (often proxied by expenditure) suggests a decrease in the share of expenditure for consumer goods (Adams *et al.*, 2008, Castaldo and Reilly, 2007; Guzman *et al.*, 2007; Miotti *et al.*, 2010; Taylor and Mora, 2006). A similar increase in income increases the share of expenditure

on durable goods and education by 0.014 and 0.0046 percentage points, respectively. These estimates are also highly significant however, the magnitude is relatively low. Given the interaction dummy between the natural logarithm of income and receiving remittances in the specifications, these estimates are for those not receiving remittances (but as discussed above the interaction variable is insignificant for consumption goods and education).

Age and Age-Squared

The estimated effect of the age of the head of household and expenditure on consumer goods is a non-linear relationship, such that as the age of the head of household increases, the expenditure on consumer goods decreases, but at decreasing rate, given by the positive sign of the age squared. Both the linear and squared values are highly significant at 1 percent level. The share of expenditure on consumption goods decreases as the age of the head of household increases until the age of 63¹⁷, then it starts to increase. Such relationship between age and expenditure on consumption goods could be as a result of entrepreneurial behaviour of the head of households while at younger age and as hypothesised in section 4.3. In addition, given that the share of consumption continuously decreases until the age of 62, this could also reflect the attitude towards savings for retirement given that the pension system in Kosovo was dysfunctional until 2002, with contributions which existed before 1999 having been transferred to Serbia during the War

¹⁷ The turning point is calculated by:

$$X^* = -\frac{\beta_1}{2\beta_2}$$

Where, β_1 represents the absolute value of the Age coefficient and β_2 represents the absolute value of the Age-Squared coefficient.

of Kosovo and not returned to their owners. Also, the first pillar pension system which exists in Kosovo is very low, and as a consequence a relatively large number of employees in Kosovo may aim to save on their own for retirement.¹⁸ Regarding durable goods and education, the age of the head of household is statistically significant at 1 percent. The effect of age on the share of durable goods expenditure is an inverse U-shaped relationship, suggesting that the share of expenditure on durable goods increases until approximately at the age 51, and after that starts to decrease. The results for the relationship between age and education expenditure share similarly suggests an inverse U-shaped function with it increasing until a peak at the age of 39 and then decreasing, as indicated by the squared term of age.

Number of Children

The share of expenditure on current consumption goods is also estimated to be significantly positively affected by the number of the children below the age of 15 in the household. However, the effect of the square variable is insignificant, suggesting that this relationship is linear. As the number of children increases by one, the share of expenditure on current consumption increases by 1.66 percentage points.¹⁹ Regarding the specifications for the durable goods, the results for the number of children are of expected sign and significance, suggesting a negative relationship between number of

¹⁸ Kosovo's current pension system is based on three pillars, the first being the pension that government pays to all the individuals in Kosovo who are over the age of 65 and is approximately around 15 percent of the average salary in Kosovo's public sector which is nearly 370 Euros (SAK, 2012). A pay as you go system is applicable since 2002 and the contributions in the second pillar to date account for around 15 percent of the GDP and only around $\frac{1}{4}$ of the labour force are active contributors to this fund. The third pillar represents the voluntary contributions.

¹⁹ Even though insignificant, taking into account the squared term for the number of children variable, it suggests a continuing positive relationship which reaches the turning point at 29 children, being far higher than the maximum number of children in our sample, which is 11.

children and the share of expenditure on durable goods. The squared term is insignificant. The results suggest that, on average, as the number of children increases, the share of current expenditure on durable goods decreases by 0.4 percentage points. Importantly, the number of children suggests a positive relationship towards the share of expenditure on education, although this is only significant at the 10% level. When keeping other variables constant, the number of children results in higher share of expenditure on education by 0.33 percentage points. The squared term of the variable for the number of children is statistically insignificant with a negative sign.

Number of Adults

The effect of the number of adult household members is statistically insignificant regarding the share of current consumption. For adult household members consumption patterns may be characterized by some returns to scale. Moreover, as Nielson (1988) argues, the higher number of household members may result in increasing returns in production, while this may add little or nothing to the cost of cooking meals. A larger household could also decrease the overall cost of consumption by using bulk purchases and focusing on discounts, therefore, with little extra cost to the total (Nielson, 1988; Lazear and Micheal, 1980). For the category of durable goods, the number of adult household members result is as expected, statistically insignificant. This result suggests that as the number of adult household members' increases, the share of durable goods does not change. These results make sense given that a household may not need, for example, more refrigerators, cars or TV-s if the number of adult household members increases, keeping the other variables constant. However, regarding the impact of the number of adult household members on the share of expenditure on education, both the

single (positive) and squared (negative) terms are significant. The share of expenditure on education is estimated to increase until the number of adults in the household reaches 7.4.

Education of the head of household

The education of the head of household is statistically insignificant regarding the effect on the share of expenditure on current consumption and durable goods.²⁰ However, regarding the share of expenditure on education, the results are in line with expectations. Keeping other variables at their mean value, the results suggest that, an additional year spent in education by the head of household results in an increase of 0.14 percentage points in the share of expenditure on education. This variable indicates that more educated households increase their share of expenditure on education and view it as an important human capital; they may consider education as a valuable expenditure category which may affect the long-term well-being of household members.

Gender of the head of household

Gender of the head of household is also important in expenditure patterns. The results suggest that female headed households spend a higher share of total expenditure on the current consumption goods category by 2.6 percentage points (significant at 1 percent level). On the other hand, female headed households spend lower share on durable goods (by 1.4 percentage points). Regarding education expenditure, the gender of the head of household is statistically insignificant.

²⁰ It should be pointed out that education of the head of household was highly significant in the specifications when the expenditure was used as a proxy of income for the share of current consumption expenditure model. However, when the income variable was included in the final model, this variable is not significant.

Housing Status

Among the most important variables in the share of expenditure across the three categories investigated in this chapter is the housing status of the household. If the households own the house/apartment they live in, their share of expenditure on current consumption increases by 3.5 percentage points. Owning their house/apartment increases the share of expenditure on durable goods by 2 percentage points. The relationship is the opposite when considered the share of expenditure on education. If the household owns the house, the share of expenditure on education decreases by 1.4 percentage points. The literature lacks a discussion about this variable; however, this variable appears to be of importance in Kosovo and this may also apply to other countries since it may shape expenditure patterns. For example, if the house is not owned, the household would be expected to pay rent, hence allowing a lower share for expenditure across other categories. If the household is renting the house/apartment, then it is likely that they will spend less on durable goods given that they may be temporarily living in the rented house/apartment and hence they are not willing to invest in durable goods for houses/apartments they do not own.

Self-Employment of the Head of Household

The variable taking into account if the head of household is self-employed is statistically insignificant for the category of expenditure on current consumption, while it is significant at 10 percent, with regard to durable goods. This variable indicates that self-employed head of households spend less on durable goods by 0.5 percentage points. This variable is highly significant for the category of the share of expenditure on education.

The results suggest that the share of expenditure on education decreases by 2.2 percentage points. Two interpretations could be applicable to this variable, first, that self-employed face higher income risks, hence they decrease the share of expenditure on durable goods and education and increase their savings. Second, this could be a result of small business focusing on further investing in physical investment rather than household goods and human capital. Also, the inheritance practice in Kosovo, which in almost all the cases is characterized by transfer of the business and real estate to the children, may result in self-employed head of households expending less on formal education for the children, being more focused on the practice of running the small business.

Estimations for Remittance Recipient Households

The specification above allowed the expenditure patterns of remittance receiving households to be distinguished from other households. However it assumes that the effects of the non-remittance related variables are the same for both types of household. Given the prominence of the effect of remittances in the research, in order to explore as much as possible the implication of remittances for expenditure patterns, estimates for remittance recipient households only are estimated.

Apart from the exclusion of the remittance dummy variable, the same variables were included and the same diagnostic tests are applied (Appendix 4.5.3). The specification used in (Ic), excluding the interaction term between dummy of remittances and income, again was supported by the Ramsey RESET test (Appendix 4.5.3). However, using the sub-sample of household remittance recipients (total 610 observations), many variables are statistically insignificant, though the sign largely remains similar to the total sample

estimates. Given that all households in the sample receive remittances, the interpretation starts from the variables of particular interest, those connected to remittances.

Migrants' Advise on Expenditure

The results suggest that the role of migrant in the expenditure decision-making process of expenditure for households is statistically significant for the category consumption, results which are consistent with those presented in Table 4.8 for the total sample though the sign is again contrary to the expectations. The results suggest that if migrant advises the remittance recipient household on how to spend remittances, the effect of one percent increase in income, increases the share of expenditure on consumption by 0.005 percentage points. The results are also consistent with that of the total sample with regard to the share of expenditure on durable goods and education, giving a statistically insignificant effect of income increase in the presence of advise on how to spend remittances.

Frequency of Visits

The results for the variable taking into account the frequency of visits are also consistent with those presented in Table 4.8. This variable suggest that an if a remittance sender visits the home country once, the effect of a one percent increase in income is an additional increase of 0.0008 percentage points in the share of education expenditure, compared to households receiving remittances but not receiving visits; suggesting that the presence of the migrant may act as a control mechanism (assuming that education expenditure is desired by the migrant). The frequency of visits also affects the current

consumption category, suggesting that if the remittance sender visits the home country, as income increases by one percent, current consumption drops by 0.0028 percentage points.

Years since Migration

The variable taking into account the duration of stay in migration, as a potential indicator for the risk of remittances decreasing is statistically insignificant across all specifications.

Income

The income variable is statistically insignificant for the share of current consumption category for the sub-sample of households who receive remittances. This suggests that the change of income level for remittance recipient households does not change the share of expenditure on consumption. However, the results are highly significant with regard to the expenditure on durable goods, suggesting that a one percent increase in income increases the expenditure on durable goods by 0.15 percentage points. With regard to education, a one percent increase in income results in an increased share of expenditure on education by 0.006 percentage points. The results of durable goods and education are consistent with those presented in Table 4.9 in terms of significance, signs and also magnitude.

Age and Age-Squared

The estimated effect of the age of the head of the household does not suggest any significant effect across the three specifications, while the age square is only significant with regard to expenditure on education suggesting negative relationship with expenditure on education, although the effect is relatively small.

Table 4.10 The estimated regression on consumption as a share of total expenditure for remittance recipient households

VARIABLES	OLS	Tobit	Tobit
	Consumption	Durable Goods	Education
Log of Income (loginc)	-0.653 (0.388)	1.15*** (0.000)	0.617** (0.011)
Age of the HH	-0.331 (0.240)	0.0549 (0.447)	0.1476 (0.219)
Age of the HH^2	0.003 (0.254)	-0.0011 (0.131)	-0.002** (0.025)
Number of Children	3.353*** (0.000)	-0.1076 (0.741)	-0.5005 (0.150)
Number of Children^2	-0.03*** (0.001)	-0.0591 (0.507)	0.0517 (0.425)
Number of Adults	0.6998 (0.589)	0.8330** (0.025)	1.97*** (0.001)
Number of Adults^2	-0.0636 (0.611)	-0.068** (0.052)	-0.14** (0.012)
Years of Schooling of HH	-0.0982 (0.609)	-0.14*** (0.003)	-0.0834 (0.300)
Gender (1=Female)	-1.813 (0.306)	-1.18*** (0.003)	1.1055 (0.139)
Housing Status (1=Owns a House)	1.491 (0.519)	1.91*** (0.000)	0.0685 (0.941)
Self-Employed	-0.070 (0.969)	0.2503 (0.615)	-2.39*** (0.001)
Advise on Remitt. *loginc	0.5487** (0.013)	-0.0784 (0.170)	0.0332 (0.724)
Frequency of Visits *loginc	-0.2314 (0.015)**	-0.0226 (0.386)	0.08** (0.040)
Years Since Migration	-0.0123 (0.735)	-0.0098 (0.276)	0.0149 (0.342)
Years Since Migration^2	-0.0001 (0.924)	0.0002 (0.419)	-0.0002 (0.647)
Constant	72.42*** (0.000)		
Observations	610	610	610
R-squared	0.069		

P-Values in parentheses

*** p<0.01, ** p<0.05, *p<0.1

Number of Children

The number of children in the household is suggested to have positive and significant relationship on current consumption. Also, the squared term for the variable taking into account the number of children squared is statistically significant, indicating a non-linear relationship. However, the calculated turning point of expenditure is so high that it never reaches it given that within our sample, the maximum number of children is 11, while the results suggest that the turning point is when the number of children reaches 55! With regard to expenditure on durable goods and education, the results are statistically insignificant.

Number of Adults

Similar to the results presented in Table 4.8, the number of adults is statistically insignificant with regard to the current consumption category and similar arguments as in the previous section could be used, either, suggesting some returns to scale or increased returns as a result of increased production and hence keeping the shares unchanged. However, contrary to the results for total sample presented in the previous section, the effect of the number of adults in the household on expenditure for durable goods is positive and with non-linear relationship as indicated by the squared term of the variable, suggesting that the turning point is reached when the number of adults reaches 6 persons, the share on durable goods expenditure starts to decrease. Similar are the results with regard to the expenditure on education as they indicate that the number of adults in the household increase the share of expenditure on education until the household reaches 7 adult household members (for total sample, the similar result was 7.4).

Education of the head of household

The effect of education on the share of consumption is statistically insignificant as found for the full sample. However, regarding the share of expenditure on education, the results are statistically insignificant. However, the education variable has statistically significant effect on the share of expenditure on durable goods, by decreasing them by 0.0014 percentage points if head of households' education is higher by one year.

Gender of the head of household

Gender is statistically significant with regard to the share of expenditure on durable goods, decreasing the expenditure by 1.8 percentage points when the household is headed by female, however, for the other two categories the estimates are statistically insignificant.

Housing Status

Similar to the estimates using the full sample, this variable is important when considering only the remittance recipient households' share of expenditure on durable goods. Owning their house/apartment increases the share of expenditure on durable goods by 1.9 percentage points. With regard to the other two categories, the results are statistically insignificant.

Self-Employment of the Head of Household

Self-employment is statistically insignificant with regard to the share of current consumption and durable goods. While for the education category, it is statistically significant and negative, similar to the results presented in Table 4.9. The results estimate that when the head of household is self-employed the share of expenditure on education decreases by 2.4 percentage points.

4.6 Conclusions

In this chapter, the Working-Lesser model has been applied to estimate the impact of remittances on households' expenditure patterns in Kosovo. In order to investigate the expenditure patterns, we estimated the regressions for three different categories, that is, 1) share of expenditure on current consumption, 2) share of expenditure on durable goods and 3) share of expenditure on education. Given the specificities in the data, that is, the all positive numbers in current consumption variable and the presence of a considerable number of zero values in the durable goods and education categories, two different estimation methods have been used, that is OLS and Tobit. Since it is often suggested in the literature, expenditure was initially used as a proxy for income. This is because income is often underreported, but also, expenditure often depends on long-term expectations for income and borrowing. However, diagnostic tests suggested that the model specification was not appropriate using expenditure. Consequently, income was used for this estimation, though the results of the model using expenditure have been included as a robustness check.

Regarding the factors affecting the expenditure patterns, the results suggested that the effect of the income variable is in line with Working-Lesser model and highly significant, suggesting that as income in the household increases the share of expenditure in current consumption decreases. The effect of income is the opposite on the share of durable goods and education. The age-current consumption relationship is non-linear suggesting a U-shaped function and the lowest point being at the age of 63. The age-durable expenditure relationship is estimated as inverse U-shaped, the age of 50 being the highest point. As for education expenditure, the share of expenditure on this category increases until age of 38, after which it decreases. The number of children below the age of 15 affects positively the share of expenditure on current consumption and is linear, while for durable goods there is a negative effect. The share of education expenditure increases as the number of children increases, though; in Kosovo the public education is free. The result is that the education of the head of the household positively effects the share of expenditure on education. Gender also makes a difference in terms of share to each category, given that female headed households spend higher share on current consumption and lower on durable goods. Self-employed headed households behave differently with regard to the share of expenditure on education with the share decreasing.

In addition to the standard models used in the literature, in this chapter, the Working-Lesser model has been expanded with new variables which could affect the expenditure patterns (in equation 4.6 and further). A widely neglected variable in the literature for developing countries is that taking into account the home ownership. This variable is estimated to be one of the main factors affecting expenditure patterns. Home ownership increases the share of expenditure on current consumption and durable goods, while it

decreases the category of education, perhaps reflecting some sort of economic security compared to their counterparts.

The major concern of this chapter is the effect of remittances on expenditure patterns, considering whether the presence of remittances gives rise to different behaviour than for other sources of income, but also raised hypotheses such as whether the remittances recipient households are driven by moral hazard behaviour and whether this could be reduced by remitter's actions. We included a variable which takes into account whether the migrant advises the households on how to spend remittances and considered if the frequency of visits of the migrant could serve as control mechanism. The estimates suggest that the changes in income of households who receive remittances are spent differently compared to non-recipients across expenditure categories. An increase of income for recipient households leads to a higher change in durable goods expenditure. An increase in income in the households receiving remittances and getting advice on how to spend them, results in an increased share of consumption category, compared to remittance receivers who do not receive advice, but does not affect the share of the other categories. An increase of income to the households who receive remittances and the migrant visits, results in a decreased share of expenditure in current consumption and an increased share of expenditure in education, compared to remittance receivers who are not visited. However, years since migration are not found to affect expenditure patterns. In order to further investigate the remittances, a separate model was estimated with the same definitions, but only for the remittance recipient households. The results are generally in line with those presented in the main model, however, with more

insignificant variables. For those that are significant the sign and the magnitude are generally in line with those for the full sample.

CHAPTER V

THE EFFECT OF REMITTANCES ON LABOUR FORCE PARTICIPATION AND EMPLOYMENT

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5.1 Introduction

With the growing number of migrants worldwide, the body of the research on migration and remittances issues has also increased. However, for the case of Kosovo and transition countries, literature is relatively scarce.²¹ In this context, this chapter aims at investigating the impact of remittances on the labour market in Kosovo, particularly, their impact on the labour supply of individuals. This is because remittances are often discussed as one of the main factors driving down the labour force participation for the recipient individuals in many countries. However, despite being a frequently discussed topic, surprisingly, the implication of remittances on labour supply is not thoroughly researched empirically in the literature (Ameudo-Dorantes and Pozo, 2006). Given the apparent lack of research, it appears that the debate is based on anecdotal evidence. Such discussion seems to have been driven by the viewpoint of the standard neoclassical model (section 5.3.1) which posits that an increase of non-labour income decreases the labour supply as a result of increased reservation wage and the preference of leisure against work by the individuals.

Despite being a relatively unexplored area, the investigations of labour supply in the literature related to migration and remittances uses the standard approach, which is the neoclassical labour supply model, i.e. the leisure-work trade-off model. Extending this model to include migrants' remittances appears to have two main implications. Firstly, the non-labour income increases, sometimes substantially, in these models under the presence of remittances; and secondly, the remittance recipient households change their behaviour in the presence of remittances. The application of the neoclassical model was

²¹ Few studies exist for the case of Kosovo and they are mostly descriptive (such as Riinvest, 2006)

often perceived to be the appropriate method given that remittances are a form of non-wage income. In this context, amongst the main studies in the area of remittances and labour market are Kim (2007), Ameudo-Dorantes and Pozo (2006), Rodriguez and Tiogson (2001), Funkhouser (1992) Acosta (2011), Mendola and Carletto (2012). For Kosovo, the only study found is that of Hoti (2015).

Alternative models exist in the economics literature, such as the search theory model, which is developed on the basis of the neoclassical model, but having as a distinct feature the reservation wage and hence the unemployment duration. However, with regard to remittances, search models are largely absent in the literature and it appears that the lack of data might have driven this outcome. Furthermore, studies using the segmented labour market approach, which differentiates the so-called good jobs, often considered those with high salaries and other benefits, and the bad jobs, those with low salaries and often undesired, are also absent from the remittance literature. However, similar to the search theory, a lack of data seems to be a major problem for the labour markets in developing countries, hence, allowing only for the neoclassical model to be implemented.

In this context of Kosovo, it is only the neoclassical approach and developments from it that could be investigated given the lack of data. In this chapter, in addition to the investigation of the impact of remittances on labour supply, we make a clear distinction in the neoclassical model between the probability of being active and the probability of being employed, which often tends to be unclear in the literature. Regarding the other models, their application, for example of search theory, may not be as relevant in Kosovo compared to the developed countries. This is because Kosovo faces substantial constraints in terms of job availability. In this context, many do not participate or work

part time because of the lack of opportunity while frictional unemployment or a search for better opportunities is of lesser importance.

Although often considered as one of the most developed theories in economics, the labour market changes in the presence of remittances is not vastly researched. For this reason, this chapter is initiated with a review of the literature in section 5.2 which attempts to identify the approach that literature has used with regard to remittances and their implications for the labour market. Section 5.3 is dedicated to the theoretical background which describes the neoclassical theory as the standard approach followed by a discussion of the alternative theories; that of job search and segmented labour markets. Given the review of the literature and the theory, a generic model is proposed for Kosovo in section 5.4, which also presents the descriptive statistics and discusses the potential endogeneity that could arise from selected variables. Section 5.5 presents the empirical results and their interpretation, followed by the concluding remarks in section 5.6.

5.2 Literature Review on the Labour Force Participation Non-Labour Income

5.2.1 Remittances effect

Despite the size of remittances to developing countries, the literature on the possible remittance effect on the labour force is not extensive, hence making this one of the less explored topics in the migration and remittances literature (Ameudo-Dorantes and Pozo, 2006). Among the influential works in the topic of remittances and the labour market is that of Funkhouser (1992). In analysing the impact of remittances on the labour market in the capital city of Nicaragua, Funkhouser (1992) distinguishes between the effect on labour force participation and self-employment in Nicaragua. Also, in line with the standard models, this study conducts empirical research separately for males and females.

The effect of remittances is positive on self-employment, while it is negative on labour force participation. The results suggest that a \$100 increase in remittances per month increases the probability of being self-employed by 1.2 percentage points for males, and 1.1 percentage points for females. When a similar model was conducted to investigate labour force participation, the results suggest that receipt of remittances decreases the probability of joining the labour force for both men, by 2.1 percentage points, and women, by 5.0 percentage points.

Rodriguez and Tiongson (2001) investigated the effects of overseas migration on home country households for urban areas in the Philippines using 1991 family income and expenditure survey data. The model used in this research paper is based on the neoclassical approach but with a greater focus on the influence of the family on the decision to work, with the consideration that the family is widely considered as a single decision-making unit. In this context, Rodriguez and Tiongson (2001) consider three influences on labour force participation: 1) the opportunity cost of leisure, 2) non-labour income and 3) family preferences. Given the assumption that the family is a single decision making unit, the findings are in line with the literature suggesting that the labour force participation and hours worked of home country household members decreases in the presence of a migrant abroad. In particular, the presence of non-labour income, that is remittances, affects negatively labour force participation.

An explicit reference to neoclassical theory is presented in Ameudo-Dorantes and Pozo (2006). This paper is more concerned with the distinction between hours of work and the labour force participation, although direct reference to the neoclassical model of the work-leisure trade-off is only briefly mentioned in the context of defining remittances as

non-labour income. Using the data from the 2002 national of income and expenditure survey of households in Mexico, the evidence supports the generally accepted view of the effect of remittances on labour market behaviour, suggesting that as remittances increase the hours of work per month decrease for both men and women in both urban and rural areas. In terms of participation, unlike working hours, their results suggest that remittances do not decrease the probability of participating in labour market for men.

Kim (2007), using 1995 to 2002 pooled data from the Survey of Living Conditions and Labour Force Survey for Jamaica finds that remittances have a statistically significant effect on labour market participation. The estimate suggests that the effect of remittances on labour force participation is negative; however, for households who receive remittances but remain in the workforce, the reduction in working hours is insignificant. Kim (2007) explains the reduction in labour force participation through changes in the reservation wage, suggesting that, when households receive remittances, their reservation wage increases, which makes them more likely to stay out of the labour force. The results in this study are somewhat different from other studies in terms of hours of work; however, no extended explanation on why remittances affect the labour force participation but not the hours of work is presented.

Hanson (2007), using 1990 and 2000 data from the Mexico Census of Population, investigates the role of emigration and remittances on the labour force participation of home country household for both labour force participation decisions and the hours of work. However, different from other research papers, this author tests whether the labour supply of the household decreases once they have sent a migrant abroad. The results of this investigation suggest that either the presence of remittances or a migrant have similar

effect on the labour supply of the home country households. However, a surprising finding is that the effect of migration and remittances is higher for males compared to females. Their results suggest that males in the presence of a migrant (or remittances) are 11 percent less likely to supply labour, while females are 2.5 percent less likely. In the specification which uses the hours of work, home country individuals in the household that have sent a migrant or received remittances supply fewer hours of work.

Similar to Ameudo-Dorantes and Pozo (2006), the 2012 paper of Justino and Shemyakina also briefly mentions the theoretical basis as the neoclassical model of labour-leisure choice, referencing Killingsworth (1983). The data used in this study are of Post-Conflict Tajikistan, using the 2003 Tajik Living Standards Measurement Survey. Using this brief discussion, remittances are included as non-labour income which according to the model, should affect labour force participation and the hours worked. The dependent variable is the binary labour force participation variable while for investigating the hours worked a Tobit model is used. The findings are largely in line with the literature suggesting that the presence of remittances decreases the probability of participating in the labour market and decreases the hours of work. The results are similar for both men and women.

Cox-Edwards and Rodriguez-Oreggia (2009), using the neoclassical model of labour supply, investigates whether the persistence of remittances affects the labour supply of home country households. This study is conducted using the data from the 2002 Mexican National Employment Survey. The specific approach of this paper is that it focuses on the persistence, rather than sporadic flow of, remittances, using the propensity score matching method. Their findings suggest that when individuals in remittance recipient households are paired with their non-recipient counterparts, the effect of remittances is

statistically insignificant across all specifications, except for females in urban areas who have a higher participation rate, given that the urban regions are commonly known to have lower migration and remittances levels.

Airola (2008) investigates the response of the labour supply of the home country head of the household to remittances for the case of Mexico using the 2004 Household Income and Expenditure Data. This unitary model approach used in this case assumes that the head of the household represents the decision maker rather than the different individual preferences of household members. Their study uses only hours of work as the dependent variable and the results suggest that the head of the household reduces the hours of work in the presence of remittances, and for females, the negative effect of remittances on labour supply is higher.

Acosta (2011), for El Salvador using the data from Household Survey for Multiple Purposes of 1998, investigates the effect of remittances on child, adult female and adult male labour supply. Specifically addressing the likelihood of children between the age of 11 and 17 working, the findings suggest that the flow of remittances has a negative impact on child work by 2.8 percentage points, though when other variables are included such as household wealth, this effect is estimated to be smaller, suggesting a negative effect on child labour by 1.5 and 1.6 percentage points. The findings for adults suggest that remittances decrease the probability of participation for adult females, while the results are statistically insignificant for adult males.

Considering research on the implication of remittances in the labour markets of the Balkan region, Dermendzheiva (2010) investigates the case of Albania. This study uses

the Living Standard Measurement Survey of 2005. The findings suggest that the effect of remittances on labour force participation is significant and negative for males and also, when considered separately, for males between the ages of 46 and 60, but for females the results are statistically insignificant.

Furthermore, Mendola and Carletto (2012) in their study for Albania undertake extensive research on various specifications that investigate the implications of migration related characteristics to labour force participation using Living Standard Measurement Survey of 2005. They use three different dummy variables taking into account if the household has migrants abroad, past experiences of the household with migration and past personal or individual experience with migration, and consider the effect on labour force participation and working hours for females and males. This study finds that, for females, having a household member who is a migrant (as an approximation for remittances) lowers the probability of working for a paid salary, but increases the probability of being self-employed or working in farm or non-farm activities. For males, having a family member who is a migrant does not have a significant effect on participation and on hours of work.

The study of Hoti (2015) on the supply of labour for Kosovo indirectly addresses the effect of remittances by using the variable 'if household has a member abroad' as a proxy. This study uses the Riinvest Household and Labour Force Survey of 2002. The evidence found in this study is from two specifications. The first, having the variable of the presence of migrant abroad (as a proxy for remittances) suggests that there is a relatively small negative effect (of 0.007 percentage points), but significant, on a migrant abroad on the female labour supply, while for males the effect is statistically

insignificant. When the presence of migrants abroad from the household are interacted with a dummy representing urban areas, the estimated effect is significant and positive for males, but is insignificant for females. Additionally, other sources of non-labour income *per capita* in Kosovo do not reduce the labour supply for males and females across the various specifications.

Overall the literature tends to find, particularly for females, that remittances, as a non-wage source of income, reduce the labour supply. However, there are studies where the effect is insignificant and in a few cases, a positive effect is found.

5.2.2 Other forms of non-wage income and their effects

Remittances have often been compared and considered similar to the other forms of non-wage income (Ameudo-Dorantes and Pozo, 2006; Cox-Edwards and Rodriguez-Oreggia, 2009; Justino and Shemyakina, 2012; Emilsson, 2011). In light of this, a brief review of the literature with regard to the welfare programmes is also presented. The theoretical background in the studies referred to in 5.2.1 (in as much as it is specified) and that used in the investigation in section 5.4, is built on the basis of non-wage income effects rather than remittances specifically.

With the increase of application of various welfare programmes and transfers to unemployed individuals and females with dependent children, the issue of such transfers became a topic of interest for policy-makers in order to evaluate the effect of non-wage income the labour supply (Moffitt, 2002). The findings in the literature reviewed by Moffitt (2002) with regard to the impact of welfare programs and labour supply, show that generally transfers decrease the labour supply. Furthermore, Moffitt (2002) presents

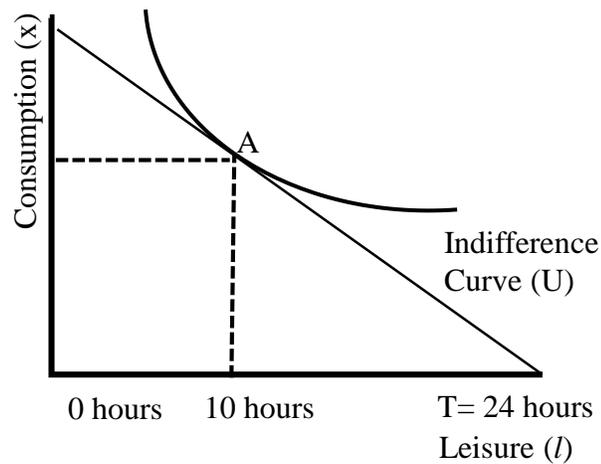
a summary of the findings of the Hoynes (1996) paper which found that guarantees reduces the labour supply for single mothers as does the aid to the families with dependent children. For food stamps, it is observed that they have small effect, but it is still negative for married couples (Hangstrom, 1996). Meyer and Rosenbaun (2001) similarly find that unemployment insurance reduces the employment probability for single mothers, while a decrease in taxes increases the probability of being employed.

A similar review is also presented in Blundell and MaCurdy (1999) and they summarize that various authors have found a negative impact of non-wage income on labour force participation. Chetty (2008) findings suggest that unemployment insurance in the US affects search behaviour through the liquidity effect. This suggests that such measures are likely to increase the unemployment duration much more for liquidity constrained individuals compared to other unemployed individuals. Similar to the studies on remittances, the literature for the transition countries is scarce with regard to the effect on the labour force participation decision of non-wage income. Bicakova *et al.* (2008) investigate the labour supply using the Czech household income survey data of 2002. This study finds that non-labour income reduces labour force participation with a one percent increase in non-labour income decreasing the probability of being employed by 0.4 percent for both men and women.

5.3 Theoretical Background

The models explaining the labour force participation (LFP) are largely based on neoclassical theory. The approach in the empirical literature has been that the theory has been extended with various factors that could affect the participation in the labour market. Such factors included households' characteristics such as investment in

Figure 5.1 Individual Labour Supply

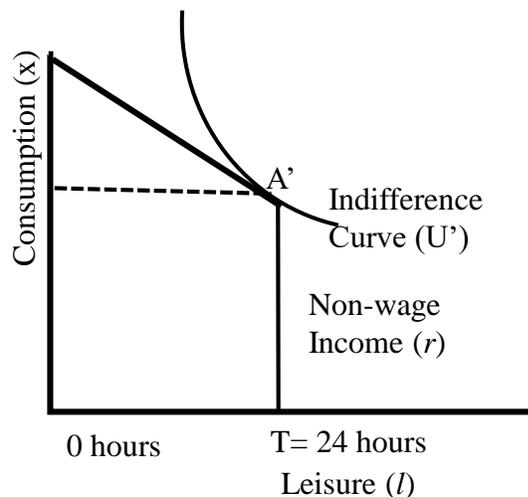


Given the budget constraint in Figure 5.1, which assumes zero non-wage income, the optimum solution of the individual would be the point where the indifference curve is tangent with the budget constraint line and as a consequence, the individual ‘consumes’ in the case above 10 hours of leisure and 14 hours of work. The optimum point will differ between individuals given slope of their indifference curve but must give participation in the labour market (given the shape of the indifference curve and that consumption would be zero with no participation). A decrease in the market wage gives a positive substitution effect of leisure for commodities while the increase in the market wage for an individual makes leisure more expensive. In cases of an increase in the wage rate, the individual may substitute leisure for work because of higher opportunity costs which would shift the budget constraint upwards giving more working hours and less leisure. However, such behaviour would be different in cases where the income effect is greater than the substitution effect. In these cases, the individual is assumed to reach a point where the marginal utility of leisure is higher than the marginal utility of income and if

the income effect outweighs the substitution effect, then it makes the labour supply curve backward bending.

The outcome may change from Figure 5.1 if the individual also has non-wage income (from, for instance, remittances and pensions) which would change the budget constraint line (which now becomes $x=r+wh$, where r is non-wage income). The budget constraint is kinked at zero hours of work (24 hours of leisure) in Figure 5.2. This Figure illustrates the particular outcome where the individual decides not to participate in the labour force. This corner solution is more likely for persons who face a low wage rate, which makes the slope of the budget line shallow and thus more likely to touch the highest achievable indifference curve at zero hours of work. It is considered that the reservation wage increases in such situation. Consequently, marginal changes in the real wage may not affect the choice of the individual whose non-wage income is substantial (Pencavel, 1987).

Figure 5.2 Individual Labour Supply with non-wage income



So far the theory considers the hours of work, including a corner solution with zero hours. The models in figure 5.1 and 5.2 both assume that choice over hours of work in the economy is available. However, in the case of Kosovo the majority of the part-time working individuals do so because of the unavailability of full-time jobs, while the great majority of employed have full-time contracts (see section 2.3.2).

Several theoretical models have been developed and they mainly differ by the unit of analysis: the household or the individual. The standard unitary model treats the household as a single decision making body (Blundell and MaCurdy, 1999). Given the assumption that the individual utility can be also represented at household level, for example as a result of income pooling, a common approach in the literature is to consider that the same principles can be assumed for household level analysis as for the individual (Mincer, 1962). The main assumption in this context is that the household members maximize a joint utility function and through this, the household is considered as a single headed nucleus, with choices and preferences being collective (Rodriguez and Tingson, 2001). However, an alternative theoretical framework, known as the collective model, is oriented towards the identification of the effect of individual preferences on collective choices (Alderman *et al.* 1995). The collective utility and budget constraint models are in many respects similar to the unitary models, with the difference being in most of the cases only in the decision-making rules (Mattila-Wiro, 1999). In this context, there are two widely discussed models of intra-household behaviour models, namely, the efficient cooperative models and the bargaining models. The efficient cooperative models view household decisions as efficient, however, where a gain of one household member over the cost to the other member is based on agreed sharing rule.

The bargaining models are those developed in the manner of the game theoretic approach. In these models individuals within the household cooperate in order to improve the position compared to the situation where these individuals do not cooperate. It must be noted that both the efficient cooperation and bargaining models allow for individual utility functions and individual budget constraints. However, in most of the cases and especially for developing countries, the application of such models in applied work is not possible given the lack of detailed data on the decision-making process and the intra-household behaviour (Mattila-Wiro, 1999). Consequently, the collective view models are identical to the unitary models, with the only difference being on the assumption that different decision making rules are implemented in the collective view. In the collective model it is assumed that the household is run by a benevolent dictator and aims for a maximization of a joint utility function subject to the budget constraint in the household (Killingsworth and Heckman, 1986; Mattila-Wiro, 1999).

In the literature it is often labour supply participation that is analysed (the decision to work taking the value of 1 for positive working hours and 0 for not participating in the labour market) instead of the hours of work. Although neoclassical theory is built on the supply of labour measured by hours of work, the same thematic principles are used when investigating the participation decision (Funkhouser, 1992; Rodriguez and Tiogson, 2001; Acosta, 2011; Bicakova *et al.*, 2008; Nicodemo and Waldaman, 2009; Dermendzheiva, 2010). The implications of such an approach are that the same independent variables are important for the decision to work, though the effect of the variables may be of different magnitudes compared to their effect on hours of work. The use of the participation decision instead of hours of work, in most of the cases, is because

of the lack of data for the hours of work, especially in developing economies. Consequently, the use of dummy dependent variable, accounting for participation decision, is used.

The economics literature has focused to a large extent on gender differences in labour supply. There are various explanations provided for this distinction, such as the difference in tastes between men and women. In the seminal work of Becker (1985), it is suggested that the availability of gender-specific time-allocation options for females is one of the factors which strongly affects their labour supply. Those options for females are often related to the child rearing but also goods and services produced at home by females, or the so-called household work, which is an extension to the classical family utility model. Furthermore, the distinct analysis in terms of gender is often related to the discrimination in terms of employment but also wage differences between males and females, the latter being lower on average. Males in most of the countries have a higher participation rate in either the paid labour market or self-employment (World Bank Dataset, 2014). Being subject to discrimination, which has been emphasized in developed countries (Wright and Ermisch, 1991; Ainger and Cain, 1977), makes females' decision to not participate more frequent, known as the discouraged worker effect, given the increased likelihood of lack of success in finding a job or as a result of low returns from work.²² This could be more important in developing countries which are often characterized with very low participation rates, particularly for women, which may be a

²² Gender discrimination appears to have reduced gradually as presented by various studies such as Eberts and Stone (1985), Powell and Butterfield (1994) for U.S.A. Recent studies using field experiment methods (Booth and Leight, 2010) for Australia find that there is positive discrimination in female-dominated occupations (i.e. females have greater chances), while in other non-dominated occupations the results were insignificant. Further studies such as Acosta (2006) and Ransom and Oaxaca (2005) find that discrimination may exist in U.S in terms of promotions and salaries.

consequence of the discouraged worker effect, resulting from high unemployment rates (see chapter II, section 2.3.2 for the case of Kosovo).

5.3.2 Alternative Theories: Job Search Theory and Segmented Labour Markets

Search theory evolved from the viewpoint that in the economy most individuals search for a job if they want to improve their labour market position. However, according to the search theory, this process involves costs, mostly considered in terms of the time spent searching for a job (Gorter and Gorter, 1993; Mortensen, 1987). The essential concept in the job search theory has become the reservation wage, which is the minimum wage that an unemployed worker would accept to work (Burdett and Vishawanath, 1988). The concept of the reservation wage became an important research question having in mind the additionally introduced aspects that could affect it. Such aspects include unemployment duration, human capital and wealth depreciation over time and social/unemployment benefits. Additionally, further personal and household characteristics were constantly added to the search models given that wealth and household composition plays a role in these models (Burdett and Vishawanath, 1988).

Apart from the neoclassical assumption that the labour markets function well and it is the personal characteristics of the individuals that affect the labour supply, recently, attention has been paid also to the segmented labour market. Two conventional segments are identified in the labour market: the primary, often referred to as ‘good jobs’ with predominantly high salaries and other benefits; and the secondary, considered as the ‘bad jobs’ or often referred to as the involuntary jobs with lower salaries, and especially in transition economies, in many cases insecure jobs and those in the informal sector of the

economy (Lehmann and Pignatti, 2007; Dekker *et al.*, 2002). The segmented labour market has not been extensively researched for transition countries due to the lack of the data (Lehmann and Pignatti, 2007). Nevertheless, it is likely that this approach, although less emphasized, is likely to be important in developing countries which are experiencing high unemployment rates. This is because in countries like Kosovo, where unemployment rate stands at over 35 percent (see Chapter II, section 2.3.2), there is little choice of jobs. However, at present little is known of the informal labour market in Kosovo and also to investigate the topic using the segmented labour market approach requires investigation from the earnings perspective, for which data is not readily available. Furthermore, the unemployment duration is for about 90 percent of job-seekers considered long term. In this context, an important aspect of the job market remains on whether the so called push factors or the immediate necessity is driving the individuals to join the labour market and find a job, or is it the pull factors, the good opportunities in the market that are attracting individuals to join the labour market. Furthermore, in the literature on the impact of remittances on the labour market, models explicitly using search theory are absent, and in most of the cases, this is because of the lack of the data. As presented in section 5.2, most of the remittances related studies conduct the research based on neoclassical theory leisure-work trade off and the conclusions of lower participation of remittance recipients on average are often drawn from the increase of reservation wage and leisure, although it is not clear the assumption of a smoothly functioning equilibrating market, which is the basis of this approach, is appropriate given the above discussion.

5.4 The Model Specification

Given the discussion in the theoretical section 5.3, a generic model will be developed for Kosovo in order to investigate the implication of remittances for labour force participation. In line with the literature, the research question will be investigated separately for females and males. In addition to the female and male distinction, in the model that will be presented, we will also clearly define the probability of being active and the probability of being employed. This distinction has often not been treated carefully in the literature: those inactive are often simply treated as unemployed. This unclear use of terms in the literature results from the use of hours of work as a measure of labour force participation which could have conceptual implications. First, the use of hours of work either neglects those who are not in the labour market, or treats them in the same way with those who are in the labour market looking for a job. Simply put, in the zero hours used in the literature we may have two types of individuals, those who supply zero hours but are looking for a job (active in the labour market) and those who are supplying zero hours but not looking for a job (inactive in the labour market, hence not part of the labour force).

Before developing the model, several factors must be taken into account. These factors include the structure of the survey, which was designed with the aim obtaining household characteristics hence it targets the head of household. The structure of this survey makes it tempting to use the head of household as the unit of analysis for the dependent variable. However, given the data in the total sample, a problem that may arise from this approach is that 15.8 percent of the head of households were 65 or older, which essentially makes them retired (and 97 percent of these are inactive). In addition to the data problem, the

social norms in Kosovo may indicate that the head of household may not be the best choice. This is because the social norms consider that the head of household is usually the oldest person, regardless of their labour market and economic status within the household. In addition to that, the use of household, or the unitary model, has been criticized from the theoretical point of view since the individual represents the decision maker rather than the entire household, given that the individual preferences cannot be represented in an aggregated model (Chiapporri, 1992; Fortini and Lavroix, 1997).

Glewwe (1990) suggest that the potential highest earner could be used as the subject of analysis. The highest potential earner is defined as the person within the household with the highest educational level between the ages of 18 and older. However, there is a serious endogeneity issue with this approach given that within the family it can be regarded as a choice of who works and who continues education. Furthermore, through the data set, it is possible to define the dependent variable using each individual in the household. Using this approach, it may not be possible to estimate the model using some of the characteristics given that many of these are reported only for the head of the household and do not necessarily apply to the individual; however, it is more inclusive in terms of individuals.

In evaluating the impact of remittances and other factors on the labour force participation, the data set allows us to investigate, using the neoclassical approach, the individuals' decisions to participate in the labour force. This is because the data set contains information on the individual characteristics such as age, gender, education and employment for adult household members (see section 5.4.1 which describes the data).

The neoclassical model suggests that the labour force supply is dependent among others, on the labour income of other members of the household (W_i). However the neoclassical model has been extended with various other household characteristics (X_n), represented in equation 5.2 and which will be described throughout this section. The unobservable characteristics are included in the error term (ε).

$$LFP_i^G = \alpha_1 + \beta_2 W_i + \beta_n X_n + \varepsilon_i \text{-----} 5.2$$

In the equation 5.2 LFP_i^G represents the labour force participation. However there are two possibilities for the definition of the dependent variable. First, it represents the probability of being active in the labour market for the individual i , and second, it represents the probability of being employed for the individual i .

This equation is estimated separately for females and for males as denoted by superscript (G). This separation in terms of gender is a general practice in the literature which is often believed to be as a result differing tastes but also as a consequence of gender discrimination in terms of employment opportunities and the wage rate.

The earnings of other members (W_i), are not available in this dataset (see section 5.4.2 for more details). Instead as a proxy for the other sources of income we have used the maximum years spent in education by another household member (this variable is continued to be symbolised by W_i throughout the equations in this section), as this is expected to reflect earnings capacity. Given that this schooling was achieved in the past, this variable is not considered to be endogenous (although current income from other household members, if this data were available, would be expected to be).

Other personal characteristics of the individual, such as age and its square term (*Age and Age²*), are also included and discussed in the context of neoclassical model. Age is considered as an important aspect in the life-time budget constraint in terms of long-term utility maximization and consequently, an important determinant of participation given that it reflects in many cases the experience in the labour market. Becker (1964) and Mincer (1974) consider experience and on-the-job training as essential components of human capital, thus giving higher earning power to individuals. The view on the effect of age in studies in this area is similar to Mincer's earning function which suggest that the relationship between age and earnings is an inverted U-shape function, that is, increasing at a decreasing rate until it reaches a peak after which, earnings decrease (Mincer, 1974). In terms of participation, similar to the earning function, age is used as a proxy for experience. The theory suggests that the probability of participation increases at decreasing rate until it reaches a peak and then declines; as found by Pencavel (1987), the decreasing point was in mid-fifties. This variable is presented in equation 5.3.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \varepsilon_i \text{-----} 5.3$$

Education (*Ed*) of the individual is included given its importance as an indicator of the chances of getting a job and as an indicator of earning power. Education is usually associated with higher earning power and returns, given that education comprises one of the most important attributes of the human capital; the effect is well-documented in empirical work (e.g. Becker, 1964; Mincer, 1974; Laplagne *et al.*, 2007). In this context, the more educated would have a higher opportunity cost of leisure; therefore, resulting in an increased likelihood of labour force participation. The education variable is expected to increase the labour force participation as a result of increased potential wage.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \varepsilon_i \text{-----} 5.4$$

Pencavel (1987) identifies a few studies that included price measures for different regions or cities. However, it is difficult to find the price differences across regions, especially for developing countries. Under the circumstances of no price information, Pencavel (1987) suggests that dummy variables for regions and cities are often used in order to take into account any variations including in terms of prices. A location variable is included as a set of dummy variables, representing the five regions of Kosovo, the benchmark category being Prishtina, the others being Mitrovica, Prizren, Peja and Gjilan. These variables are represented by (*L*) which denotes location.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \varepsilon_i \text{-----} 5.5$$

In addition to the region or location differentiation, rural and urban variables are included. However, often these are done in order to distinguish the labour market differences and the availability of jobs, especially since urban areas are often associated with more variation in jobs. The variable denoting the location being rural/urban is interacted with whether rural households possess productive assets. This gives three types of household: rural with productive assets, rural without productive assets, with the base category being households from an urban area. These are denoted as *Ur* in equation 5.6. The inclusion of productive assets is important because the presence of assets such as land, tractors or livestock may contribute directly or indirectly to household income (Glewwe, 1990) but also goods and services which are not accounted for either income or non-labour income. The current decision on investing in productive assets will be endogenous with the labour supply decision, but many of the productive assets owned by

these households are likely to have been from past decisions, including some that may have been inherited.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \varepsilon_i \text{-----} 5.6$$

Home Ownership has been related with higher unemployment rates and lower participation rates at the macroeconomic level (Blanchflower and Oswald, 2013; Green and Hendershott, 2001). This, however, has been justified by the individual motivations, since it is considered that home ownership, denoting whether the individual owns a house or not, decreases the labour mobility and results in fewer businesses created and greater commuting times. However, an alternative explanation, which may be more plausible for the case of Kosovo, is that home ownership is actually an approximation of accumulated wealth (Goodstein, 2007). This is especially the case, given the relatively small distance between the cities and also the small size of Kosovo's territory, which makes the mobility and commuting time hypothesis less likely, especially for males. However, given that household production is emphasized for females in Kosovo, with a low participation in labour market, it could be argued that mobility as well as asset accumulation may be more applicable to the female decision.²³

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \beta_8 HO_i + \varepsilon_i \text{-----} 5.7$$

The number of the children below the age of 7 (*Ch7*) but also children between 7 and 17 in the household (*Ch17*) is also included given its theoretical implication for the labour

²³ As explained in Chapter II, the participation rate of females in the labour market in Kosovo is relatively low at only 21 percent compared to 60 percent participation rate for males.

force participation, as discussed in the theoretical section 5.3. The division of children into these groups is related to the need for care and school attendance of children.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \beta_8 HO_i + \beta_9 Ch7_i + \beta_{10} Ch17_i + \varepsilon_i \text{-----} 5.8$$

Similar to the presence of the children is the interpretation of the presence of seniors in the households (that is household members 65 years old and over). In some cases, it has been suggested that, especially for women, labour force participation may be affected by the presence of elderly household members given the need to care for them (Jaumotte, 2003). Such expectations are also associated with the social norms in developing countries, such as Kosovo, where most of the household work, including the care of children and the elderly, is expected to be done by the females.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \beta_8 HO_i + \beta_9 Ch7_i + \beta_{10} Ch7_i + \beta_{11} Sen_i + \varepsilon_i \text{-----} 5.9$$

An important aspect developed with regard to the labour force participation, both in terms of activity and employment, is the discouraged worker effect. In this model it is proposed that the discouraged worker effect is tested through the variable which takes into account the number of unemployed adults in that household (*UnAd*).²⁴ Two opposing hypotheses exist in terms of the added or discouraged worker effect within the household. These hypotheses imply that when countries or regions face high unemployment rate it reflects

²⁴ We use the number of unemployed adults instead of the proportion because knowing that more family members are unemployed may indicate the difficulties involved in searching for a job. An alternative specification would be the proportion of unemployed adults in the family, however, this approach is not pursued here.

on participation. The first, added worker effect suggests that the participation probability of other family members increases when the unemployment rate is high as an attempt to counter the liquidity constraints which may be as a result of risk of or loss of the job of the main breadwinner. Alternatively, the discouraged worker effect suggests that as a result of the high unemployment rate and consequently the low probability of finding a job, household members might be discouraged from searching for a job. This may be particularly important in the case of Kosovo given the high unemployment and discouraged job-seekers, who because of the long-term unemployment rate, do not actively look for a job because they do not believe they will find one (chapter II, section 2.3.2). Given these possible effects, the regional unemployment rate has been suggested for inclusion in the model as a measure of market conditions or labour market tightness (Ameudo-Dorantes and Pozo, 2006; Bhalotra and Umana-Aponte, 2010). However, in Kosovo, regional information is not available, while it is also most likely that individuals build their expectations based on the family or a narrower group of people rather than the regional level. For this reason, we propose including the number of unemployed adults (*UnAd*) in the household as a variable aiming to test the added or discouraged worker effect.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \beta_8 HO_i + \beta_9 Ch7_i + \beta_{10} Ch7_i + \beta_{11} Sen_i + \beta_{12} UnAd_i + \varepsilon_i \text{_____} 5.10$$

Non-wage income from the social and pension (*NWIS*) assistance of government is represented in the model separately from the remittances (*NWIR*). As presented in chapter II, remittances are one of the important sources of non-labour income for households in

Kosovo and therefore will be represented in the model by (*NWIR*), while other non-labour income such as social assistance will be represented by (*NWIS*). Although theoretically, remittances and other non-labour income should have the same effect, in terms of sign and magnitude, as assumed in section 5.3, it might be more appropriate to test for the two with different variables. This is because in many cases, the non-labour income is represented by government social assistance which is of permanent nature if an individual does not find a job, while remittances might be of temporary nature. The separate inclusion is also justifiable given that the focus of this chapter is the implication of remittances on the labour market. In this context, remittances and other non-wage income may lead to a corner solution, with withdrawal from the labour market, as discussed in section 5.3. In this situation the market would need to increase wage rates in order to induce the individual back into the labour market. Alternatively, if not a corner solution the additional income from remittances is likely to reduce the supply of hours of work.

$$LFP_i^G = \beta_1 + \beta_2 W_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Ed_i + \beta_6 L_i + \beta_7 Ur_i + \beta_8 HO_i + \beta_9 Ch7_i + \beta_{10} Ch7_i + \beta_{11} Sen_i + \beta_{12} UnAd_i + \beta_{13} NWIS_i + \beta_{13} NWIR + \varepsilon_i \text{-----} 5.11$$

It must be noted that marital status of the individual, a variable that has been extensively included in the literature, is not included in our model. This would have been an important variable given its effects on male and female household members. For instance, it is suggested that married men are more likely to participate in the labour market compared to their non-married counterparts (Pencavel, 1987; Jacobsen, 1999). Paaps (2006) argues this as a result of specialization of married men given that the wives

perform many of the tasks within the household. For females, the effect of marriage is considered often to be the opposite. Mincer (1962) describes this as the presence of more options for time allocation for females. This is the case especially if young children are present, but also in many cases related to the social norms of different countries. Women may be more affected, especially in developing countries, given they are responsible for providing the majority of childcare services, which is also related to Becker's home production hypothesis (Gangadharan *et al.*, 1996; Becker, 1964). However, this variable could not be included in our model given that we are using every adult individual in the household, while the information on marital status is available only for the head of household.

5.4.1 Data Description

The dataset used in this chapter is the same as in the Chapter IV, UNDP 2010, a survey conducted with 4,000 households with a stratified sampling procedure based on regional distribution of households. Similar to the consumption profile of the household, this survey contains information on the labour force participation and employment of the individuals. Furthermore, this survey is also relatively wide in terms of the area it covers with regard to household characteristics migration profile of the household, including the presence of remittances. The survey allows the inclusion of all adult households in the model given the question it contained on the composition of the household. The question was:

“Please list the members of your family, age, gender, education and employment. Please begin with head of household.”

In order to obtain more detailed information on the employment and activity, the survey listed the options applicable for each individual. For each individual in the household, the employment status was required to be reported in the following form:

The individual is:

- a) Employed*
- b) Not employed (looking for work)*
- c) Not employed (not looking for work)*
- d) Not applicable*

This question allows the distinction to be made between being active in the labour market (those who reported option a) and b) and being inactive in the labour market, that is, option c) the d) not applicable, category was usually assigned to persons below the age of 18 and above the age of 64. The specification, which aimed at investigating the probability to be employed, used only the observations that were reported option a) employed, and b) not employed but looking for work, given that these categories represent the active labour force from this survey.

From the sample of 4,000 households, we were able to obtain information on 6,175 females labour force activity. As presented in Table 5.1, with regard to activity, about 40 percent are active in the labour market. The mean age level of females in this survey was 36.8 and half had completed secondary education. Only 8 percent of females had completed university education. The regional distribution of labour force activity shows a higher concentration in Prishtina (about 23 percent) while the other regions are represented with around 20 percent, except Mitrovica with 16 percent. Rural households

represent nearly 48 percent, of which 20 percent have reported productive assets in their household. Home ownership is an important characteristic of Kosovo given that 92 percent of individuals live in their own house. The average number of children below the age of 7 per household is 0.32 while average number between the ages 7 and 17 is one per household. The mean number of seniors is nearly 0.3 per household. One of the most interesting numbers in this data set is that the average number of unemployed adults per household is relatively high at 2.6. Regarding the non-labour income from pension and social assistance, the mean value is 5.3 euros *per capita* a month for the total sample. However, it is 21 euros on average for the households that receive them. Remittances are higher compared to social and pension income, given that for the total sample they average around ten euros per household, while for the households receiving them, the mean is around 50 euros *per capita* a month.

Table 5.1 Descriptive Statistics for Female Individuals

	Prob. Of being Active (Females)					Prob. Of being Employed (Females)				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Active	6175	0.40	0.49	0	1.0					
Employed Females						2474	0.45	0.50	0.00	1
Age	6175	36.83	13.00	18	64.00	2474	34.35	11.27	18.00	64.00
Age-Squared	6175	1525.43	1011.55	324.00	4096.00	2474	1306.89	841.12	324.00	4096.00
Secondary Education	6175	0.51	0.50	0	1	2474	0.63	0.48	0.00	1
University Education	6175	0.08	0.27	0	1	2474	0.16	0.37	0.00	1
Mitrovica	6175	0.16	0.36	0	1	2474	0.13	0.34	0.00	1
Prizren	6175	0.20	0.40	0	1	2474	0.13	0.34	0.00	1
Peja	6175	0.20	0.40	0	1	2474	0.27	0.45	0.00	1
Gjilan	6175	0.21	0.40	0	1	2474	0.25	0.43	0.00	1
Rural with Productive Assets	6175	0.20	0.40	0	1	2474	0.15	0.36	0.00	1
Rural without Productive Assets	6175	0.28	0.45	0	1	2474	0.27	0.45	0.00	1
Home Ownership	6175	0.92	0.27	0	1	2474	0.90	0.30	0.00	1
Children under age of 7	6175	0.32	0.66	0	4	2474	0.32	0.65	0.00	4
Children from 7 to 17	6175	1.03	1.17	0	6	2474	0.97	1.13	0.00	6
Seniors	6175	0.28	0.56	0	5	2474	0.27	0.57	0.00	5
Unemployed Adults	6175	2.61	1.57	0	8	2474	2.23	1.61	0.00	8
Pension and Social assistance Income	6175	5.35	18.92	0	525.0	2474	4.61	16.93	0.00	525.0
Remittances	6175	9.90	56.96	0	2516.67	2474	9.24	74.45	0.00	2516.67
Maximum Education of second Household Member	6175	12.77	2.98	0	28.0	2474	12.94	3.03	0.00	28.00

These reported statistics do not change substantially for the females that are employed, hence, only substantial variations will be discussed. In total, the number of females that are active in the labour market is 2,474. Employed females are on average around 2.4 years younger than the total sample. The major difference between the employment and activity data sets is that in the former 37 percent of females have completed university education (compared with less than 10 percent in activity data set).

With regard to males, we obtained 6,888 observations with the probability of being active. Males are active in the labour market at a considerably larger level than females, at around 78 percent. In terms of age, there is no substantial difference from females, given that average age of male individuals is nearly 36. However, males have more education, given that of the total males between the age of 18 and 64, 65 percent completed secondary education and 16 percent completed university education. With regard to other variables, there are only slight differences from the female figures, notably a lower average level of pension and social assistance income at 4.5 euros per month, which, when measured only for the pension and social income recipients, is higher at 22 euros per month *per capita*. With regard to remittances, the average amount in the sample is slightly higher than 10 euros and for the recipient households this is at 55 euros per month. For the males that are active in the labour market, we were able to obtain 5387 observations for which the employment is at 70 percent, which is considerably higher than females (Table 5.1 and Table 5.2). However, the difference in terms of education between the total sample and those being active is not large as in the females' data set. The other reported statistics, as presented in Table 5.2, are relatively consistent through the two measures of participation.

Table 5. 2 Descriptive Statistics for Male Individuals

	Prob. Of being Active (Males)					Prob. Of being Employed		
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.
Active	6888	0.78	0.49	0	1			
Employed Males						5387	0.70	0.46
Age	6888	35.70	13.26	18	64	5387	36.36	12.15
Age-Squared	6888	1450.31	1029.30	324	4096	5387	1469.21	941.20
Secondary Education	6888	0.65	0.48	0	1	5387	0.65	0.48
University Education	6888	0.16	0.37	0	1	5387	0.18	0.39
Mitrovica	6888	0.16	0.37	0	1	5387	0.16	0.37
Prizren	6888	0.23	0.42	0	1	5387	0.23	0.42
Peja	6888	0.19	0.39	0	1	5387	0.19	0.39
Gjilan	6888	0.19	0.39	0	1	5387	0.20	0.40
Productive Assets	6888	0.22	0.42	0	1	5387	0.23	0.42
No Productive Assets	6888	0.29	0.46	0	1	5387	0.29	0.45
Home Ownership	6888	0.93	0.26	0	1	5387	0.93	0.26
Children under age of 7	6888	0.28	0.63	0	4	5387	0.30	0.64
Children from 7 to 17	6888	0.93	1.14	0	6	5387	0.94	1.15
Seniors	6888	0.27	0.57	0	6	5387	0.27	0.58
Unemployed Adults	6888	2.64	1.58	0	10	5387	2.47	1.57
Pension and Social assistance Income	6888	4.54	15.83	0	525	5387	4.01	14.60
Remittances	6888	10.50	50.99	0	2166.67	5387	11.05	54.81
Maximum Education of second Household Member	6888	13.11	2.66	0	22	5387	13.13	2.58

It must be noted that data on activity and employment are not comparable with the national labour market data given the very strict definition of labour force activity in the labour force surveys. For instance, the question in the survey used here does not specify the period length of job-search activity in order to classify according to the labour force survey standards. While the labour force survey in Kosovo, for those who seek a job is followed by another two criteria which could invalidate the activity of the individual. For instance the labour force survey in Kosovo asks to state the following:

The individual is looking for a job:

- a) *The individual searched for a job actively during the last four weeks*
- b) *The individual could have started to work within two weeks if he/she found a job.*

If the individuals would reply no to any of these two questions, then according to the labour force survey standards, this individual is not considered to be active in the labour market.

5.4.2 Potential Endogeneity

One of the issues in estimating the model presented in the previous section is the endogeneity problem with some of the variables. It may be argued that variables such as family size, composition, education and remittances are endogenous. This could be as a result of the so called old-age hypothesis which is particularly important for developing countries. This hypothesis suggests that parents are not sure if they can support themselves during old-age and as a result they rear children to ensure support (Willis, 1979). Remittances are often discussed to be endogenous to the presence of the migrant from the household. This is because, under the income risk diversification strategy of the household, it is often discussed that it is households' decision to send a migrant abroad in order to receive remittances. This is also thought to be more likely for larger households, given their higher potential to send a

migrant. Also, it is likely that poorer households send a migrant in order to receive remittances (Glewwe, 1990; Adams and Page, 2003).

The model presented in equation 5.11 includes the variable of remittances and income *per capita* in the household from other family members. In the data set that we use, the questions that were asked do not cover any area that could provide a potential instrumental variable for remittances. The relevant literature often uses the presence of money transfer agencies as an instrument for remittances; however, in the case of Kosovo such data are not available for rural areas given that most of the money transfer agencies are located in bank branches across the country. At the same time, bank branches are only located in cities and towns, which does not represent the flow of remittances into rural areas. Consequently, the assumption of pre-determination of migration is used, hence the effect of remittances is considered conditional on a previous decision of the household to send a member in migration, rather than a current decision. Given the profile of migration from Kosovo, which largely was initially caused by political motives (see section 2.3.3), but then many remained in developed countries given the income difference and employment opportunities, this is arguably a reasonable assumption in this estimation. Total income in the household from other household members may be simultaneous with the labour force participation of a particular member as the decision can be viewed as part of the household's choices. In the estimation here, however, income is proxied by the maximum years spent in education by another family member (for which we continued to use the symbol (W) in the equations from 5.2 to 5.11), as the questionnaire has only information on total household income and the individual income of the head of household, so that the income from other household members could not be calculated. The reason why we consider the maximum years spent in education by a member as a valid proxy is that this variable is expected to be correlated with household income, given that it reflects the earnings capacity of the other household member. Given that the

education levels of adult members of the family are from past, not current, decisions, the variable is not is not treated as endogenous. Indeed, many of the household characteristics such as assets, migration, size and similar although not exogenous, are predetermined on the past choices as a plan to maximize the household utility (Glewwe, 1990). Consequently, the estimation of the equation (5.11) is conditioned on past decisions.

5.5 Empirical Findings

This section presents the findings of the model on the determinants of labour force participation and determinants of employment. The results are presented for males and females in the household separately. The different specifications in terms of dependent variable (probability of being active and probability of being employed) and in terms of gender are based on theoretical and empirical considerations as discussed in sections 5.3 and 5.4. The initial model developed included non-labour income such as social assistance and pension income and remittances and additionally accounts for the income of other household members (proxied by maximum education of another household member).

The full results of the estimation of the model using probit is presented in appendix 5.2.²⁵ Table 5.3 presents the Average Marginal Effects (AME) as opposed to the Marginal Effects at Mean (MEM). The former takes the values of the variables for each observation in the sample and gives the marginal effect averaged across the observations in the sample. The latter takes the average of each individual variable in calculating the overall marginal effect. The choice of presenting Average Marginal Effects (AME) rather than Marginal Effects at the Mean (MEM) for the model given in equation 5.11 is because it contains variables which are mathematical transformations of another variable and the presence of dummy variables.

²⁵ Clustering the standard errors by household may be appropriate in this model, however, at the time of this investigation, this option was not available in STATA for the procedures used.

Bartus (2005) identifies that the literature is generally inconclusive as to which marginal effects are preferred. MEMs have often been presented in the literature as the calculations of these have been more readily available through econometric programmes. However, recently, in STATA with the development of the *margins* command, AMEs is almost as easily obtainable as MEMs. Long (1997) and Greene (2003) suggest that the main reason why AME are preferred against MEM is in the specific values set to the variables with MEM, the usual being means, which for dummy variables often represents non-existent observations. The standard MEMs reported in STATA for a dummy variable consider the change for 0 to 1 for that variable, but in doing that all other variables, including other dummy variables, are put at their mean value. In the models that we have estimated, there are nine dummy variables and, for example, in the calculation of the MEM of household members over 65 (the variable Sen in equation 5.11), the variable secondary education is given its mean value, of 0.51, in the probability of being active for females, when the variable can only in practice take the value 0 or 1. Thus the MEM is not the marginal effect of any possible observation, Although the software does allow for imposing particular values in calculation a MEM, it is unclear what particular values to impose to give a representative estimation, given the large range of possibilities when multiple dummy variables are involved. Although often the literature considers MEMs as generally a good approximation of AMEs, Bartus (2005) suggests that the dummy variable problem is more fundamental when the regression model contains more dummies which indicate different categories of a single dummy variable. In model specified in section 5.4 there are four sets of dummy variables, three of which have more than two categories (Education, Region and Rural households with and without productive assets against urban ones); hence using MEM is problematic from this viewpoint since the standard MEM command in STATA, *mf*, takes the mean of each variable separately, not recognising that these are alternatives. The issue with non-linear functions is also that the values taken for

an observation are not independent, but this is not recognised in the standard calculation of MEMs. In the estimation here, given the age of a person, age squared is given. The standard MEM, by using the mean values of each variable separately, does not use the square of the value of the single term in the calculation. The AME, by taking the values by each individual observation does. (Recent advancements in programmes such as STATA do include more complicated procedures that allow the imposition of particular values to circumvent this problem if using MEMs), Given the potential complications presented and the preference of AME over MEM by Greene (2003) and Long (1997), in estimating model specified in section 5.4, we will use the AME. The results of the AME are presented in Table 5.3. The results are presented for females and males separately while the dependent variables represent the probability of being active and probability of being employed. The interpretation is on average throughout this section.

Table 5.3 Average Marginal Effects for LFP and Employment Determinants

	Males		Females	
	Pr_Active	Pr_Employed	Pr_Active	Pr_Employed
Age (combined effect)	0.0099*** (0.000)	0.0103*** (0.000)	-0.0003 (0.472)	0.0065*** (0.000)
<u>Education Base Level Preliminary</u>				
Secondary Education	0.119*** (0.000)	0.0672*** (0.000)	0.2487*** (0.000)	0.15941*** (0.000)
University Education	0.203*** (0.000)	0.140*** (0.000)	0.5315*** (0.000)	0.44297*** (0.000)
<u>Region Base Level Prishtina</u>				
Mitrovica	0.048*** (0.002)	0.0335* (0.048)	-0.0392** (0.026)	-0.1307** (0.026)
Prizren	0.088*** (0.000)	0.0746*** (0.000)	-0.0169 (0.320)	-0.0099 (0.731)
Peja	0.080*** (0.000)	-0.068*** (0.000)	0.2127*** (0.000)	-0.0376 (0.112)
Gjilan	0.073*** (0.000)	0.001 (0.967)	0.0885*** (0.000)	-0.0804*** (0.001)
<u>Urban Households Base</u>				
Rural Household with Productive Assets	0.053*** (0.000)	0.0439*** (0.001)	-0.0864*** (0.000)	-0.0354 (0.141)
Rural Household without Productive Assets	0.008 (0.415)	-0.028** (0.028)	-0.0059 (0.646)	-0.1046*** (0.000)
House Ownership (1=Yes)	0.018 (0.309)	0.114*** (0.000)	-0.042** (0.043)	0.07834*** (0.003)
Children under 7	0.016** (0.032)	0.013 (0.131)	0.0038 (0.657)	-0.0405*** (0.003)
Children from 7 to 17	-0.016*** (0.000)	-0.0067 (0.177)	-0.0221*** (0.000)	-0.0413*** (0.000)
Seniors	-0.022*** (0.007)	-0.001 (0.932)	-0.0082 (0.429)	0.00117 (0.941)
Unemployed Adults	-0.035*** (0.000)	-0.097*** (0.000)	-0.0341*** (0.000)	-0.1264*** (0.000)
Pension and Social Income per capita	-0.00013*** (0.000)	-0.003*** (0.000)	-0.0003 (0.337)	-0.0011** (0.051)
Remittances <i>per capita</i>	0.00004 (0.710)	0.0001 (0.406)	-0.00002 (0.814)	-0.00001 (0.553)
Maximum Education apart from observation	-0.009*** (0.000)	0.011*** (0.000)	-0.008*** (0.000)	0.0011 (0.720)
Number of Observations	6888	5387	6178	2474

P-Value in Parenthesis with ***, ** and * denoting 1, 5 and 10% level of significance

The interpretation will be variable by variable, across the four different specifications (*i.e.* interpreting the impact of each independent variable on each of the four specifications). As the main aim of this chapter was to identify the impact of remittances we will begin by interpreting its results, followed by the impact of other non-labour income on the labour supply.

Remittances

Monthly remittances *per capita* do not have a statistically significant effect in any specification. Such results may be due to the possible temporary nature of the remittances flows, which suggests that households do not make decisions on the labour supply (both activity and employment) on temporary sources of non-labour income. As elaborated in section Chapter III, sections 3.2 and 3.3, remittances are often characterized with inverse U shape behaviour over time, suggesting that after some years in migration, migrants could send less as a result of their establishment in the host country. Such results are found often in the literature (Lucas and Stark, 1985; Funkhouser, 1995) and they have also been found for the case of Kosovo (Havolli, 2010). In addition, the relatively young population in Kosovo could also be a factor which makes the impact of remittances absent on the labour supply, given that it is important to build labour market experience, regardless of income levels. However, we have further investigated the robustness of these results with other specifications, but these additional estimations provided results in line with this interpretation (see section 5.5.1).

Non-Labour Income

The non-labour income variables, that is the monthly pension and social income and remittances *per capita*, were treated separately due to the nature of these two variables. It may be argued that pension and social income is of permanent nature and there is no risk that households would lose this source of income, while for the remittances, it is often argued that it is a temporary source of income. Results suggest that pension and social income is statistically significant in decreasing the probability of being active for males and decreasing the probability of both males and females of being employed. An increase of 10 euros per month in pension and social income *per capita* decreases the probability for male individuals of being active by 1.2 percentage points and by 3 percentage points of being employed. For females, in terms of finding a job, a 10 euro increase in social and pension income *per capita* decreases the probability by 1.1 percentage points.

Education

The effect of education, as one of the main characteristics of human capital, is in line with expectations, suggesting that higher educated individuals are more likely to be active and employed, compared to those with preliminary education, which is the benchmark category. The estimates are highly significant across all specifications. Male individuals with secondary education are 10.6 percentage points more likely to be active in the labour market compared to the counterparts with preliminary education. However, the effect of secondary education is lower in terms of increasing the average probability of becoming employed, with an increase of 6.8 percentage points. Regarding university education the effect, as expected, is larger compared with other levels of education. In the specification for males, the university education increases the probability of being active by 17.9 percentage points when compared to the base category of males with preliminary education. Furthermore, university education

increases the probability of becoming employed by 15.2 percentage points, compared to the base category of preliminary educated males. Education is estimated to have considerably higher effects for females than for males. The effect of secondary education on females suggests that those with secondary level education have 24.9 percentage points higher probability than preliminary educated females in being active. The probability of female individuals to become employed increases by 15.9 percentage points if they completed secondary education. University education increases substantially the probability of being active for females by 53 percentage points. Similarly, the effect of university education on the probability to become employed for females is much higher compared to males given that it increases the probability by 44.3 percentage points.

Regions

In terms of regions, the results suggest that being from a region other than Prishtina significantly increases the probability of being active for males. In detail, for the probability of being active the estimates are by 4.7 percentage points in Mitrovica, by 8.5 percentage points in Prizren, by 7.8 percentage points in Peja and by 7.2 percentage points in Gjilan. In terms of employment, the results are similar, with a higher probability of being employed than Prishtina, for individuals from Mitrovica (3.3 percentage points – though only significant at the 10% level) and Prizren region (7.6 percentage points). However, men from Peja have a reduced probability of being employed (by 6.5 percentage points) while the effect in Gjilan is statistically insignificant. For females, the results are different. In Mitrovica, females have a lower probability of being active and becoming employed against Prishtina by 3.9 and 13.1 percentage points respectively. However, females from Peja and Gjilan have a higher probability of being active by 21.2 percentage points and 8.9 percentage points respectively. However, in terms of employment, being from Gjilan is significant but with

reduction in the probability by 8.0 percentage points compared to Prishtina, while the effect is insignificant in Peja.

The results of these variables is problematic given that labour mobility is not considered a major issue in Kosovo, having in mind the close distance between major cities of these regions (the most distant being around 80 kilometres). However, in explaining the higher employment probability, we must have in mind that for many of the individuals we do not know their place of employment and it might easily be that because of higher unemployment rates in these regions, they might work in and commute to Prishtina. For females the reduction in probabilities of being active may be explained by the social norms that exist in Mitrovica region and similarly, the positive effect for Gjilani and Peja regions. These social norms are built on the historical distribution of industries across Kosovo since the end of World War Two. For instance, the Mitrovica region has always been characterized by heavy industry in mining and processing of metals and minerals, which may be considered mostly as jobs for males. Hence, the female labour force participation may have been lower traditionally as a result of the industry distribution. Elsewhere, the Gjilan region was characterized by developed tobacco and textile industries, the first usually being run by small family farms which may have included females as well as males and the second, the textile industry is traditionally female orientated and this is also found in the Peja region. These light industries that existed in may have created the tradition that females participate in the labour market. However, it must be taken into account that most of these industries today are rather less important or non-functional, first, given the lack of investment and second, the privatization process which left them idle for relatively long time. Consequently, the higher probability of employment for females in Prishtina compared to Gjilan and Mitrovica, may be explained by the lack of industrial development but also due to the larger presence of public

institutions in the Prishtina region which strictly enforce equal employment rights for public sector jobs.

Rural with and without productive assets against urban

In terms of being active, the estimates suggest differences between households in rural and urban areas depend on the presence of productive assets. The results suggest that male individuals who possess productive assets in rural areas have a 5.2 percentage point higher probability of being active and a 4.3 percentage point higher probability of being employed compared to those in urban areas. Females on the other hand are 8.6 percentage points less likely to be active when the rural households possess productive assets. This may be as a result of household work conducted by females given that the productive assets in the questionnaire represent the possession of land, tractors, cows and other livestock in the household. Moreover, males from rural households without productive assets have a 2.7 percentage points lower probability of being employed compared to urban individuals. There is no significant difference in the probability of being active between urban and rural without productive assets between males and females. However, in terms of being employed, female individuals from rural areas without productive assets are less likely to be employed by 10.4 percentage points compared to their counterparts in urban areas. This may indicate the lack of jobs in rural areas.

Home Ownership

Regarding home ownership, it is statistically insignificant for the probability of being active for male households but significant in terms of being employed with an increase of 11.3 percentage points. For females, the effect is negative in terms of being active, but similar to males, positive in terms of being employed. Given that Kosovo is relatively small country, home ownership does not necessarily decrease labour mobility in the country and the

commuting times are relatively short. Consequently the home ownership might be viewed as an economic asset which affects the decision to be inactive for females (estimated reduction of 4.2 percentage points), but for those who participate, the estimate suggests an increase in the probability of being employed by 7.8 percentage points.

Care for the Children and Seniors

The presence of children under the age of 7 is statistically insignificant for male employment and female activity. However, for females the probability of being employed decreases by 4.1 percentage points when the number of children under the age of 7 increases. Regarding males, it is significant towards being active, suggesting that as the number of children increases, the probability of becoming active increases by 1.6 percentage points. The presence of children from 7 to 17 has a negative effect for both males and females on the probabilities; however, the effect is very low for males given that it decreases the probability of being active by 1.6 percentage points and the effect on being employed is statistically insignificant. For females the result is significant and slightly higher suggesting that as the number of children from 7 to 17 increases, the probability of being active decreases by 2.2 percentage points and of being employed decreases by 4.1 percentage points. The number of seniors (of the age 65 and over) in the household is statistically insignificant with the exception of being active by males, who have a lower probability by 2.2 percentage points. This result may be as a consequence of some unobservable characteristic of households such as the local customs that the elderly parents live with the youngest son. Under these circumstances, there may be unobserved transfers from other relatives to this particular household, hence decreasing the probability of the individual participating in the labour market.

Unemployed Adults

Another finding is that as the number of unemployed adults in the household increases,²⁶ the probability of individuals being active and employed decreases for both males and females. The probability of being active in the labour market for both males and females decreases by 3.4 percentage points. In terms of the probability of being employed, the results differ slightly between males and females, with the reduction for males being a little lower, at 9.9 percentage points, compared to females at 12.6 percentage points. These findings are consistent with the view that members of households with a higher number of unemployed are discouraged, as their perception that the probability of finding a job is low is increased. It appears that the discouraged worker effect is pronounced when the unemployment data are viewed at household level. In Kosovo there is a lack of regional statistics on unemployment, which may support why this is the case. Reviewing the unemployment data at country level nearly 15 percent of working age population are not looking for a job and are treated as discouraged workers (SAK, 2013).

Maximum years of education of another member

Given that we did not have individual income of other household members separately but only total household income, we used the maximum years of education of the other household members as a proxy for other members' income. The results are somewhat mixed when the theoretical expectation is considered. This is because, in terms of being active, the results are in line with what is expected and suggest that as other members' income increases the probability of the member under investigation being active decreases, for both males and females, although the effects are relatively small. However, for employment probability the results suggest that as income of the other members increases the probability of being

²⁶ The number of unemployed adults does not include the individual for that particular observation.

employed for males increases as well (although only by a little over 1 percentage point), while for females it is statistically insignificant. The social norms that exist in the country, where males are traditionally considered those who work for the entire household as the breadwinners could explain the lack of effect with an increase in income from other members, though not a positive effect.

5.5.1 Robustness Check

Given that remittances are the variable of the interest for this chapter, other specifications have been undertaken to see if the effects changes under other circumstances. Their significance changes when remittances are specified in absolute value but the effect is extremely small. Defining the remittances variable as the absolute value in the household rather than remittances *per capita* gives an estimate that is statistically significant and increases the probability for males to be active by 0.4 percentage points and on becoming employed by one percentage point if remittances increase by 1000 euros in the household (Appendix 5.3.2), a result contrary to prior expectations. However, whilst significant, this effect is not of a size to be regarded as economically important as an increase of 1000 euro is a very large increase in the Kosovo context in this period. On the specifications for females, the results are statistically insignificant. In the data set the mean of remittances is only 60 euros monthly for the entire sample and around 300 euros for remittance recipient households.

5.6 Conclusions

In this chapter, the neoclassical model of labour supply has been used to investigate the labour force participation and the probability of being employed for the case of Kosovo. To our knowledge, this represents one of the first detailed studies of labour force participation for Kosovo and one of the few that exist for transition countries. Given that the working

hours have not been available, we used these two definitions, where the second one, might have to some extent give an indication of the reservation wage. Furthermore, the use of alternatives to the working hours avoids the issue of whether, when the working hours when at zero, this reflects inactivity or those actively looking for a job. The models have been estimated using Probit estimation method, separately for males and females.

The findings suggest that remittances, as an important source of non-labour income, do not affect the labour force participation in any of the originally specified models. This might reflect the perceptions of the home country household members that remittances are of a temporary nature, with the risk of not being a permanent flow of income. In the robustness check, an unexpected positive effect was found for males, but the size of this effect was very small. Permanent non-labour income measured by the pension and social income suggests that the results are in line with the theoretical framework of labour-leisure model. This variable indicates that as non-labour income increases the probability of being active decreases for males, while for females it is statistically insignificant. In terms of probability of being employed, the results are negative for both males and females though the effect is small.

Apart from the two variables of interest, the other variables mostly strongly support the theoretical expectations. Among the most important are the education variables which are highly significant and positive with regard to probability of being active and employed. The effect of this variable is much stronger for females. Regional variables on the other hand, may to reflect the prevailing social norms that exist in Kosovo as a result of the past distribution of industries across the country, suggesting that employment and participation for females may be as a result of an inactivity tradition in heavy industrialized regions. Regarding the individuals who own a house, results are positive in terms of employment for

males and females. However, this may reflect more on the wealth of the household rather than the often postulated labour immobility of home owners. One of the main findings of this chapter is that as the number of unemployed adults increases this decreases both the probability of being active and employed for males and females. This result could be interpreted as the discouraged worker effect.

Conclusively, the findings of this chapter are largely in line with the theoretical framework and the literature with the exception of the remittances flow. Further research may be required to investigate the impact of remittances. For Kosovo, in such future research it may not be as important to investigate this from the viewpoint of hours of work as much as to have individual data with detailed income from both labour and non-labour sources.

CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

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6.1 Introduction

The aim of this thesis has been to investigate remittances from the viewpoint of the home country considering, in particular, three aspects. Firstly, the macroeconomic determinants of remittances, with special reference to the effect of policies applied to increase and redirect these. The second and third aspects have been examining the micro-foundations of the effects of remittances on household expenditure and labour force participation, applied to the case of Kosovo.

The existing studies on the macroeconomic determinants of remittances have been limited in terms of their cross-section and time-series dimension. Furthermore, the evidence is scarce in terms of the impact of host country economic factors on the flow of remittances (with a few studies addressing this from the viewpoint of a home and host country). With regard to the impact of home country policies, to our knowledge, this is the first study that attempts to evaluate policies to increase remittances. In this context, with regard to developing countries, Chapter III focused on the following issues: a) the role of policies in attracting remittances, b) the effect of host countries' economic factors on the flow of remittances. The standard theoretical approaches of altruism and self-interest were used for the explanation of the macroeconomic factors impact on remittances. These approaches have been built on individual or household microeconomic foundations, however, on the assumption that the macroeconomic developments are the consequences of aggregated individual decisions, these theories have been adopted for the macroeconomic level studies.

With regard to Chapter IV, we explicitly draw on the Working-Leser model to investigate the role of remittances for household expenditure patterns, a model which is based on Engel's law suggesting that poor households spend a higher share on consumption. With regard to

remittances, there are three main viewpoints of their impact. The first view considers that remittances have a problematic effect on the household expenditure patterns. This hypothesis is based on the notion that remittances distort the expenditure behaviour and that remittances mostly finance luxury 'status' goods and consumption; consequently, according to this view, remittances recipient household spend a higher share on consumption. This view considers that remittances expenditure towards luxury goods is as a result of asymmetric information and economic uncertainty. As a result, there is a moral hazard problem since the use of remittances may be unobservable by the migrant. The second view hypothesizes that the remittances decrease the share of households' expenditure on consumption goods. Accordingly, the share of income spent on durable goods and human capital investments such as education is expected to increase. Typically this may be the case when remittances are viewed as a temporary source of income. The third view considers that remittances behave just like any other income and that remittance recipient households do not have different expenditure patterns from other similar households. Given these competing views, Chapter IV aimed at addressing the following questions: a) does the presence of remittances affect the household expenditure patterns, b) is there a role played by the migrant in the expenditure patterns, and finally c) does the households' behaviour change with increased frequency of visits by migrants.

The implications of remittances for the labour market are investigated from the viewpoint of neoclassical theory, which is usually the starting point for labour force participation analysis. This view considers leisure as a normal good and the utility function for individuals being dependent on the leisure-work trade-off. The investigation of labour force participation using neoclassical theory is particularly important given that the theoretical models address the presence of non-labour income; which for the case of Kosovo is particularly important given the relatively large amounts of remittances flows. In line with the standard empirical

approach and theoretical base, the models have been designed separately for males and females. However, it appears that the literature does not make a clear distinction between participation and the probability of finding a job, given the widely used working hours as dependent variable. Without properly clarification of active and inactive individuals, this approach treats the individuals who are not active as being the same as those who are actively looking for jobs. In this context, our model has been developed for two different dependent variables, the probability of being active in the labour force and the probability of being employed. Therefore, the objectives of Chapter V were to: a) find the factors affecting the probability of being active and b) find the factors which affect the probability of being employed.

The structure of this chapter is as following: section 6.2 presents the main empirical findings of the models used to investigate the research questions. Policy implications are presented in section 6.3. The contribution to knowledge of this thesis is presented in section 6.4, followed by the limitations and suggestions for further research in section 6.5.

6.2 Main Findings

The remittances debate was initiated in early 1980s given that the data suggested that they were an importance source of financing for many developing countries. Nevertheless, with the improvement of data collection for many countries, the surge in remittances especially in post 2000 revealed the importance for further research. Initially the literature was focused on determinants of remittances and then developed into examining the implications of remittances for recipient economies.

6.2.1 What macroeconomic factors are determining remittances? Do Policies Work?

Realizing that remittances for many countries represented a substantial source of financing but also a source of hard-currency, many countries have initiated policy initiatives to increase the flow of remittances, which have not so far been evaluated in the literature. In our research, we used a panel of 52 countries for which remittances are an important source of financing.

This panel data has been used to investigate the macroeconomic determinants of remittances in Chapter III. Special attention has been paid to the policy initiatives variables which were specially designed for this thesis by reviewing all policies that these 52 countries have applied (to our knowledge). The data for these countries were available in the range from six to 30 years per country. The composition of the data set and the size of the panel affected the choice of which estimation method to use. Many of the estimation methods such as Anderson-Hiaso, Arellano-Bond and Arellano-Bover, which are generally used to estimate a dynamic panel model were considered, but they are specially designed for a large cross-section and short time series. In our case, as mentioned above, the cross-section is not large and with many countries having as many as 30 years of data, the time series is relatively large. Given that we also included a policy variable, it was in the interest of the study to keep as long as possible time-series dimension, since this will allow the policies to take effect; these are often considered in the literature as slowly acting and moving variables. The estimation method used in our case has been the unobserved component model AR(1), which is based on the expected autoregressive errors in a regression model, which in this case can be represented as a dynamic regression with non-linear common factor restrictions and uncorrelated disturbances. For AR (1) to be an appropriate method is necessary that the Common Factor Restriction (CFRs) hold, which was the case in our estimation.

In specifying the model for macroeconomic determinants of remittances, two dependent variables have been used, namely, remittances/GDP and remittances *per capita*. The set of independent variables which may affect the flow of remittances is in line with the literature but also includes a policy initiative variable. Various specifications have been tested given the complexity of the policy variable: a simple dummy variable whether the country applies any policy or not; whether a country applies only one or more policies; and finally, the type of policies applied by the country, whether they are supportive policies in terms of taxation, private sector schemes or other government policies which generally include improvements of payment systems, fee reductions, whether a country has a Ministry for Diaspora, legal advice on investment specially for migrants and similar.

With regard to the policy variable, it was insignificant across all but one specification, where it suggests that applying only one policy results in negative effect on the share of remittances to GDP compared to the countries that do not apply any policy. The model was also estimated including governance indicators, as these may be correlated with remittance policies, which, however, decreased the number of observations. The results did not change with this wider specification; the policy initiative variable was insignificant. Based on the results, the main determinant of remittances/GDP is the GDP of home country, such that as the real GDP *per capita* of home country increases, remittances to GDP decrease. Previous studies consider that remittances have a countercyclical behaviour and are theorized to be driven by the altruistic motives. In this case, when economic conditions in the home country improve, the economic conditions of the households improve as well, and hence migrants remit less. It also hypothesized that remittances are the result of informal household arrangements suggesting that it is a strategy of income risk diversification, that is, in worsening economic conditions, remittances increase and vice versa. Such an effect is not observed when remittances *per capita* are used as the dependent variable, given the

statistically insignificant result of the home country GDP *per capita*. The real GDP *per capita* of main host country has a positive effect on remittances in both formulations, suggesting that as the relative living standards in host country improve the remittances to the home country increase. The effect is stronger in the remittances *per capita* formulation compared to the remittances to GDP. Notwithstanding, the effect on real GDP *per capita* of host country is estimated to be increasing at decreasing rate. Unemployment in the host country is statistically significant and with relatively large estimated effect for both remittances to GDP and remittances *per capita*. However, this variable appears with a contrary sign to the usual expectations. The results suggest that as unemployment increases in the host country, the share of remittances to GDP increases as well. This might be an indication of the temporary nature of migration in that in worsening labour market conditions migrants send more remittances and they may be signalling their intentions to return in the home country, which may also be considered as closely related with the income maximization hypothesis. This is especially important when considering the cost of living in developed countries compared with those in developing countries.

6.2.2. Do Remittances and Other Migration Characteristics Change Household Expenditure Patterns?

The next objective of the thesis was to investigate, at household level, the impact of remittances on expenditure patterns and the role of migrants in decision making within the households. Furthermore, it addresses whether the frequency of visits decreases the potential for moral hazard. Three main expenditure categories have been used to examine the effects; the share of current consumption, durable goods and education expenditure to total expenditure of the household. The model was estimated using Ordinary Least Squares for the current consumption, and the Tobit model for the durable goods and education expenditure.

The main concern in Chapter IV was to investigate the impact of remittances on expenditure patterns. This variable has been interacted with log of income to consider if receiving remittances effects expenditure differently from households' income from other sources. The results are statistically insignificant with regard to expenditure on current consumption and education; however, there is a positive effect with regard to durable goods, though the effect is very small. Thus overall the results suggest that spending of remittances is similar to spending other sources of income in the household and there is no reason to consider them differently from the policy perspective. In addition to the standard approach in the literature, we have also included in the model if the migrant advises the households on spending remittances and results suggest that an increase in income for the households receiving advice results in an increased share of expenditure on current consumption, while for the other categories of expenditure investigated the effect is insignificant. The effect of the migrant on expenditure was further expanded by including also the frequency of the visits, to investigate if some sort of control mechanism exists from the migrants' point of view. Results suggest that an increase in income, for the households who receive visits from migrants and receive remittances, decreases the share of expenditure on current consumption and increases the share on education. However, the effect of the presence of advice and visits variables is very small, which makes them economically unimportant.

The estimates of the effects of the standard variables identifying household characteristics employed in the model are largely consistent with the literature's findings. An increase of income results in a lower share of expenditure on current consumption. As the age of the head of the household goes up, the share of expenditure on current consumption decreases, but at a decreasing rate. However, the effect of age is reversed with regard to the expenditure on durable goods and education, suggesting that they increase but at a decreasing rate. The number of children is: statistically insignificant with regard to consumption; significant and

negative with regard to durable goods; and positive and significant with regard to the share of expenditure on education. The number of adults in the household is significant only with regard to expenditure on education, increasing at a decreasing rate. Education of the head of household is significant also only in regard to the share of expenditure on education expenditure, having a positive effect as expected. The gender of the head of household is significant with regard to the consumption goods category, suggesting that female headed households spend more, other things being equal, with a lower share being spent on durable goods. If the household own their house has a positive impact on the share of expenditure on consumption and durable goods. However, the relationship is negative when the share of expenditure on education is considered. Whether the head of the household is self-employed has no statistically significant effect on the expenditure on current consumption and durable goods, however, it is highly significant with a negative effect on the share of expenditure on education.

6.2.3 Are Remittances Decreasing Labour Force Participation and the Probability of being Employed?

The final objective of the thesis was to investigate the implication of remittances for the labour market in Kosovo. However, distinctive to the migration/remittances literature, two definitions have been used in our case, first, the probability of being economically active and, second, the probability of being employed. This distinction was argued as important in this thesis given the characteristics in Kosovo's labour market but also similar characteristics in many major remittance recipient countries, which are usually characterized with very high unemployment and low participation rates, especially for females (see Section 2.3.2). The models have been based on the neoclassical theory of labour force participation which among other personal and household characteristics considers also the impact of non-labour income on labour force participation and employment probability. We used Probit estimation and

reported the average marginal effect (AME) as opposed to the marginal effects at mean (MEM). This was because of concerns of the literature about the application MEM when models include dummy variables, particularly of more than two categories and squared terms, which was the case in our models.

The main objective of Chapter V was the investigation of the effect of non-labour income, in particular remittances, on the probability of being active and employed. In investigating this aspect, we obtained results which are either statistically insignificant or significant but with a very small effect. For instance, pension and social income is significant in decreasing the probability of being active only for males, but the effect is very small. Considering the probability of being employed, the estimated effect is negative for males and females, which may be the result of an increase in the reservation wage. Although part of non-labour income, remittances do not have a significant effect across all specifications.

In the estimated models, education appears to be one of the important variables, higher educated individuals are more likely to be active and employed, compared to those with only preliminary education; the estimates are highly significant across all specifications. However, the magnitude is always larger in the model specified for females. Regional variables are also significant in most of the models suggesting that being from a region other than Prishtina, on average, significantly increases the probability of being active for males. In terms of employment, the results are similar for most regions, with a higher probability of being employed against Prishtina. Results are more mixed in models specified for females. The difference between households in rural and urban areas in the presence of productive assets has also been taken into account. The results suggest that male individuals who possess productive assets in rural areas have a higher probability of being active and being employed compared to male individuals in urban areas. The lack of productive assets in rural

households makes it less likely for both males and females to be employed while it is insignificant for the probability of being active, compared to individuals in urban areas. Home ownership is significant and positive for males and females for the probability of being employed, while for females, however, it decreases the probability of being active. Given the mixed results and small size of the country, the effect of home ownership cannot be explained through the immobility of labour hypothesis but it could be viewed as an economic asset which affects the decision to be inactive for females.

It is theorized that amongst the important variables affecting labour force participation and employment probability is also the presence of children in the household, especially for female members. However, the results do not support this for Kosovo, given the relatively small effect in the cases when significant. As well as young children the model also included children from 7 up to 17 years, which did result in a negative effect across three out of four specifications. For male individuals the effect was a relatively small decrease in the probability of being active, while for females the effect was somewhat higher in both the probability of being active and probability of being employed. The number of seniors in the household is statistically insignificant in three out of four specifications and thus do not support the theory.

One of the important contributions of this thesis was the inclusion of the unemployed adults within the household in order to investigate discouraged worker/added worker effects. The results are highly significant across all specifications suggesting that a discouraged worker effect takes place when the number of unemployed adult household members increases. The effects are similar between males and females in terms of the probability of being active in the labour market, while in terms of the probability of being employed, a higher number of unemployed adults appears to discourage females more than males. Other household

members' income, (proxied by the maximum years of education of any other individual in the household in this estimation), is in line with expectations given that it decreases the probability of being active for both males and females. However, it increases the probability of being employed for males.

6.2.4 The Combined Findings in Relation to Alternative Theories of Remittances

The combined findings of the three empirical chapters with regard to whether altruism or the self-interest is the dominant motive behind sending remittances are summarized in this section. However, it needs to be borne in mind, as considered in section 3.3, that there are difficulties in making a clear distinction between these two possible motives.

In the altruism approach remittances are expected to be countercyclical, that is remittances/GDP decreases as the *GDP per capita* of home country increases, while in the self-interest case remittances are expected to be procyclical. The findings are of a countercyclical behaviour and thus, at macroeconomic level this provides support for altruism. Given that many policies are oriented towards making the home country more attractive, either in terms of taxation, private sector schemes or other government policies for migrants, the lack of significance of the policy initiatives variables in this thesis also arguably suggests that self-interest is not the prime motive.

With regard to the effect of remittances on household expenditure patterns, it is difficult to interpret whether the results clearly support altruism or self-interest. If concerned with altruism, the migrant may well want the home household to spend more on current consumption, especially if they would otherwise be in poverty (and for a sizeable minority of households in Kosovo remittances are their main source of income – see section 2.3.3). Given this motive, however, if the home household is in a slightly better financial position, encouraging expenditure to raise the long-run fortunes of the family would be appropriate, for

instance expenditure on education (but could also arguably be expenditure on particular durable goods given some family's situations). If self-interest is the main concern then the migrant may want to encourage wealth creation, rather than current consumption, but given the need under this view to maintain strong family ties it does not exclude use of remittances on current consumption. The findings are that the effect of income increase in the presence of advice on spending remittances from the migrant increases the current consumption, is arguably more in line with the altruism approach. The estimates also suggest that the frequency of visits of the migrant decreases the share of current consumption category and increases the share expenditure on education. This does not offer clear support for either view.

-Finally, with regard to the impact of remittances on labour force participation, what would be expected under the two approaches has not been fully developed in the literature. If the motive for remittances is altruism, a reduction in labour force participation with the presence of remittances may be seen as a minor side effect, whereas in the self-interest approach such a reduction in participation may be regarded more negatively by the remittance provider.

The evidence in this thesis is that remittances do not negatively affect labour force participation. However, the study did not investigate whether this may be because home country households wish to maintain in favour with remittance providers or for other reasons (such as regarding remittances as a short-run income source, as discussed in section 5.5), thus it is unclear how this empirical result bears on the altruism/self-interest debate.

In conclusion, the empirical results presented across chapters provide some limited evidence that altruism may be the primary factor why remittances are sent, but this debate is far from settled.

6.3 Policy Implications

The empirical investigation of specific aspects of remittances, including the span of the countries and years from a macroeconomic and microeconomic perspective provides evidence on which to base policy recommendations. Also, this may help consider the implications of remittances in recipient economies which may help government forecasting and planning.

6.3.1 Policy Implications from the Macroeconomic Findings

The overall findings of the macroeconomic determinants of remittances are that the behaviour of remittances flows towards home country is determined by the economic factors in both the home and the host countries, reflected by the effect of real GDP *per capita*. However, most importantly, the findings suggest that there is no evidence that policies applied to increase remittances have done so.

For the macroeconomic determinants of remittances and policy initiatives, the aim of the analysis was towards policy evaluation rather than new policy recommendations. However, some recommendations could be provided with regard to remittances. In this context, one of the main recommendations is that:

First, policies to encourage migrants to send more remittances do not seem to work. Thus the recommendation is that these should not be implemented – or at least any policy with anything more than minimal costs. There is no evidence that these are likely to be cost effective in bringing in more remittances. In this context, in application of policies, it is important to review the costs of implementing policies since these might be high. Such evaluation of the cost of policies should be carried out for specific countries against the magnitude of the benefit. For example, a policy such as having a Ministry for Diaspora may

have negligible costs for large countries; however, for small countries this may significantly affect the public expenditure of particular ministries. Another example could be the presence of tax breaks for imported goods up to some amounts or for some goods categories. This is because the increase of imports as a policy to increase remittances may not be cost effective since the loss on customs duty from the imported goods may be higher than the increased amount of remittances received. This is because literature often recognizes that countries where the duty free imports exists for migrants and specific amounts are usually implemented to categories of goods not being produced in the country, but often include luxury products. Other policies such as consultancy provided via telephone for potential investors and the presentation of investment opportunities, are usually easily implemented; hence they do not present a substantial burden in terms of cost of implementing, even if their effects are possibly limited.

Second, it should also be taken into consideration by the relevant institutions that some of the policies might not ensure equal treatment within the country given that they often target specific groups (in this case the specific group are migrants). In this context, policies that ensure equal competition and treatment for migrants and local residents should be followed. Selective policies may also in some cases conflict with the legal system of some countries.

The findings also revealed that remittances are sensitive to the change of income level in both home and host countries. In this context, governments of home countries should recognise this factor especially that some studies such as World Bank (2006) and Petreski *et al.*, (2013) find that remittances reduce poverty in developing countries, including Kosovo.

Finally, some aspects that are not directly related to the empirical findings of this chapter but are usually considered cost-effective could be recommended from the general literature. One of them is that some countries have previously applied taxes on remittances. Such policies are

likely to fail to generate as much additional revenue as forecast, as remittances shift towards informal channel transfers and hence increase the risks on transfers and other problems related to the monitoring of money laundering.

Some policies that could be cost effective and are not implemented could result from the private sector initiatives, specifically the banking sector. For instance, recently bankers in Kosovo have been discussing whether the overall conditions of households who receive remittances could be eased for loan applications under the guarantee of the migrant. Such proposals include cash-covered loans, which mean that the deposit of the migrant in a bank account in their home country may serve as a guarantee for the credit provided to the home country household. This serves as a potential source to finance investment and self-employment and most importantly, generating jobs and income. Once these are generated it may reduce the need for the migrant to send remittances. However, if the household fails to repay the loan, the deposits of the migrant would be used to repay the remaining amounts.

6.3.2 Policy Implications from the Microeconomic Findings

Based on the findings of the Chapter IV and the results obtained in the microeconomic effects of remittances with respect to household expenditure patterns, some implications and recommendations can be drawn here. The implications of the findings in Chapter IV and Chapter V are of relevance for Kosovo given that the data are for Kosovo but could also be applicable for countries with similar economic and social profiles to Kosovo.

However, importantly, the main results of the analysis with regard to the expenditure behaviour suggest that that the expenditure of remittances does not largely give rise to different behaviour than other sources of income and this need to be borne in mind in considering the policy options for remittances. Consequently, the views that remittances could be a particularly beneficial source of development with respect to consumption and

investment are not supported by the evidence in this thesis given that the evidence is that they typically behave as other sources of income. However, possible indirect effects such as through stable nutrition and health effects are not observable here. The results on the other hand suggest that remittances affect positively the share of expenditure on durable household goods but it must be noted that these goods in most of the cases include household domestic appliances and most of all, the effect is rather small. Also the import share of consumption expenditure, a potentially negative effect of remittances on the home country raised in previous studies, has not been investigated in this thesis.

However, among the important findings of the expenditure pattern models is that there is little evidence that remittances change the share of expenditure on education, which may be considered an important source of development for households and at the country level. The only case where remittances were found to affect positively the share of expenditure on education is when the frequency of visits by the migrant in home country increases, which has been proposed in this model to serve as a control mechanism in household expenditure patterns; though even then the effect was very small (however, it is possible that the frequency of visits is connected to the migrants' children residing in home country or not; this could not be established from our data). Based on the findings, the following is proposed:

- A review of current policies on remittances may be appropriate given that they do not change the consumption patterns in the home country;
- Education programs may work, however, it must be noted that the share of expenditure on education increases only when the frequency of visits by the migrant increases, suggesting that control mechanisms work, but their effect is very low.

A concern for governments has been that remittances may increase the reservation wage of remittance recipients. However, the findings from this investigation are that remittances have

no impact on the probability of being active in the labour market and probability of being employed, for both males and females. Therefore, it could be suggested that there is no evidence that remittances are a factor which may have caused the high unemployment rate in the country.

In this context, it appears that there is no need for policies to aid specifically the function of the labour market in this regard. This is because the results suggest that the level of remittances do not negatively affect the probability of being employed; nor to be active in the labour market. Hence, in terms of labour force participation and employment, it seems that other aspects affect them and often they are related to the domestic factors rather than the presence of remittances. These domestic factors are widely related to the education, region, presence of productive assets, and presence of children but most importantly, it is the discouraged worker effect that seems to be of particular importance.

Given these findings, it may be recommended that labour market policies should be oriented towards reforms from a nationwide perspective with a focus on the domestic economy given that domestic factors are those setting to largest extent the participation rate and also the probability to be employed. More specifically, as presented in Chapter II, but also in line with the findings in Chapter V, it is the education profile of the individual which defines the labour participation and employment. Although not covered in the empirical work in this thesis, through the descriptive data presented in Figure 2.8, it appears that the economy faces a shortage of skilled workers and an excessive number of unqualified job-seekers. In this context, there is an argument that the demand for skilled labour should be addressed and that education/skills training is the key determinant for participation and employment.

6.4 Contributions to Knowledge

This thesis contributed to the ongoing debate and empirical evidence for developing countries with regard to the macroeconomic determinants of remittances, the microeconomic implications of remittances with respect to expenditure patterns and also the effect of remittances on the probability of labour force participation and employment.

The contribution Chapter III can be summarized as following:

- It is the first study which identifies the policy initiatives that each country applies with regard to remittances and migrants;
- A range of variables have been created to include the policy initiatives in the model;
- The policy initiative variables are statistically insignificant, and hence, in the thesis it is recommended that the policies to increase remittances should not be undertaken, particularly if they have significant costs for implementation for the country.
- This is the only study that includes all the developing countries for which the data is available; it uses a very large data set and is amongst the most inclusive.
- It is amongst the few studies which include the economic conditions of the main host countries, such as unemployment and real GDP *per capita*.

The contribution to the literature and empirical evidence of Chapter III is that findings are in line with the literature, supporting the altruism and income diversification risk hypothesis given the significant effect of the real GDP *per capita* of home country. However, consistent with the literature, it may be very hard to clearly identify which or whether both altruism and self-interest motives affect the flow of remittances to GDP and *per capita*. In this context, when the real GDP *per capita* of host country is taken into consideration, the evidence in this thesis is that it affects the flow of remittances to GDP and *per capita* at a decreasing rate. This may indicate that initially, remittances may be sent for altruistic purposes, however, the

self-interest motives or income maximization could be important as well given that migrants are slowing the growth of remittances flows as the host country GDP increases (though there is no evidence that they ever decrease).

The suggestion that remittances may be driven from self-interest motives and individual income maximization strategy it is to some extent also suggested by the findings on the effect of host country unemployment. In turn, this suggests that as host country unemployment increases, the flow of remittances increases as well, which may indicate that return migration is being considered. In this context, this may be viewed as an attempt by the migrants to enforce the links and signal that they are part of the home country society. This is particularly important given the living cost differences between home and host countries, implying that as unemployed, migrants would prefer living in the home country environment due to lower costs compared to in the host countries.

Regarding Chapter IV, the contribution to the literature can be summarized as following:

- It introduces two new variables in the literature, that is, whether the migrant advises the household on expenditure and the frequency of the visits to the home country by the migrant. These variables have been interacted with remittances in order to obtain the effect only for remittance recipient households.
- In comparison to most of the research in the literature, this thesis draws more explicitly on the well-established theoretical models such as Working-Lesser model in order to investigate the expenditure patterns.

In addition to the above listed, the study contributes in investigating a relatively unexplored issue for Kosovo but also one that may be applicable in many developing countries with similar profile to that of Kosovo. The thesis also contributes to the literature with its findings, especially in context of their implications for expenditure patterns. In this context, it finds

that income changes do not affect expenditure patterns differently between remittance recipients and non-recipients households. Though remittances are valuable as a source of income that may help alleviate poverty, and may, for instance, ensure on average higher nutrition and consequently, improved health, which represents an important part of human capital, there is no extra (or indeed less) effect than that of other sources of income shown in this study. Furthermore, the dataset used in this study is also exceptional in terms of the information that it contains and it was specially designed for remittances research, while many other studies use datasets which are usually designed for other purposes and do not cover so extensively the remittances and migration aspects.

Similar to the previous chapter, Chapter V has also some general contributions in terms of investigating an unexplored topic for Kosovo. This also is an explored topic that has been rarely explored for other developing countries, especially in the region. The particular contributions of Chapter V are summarized below:

- The separate treatment of labour force participation and the probability to be employed. In the literature these two variables have not been clearly separated, given that working hours were used in most of the cases, but it is arguably important to treat them separately, especially for developing countries facing high unemployment rate with possibly high rates of discouraged workers.
- The use of theoretical models in investigating the impact of remittances on labour force participation and probability to be employed, which is not presented in the migration/remittances literature.
- The non-labour income treatment presents a contribution to the literature. Remittances, and pension and social income are treated separately. They both represent non-labour income; however, given their different nature, i.e. remittances

may be of a temporary nature, while pension and social income may be considered more of a permanent nature, it is argued as necessary to treat them separately.

- Theoretically it can be argued that the receipt of remittances may be expected to raise the reservation wage, and if this is the case, a decrease in the probability of being employed is expected. In the case of Kosovo, the empirical results did not provide evidence that receipt of remittances decreases the probability of being employed.

6.5 Limitations and suggestions for further research

In the process of conducting this thesis, some limitations have been faced and some new questions have been raised based on the empirical findings presented in the chapters. Consequently, some suggestions for further research will be also presented with regard to remittances for developing countries in general, but at microeconomic level for Kosovo or other countries in the region in particular.

For the macroeconomic determinants of remittances, a few limitations in the data have been encountered. Additionally, there are some areas that could not be addressed given that they are beyond the scope of this thesis. These limitations are presented as following:

- The data for many developing countries were not available, especially for African countries;
- A continuous problem in recording remittances is present in the statistical offices of many countries, consequently, we used World Bank estimates which at least use a standard methodology for calculating remittances;
- Given the findings that it is also the host country economic activity and unemployment rate that plays a role on remittances, we recommend that further research is conducted in this area. Some limited research exists with regard to USA-Mexico flow of remittances. This could be further expanded for Western Europe

towards Eastern and South-eastern Europe, Gulf-Countries towards India and Middle-East.

- No comprehensive list of economic policies undertaken by countries exists, creating further problems to researchers given that policy evaluation studies face a challenge of collecting the data in this variable. To the best of our knowledge, we attempted to create a data set of policies which is as comprehensive as possible, however, given the time limit, but also the lack of information systems in many developing countries, it is difficult to guarantee that all the policies have been covered.
- Time-series analysis for individual countries could not have been conducted given the relatively short span of the data;
- Although a contribution of this thesis is the lack of evidence that policy initiatives increase remittances, it does not investigate whether these policies are ineffective with regard to other economic indicators such as the level of foreign direct investment, imports of capital goods, deposit growth etc. This is particularly important to be researched in future given that, at least for the case of Kosovo, a significant part of the foreign direct investment represents investment conducted by migrants. This might well be the case for many other countries, including those who undertake policy initiatives and the effect could be transmitted in foreign direct investment rather than remittances.
- Given the lack of information on the policy variable, we had to group them in three general categories and could not use the individual definitions of what the policy was designed for. Further amalgamations into different policy variable groups may be a further useful investigation.

Regarding the Chapter IV on the impact of remittances on expenditure patterns, no significant challenges have been faced in the context of the cross-section data (although some issues of

breath and quality are raised below); however, some recommendations for further research might be necessary, such as:

- The investigation of the remittances impact on expenditure patterns using household level panel data, which may allow identifying the difference in expenditure patterns before and after receiving remittances.

One of the most important and debated issues in the literature of remittances remains the impact of remittances on labour supply. Therefore, some aspects that could be addressed are the following:

- In this thesis we raised the question from the viewpoint of participation that is, being active, or not in the labour market and also from the probability of being employed. Although these two distinctions were viewed as necessary and contributing to the literature, further and in depth research might be useful directly from the viewpoint of job-search theory and the reservation wage.

It is perceived that literature often uses various definitions of remittances in investigating the issue. Also, throughout the research, various research questionnaires have been encountered which do not fully comply with the IMF's definition of remittances flows. Such definition problems include the non-reporting of in-kind remittances, uses of very general definitions in the specific remittance questions and also the treatment of many other components of balance of payments in the same manner as remittances. Furthermore, many income questions did not require the respondent to exclude the income from remittances. Therefore, the final research area could be oriented towards the improvement of definitional aspects of remittances for questionnaires. While at the macroeconomic level, it appears that this is more properly standardized with IMF definitions and recommendations on calculating the flow of remittances.

Finally, research on remittances should be expanded having in mind their relatively large size to many developing economies. However, based on the combined findings across the empirical chapters and also on the review of the literature, it could be implied that the issue of migration and remittances should be addressed from another perspective given there is no evidence that the flow of remittances is affected by policies and in addition to that, from microeconomic perspective, the evidence in this thesis is that they do not affect behaviour differently from other sources of income and do not deter labour force participation. However such findings do not necessarily imply that there are no options for leveraging the diaspora of migrant sending countries for economic development. In this context, instead of focusing on policies towards shifting remittances for investment, the research could be oriented towards migration theories and towards extending the literature on attracting migrants' direct investments. This is because a large stock of migrants could represent significant potential investors, especially if migrants are running their own business in their host countries. For many developing countries, the transfer of knowledge, technology and experience from developed countries, along with financial and investment capacities of migrants could be seen as an alternative approach and the research could be re-oriented into this area. It could be hypothesised that such an approach may induce economic development because in addition to the direct effect of investment and know-how transfer, the presence of migrant investors may be a good signal and promoter of other foreign investments. Furthermore, migrants could also serve as a market for the products of the home country, especially if they are concentrated in specific countries. In this context, entrepreneurship, foreign investment, knowledge and advanced technology transfers but also trade research and theories may be useful to understand the implication of migration for stronger development.

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An Investigation of Remittances Determinants and the effect of policy initiatives: their implications to labour market of Kosovo

APPENDICES

Sokol Y. Havolli

**A thesis submitted in partial fulfilment of the requirements of Staffordshire University
for the award of the degree of Doctor of Philosophy**

Appendix 1. Global Migration Trends

Major Destinations for Migrants	International migrant stock at mid-year (both sexes)			
	1990	2000	2010	2013
WORLD	154 161 984	174 515 733	220 729 300	231 522 215
More developed regions	82 306 645	103 388 690	129 737 280	135 583 436
Less developed regions	71 855 339	71 127 043	90 992 020	95 938 779
Least developed countries	10 922 472	10 240 044	10 181 518	10 958 217
Less developed regions excluding least developed countries	60 932 867	60 886 999	80 810 502	84 980 562
	International migrant stock at mid-year (male)			
	1990	2000	2010	2013
WORLD	78 856 267	88 790 217	114 581 437	120 328 254
More developed regions	40 188 828	50 444 059	62 969 343	65 625 395
Less developed regions	38 667 439	38 346 158	51 612 094	54 702 859
Least developed countries	5 771 023	5 380 465	5 539 446	5 996 330
Less developed regions excluding least developed countries	32 896 416	32 965 693	46 072 648	48 706 529
	International migrant stock at mid-year (female)			
	1990	2000	2010	2013
WORLD	75 305 717	85 725 516	106 147 863	111 193 961
More developed regions	42 117 817	52 944 631	66 767 937	69 958 041
Less developed regions	33 187 900	32 780 885	39 379 926	41 235 920
Least developed countries	5 151 449	4 859 579	4 642 072	4 961 887
Less developed regions excluding least developed countries	28 036 451	27 921 306	34 737 854	36 274 033

Source: United Nations

Appendix 2. Selected Macroeconomic Indicators for Kosovo

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Real GDP Growth (in percent)	4%	3%	8%	7%	3%	3%	4%	3%	3%
Nominal GDP (in Billion USD)	3.741	3.918	4.743	5.799	5.582	5.694	6.637	6.323	6.827
Inflation, average consumer prices	-1.4%	0.6%	4.4%	9.4%	-2.4%	3.5%	7.3%	2.5%	1.9%
Exports of Goods	79.36	84.99	168.73	260.62	302.02	235.20	423.55	417.68	381.06
Exports of Services	307.06	332.37	439.35	544.12	547.20	686.99	795.73	795.13	843.46
Imports of Goods	1302.536	1437.674	1784.688	2250.486	2602.714	2427.302	2856.831	3064.783	3134.057
Imports of Services	-329.932	342.9865	399.3849	381.5214	335.8335	378.6261	536.1356	453.5135	383.6208
Compensation of Employees	177.87	183.01	202.87	228.88	245.73	225.17	244.59	284.35	292.06
Remittances (in million USD)	444.17	524.27	643.50	758.37	848.92	777.31	811.50	751.83	804.35
Current Account (percent of GDP)	-8.2%	-7.2%	-10.2%	-16.0%	-9.4%	-12.0%	-13.8%	-7.7%	-6.8%
Credit Growth	37.5%	23.9%	40.1%	32.7%	8.9%	13.2%	16.4%	3.8%	2.4%
Deposit Growth	35.1%	20.5%	10.5%	23.7%	26.3%	20.8%	11.0%	8.6%	8.3%

Source: Statistical Office of Kosovo (2014) and Central Bank of the Republic of Kosovo (2014).

Appendix 3.1. The definitions of the variables

Variables	Description	Source:
Remittances/GDP	Remittances in Billions of USD as a share to the GDP of the country <i>i</i>	World Bank and IMF
Remittances per Capita	Remittances in Billions divided by the population of the country <i>i</i>	World Bank
Unemployment Rate in Home Country	Unemployment rate country <i>i</i>	World Bank
Unemployment Rate in Host Country	Unemployment rate in the main host country of migrants from country <i>i</i>	World Bank
GDP per Capita of Home country (PPP)	GDP per Capita of Home country at purchasing power parity	IMF
GDP Per Capita of Host Country	GDP Per Capita of the main Host Country of migrants from country <i>i</i>	IMF
Inflation	Inflation Rate in country <i>i</i>	IMF
Population	Estimate of the population	World Bank
Any Policy Variable	A dummy variable taking into account if country <i>i</i> applies any policy	Author's Creation
One Policy Variable	A dummy variable taking into account if country <i>i</i> applies one policy	Author's Creation
Two or More Policy Variables	A dummy variable taking into account if country <i>i</i> applies two or more policies	Author's Creation
Taxation Policy Variable	A dummy variable taking into account if country <i>i</i> applies taxation policies in favour of migrants	Author's Creation
Other Government Policy Variable	A dummy variable taking into account if country <i>i</i> applies other policies related to facilitation of migrants economic interest	Author's Creation
Private Sector Policy Variable	A dummy variable taking into account if firms (mostly banks) in country <i>i</i> applies any policy for migrants	Author's Creation
Government Effectiveness	World Bank index to present the Government Effectiveness	World Bank

Appendix 3.2. Policy Initiatives Variable by Country and the List of Countries included in analysis

Policies	Government Policies and initiatives								Private Sector Initiatives		
	1	2	3	5	6	7	8	9	10	11	12
Country	Legal support	Investment Policies	Exchange rate policy	Import support	Business advisory services	Fee reduction	Ministry for Diaspora	Other Gvt incentive	Local Bank in Host Country	Loans for migrant investment	Deposit schemes for migrants
Albania	0	0	0	0	0	0	0	0	0	0	0
Algeria	0	0	0	0	0	0	0	0	0	0	0
Armenia	0	0	0	0	0	0	1	0	1	1	0
Azerbaijan	0	0	0	0	0	0	0	0	0	0	0
Belarus	0	0	0	0	0	0	0	0	0	0	0
Bosnia & Herz.	0	0	0	0	0	0	0	0	0	0	0
Bulgaria	0	0	0	0	0	0	0	0	0	0	0
China	0	0	0	0	0	0	0	0	0	0	0
Colombia	1	0	0	1	1	0	0	0	0	1	0
Costa Rica	0	0	0	0	0	0	0	0	0	0	0
Croatia	0	0	0	0	0	0	0	0	1	0	0
Dominican R.	0	0	0	0	0	0	0	0	0	0	0
Ecuador	0	0	0	0	0	0	0	1	0	0	0
Egypt	0	1	0	1	0	0	0	1	0	0	0
El Salvador	0	0	0	0	0	0	0	0	1	0	0
Estonia	0	0	0	0	0	0	0	0	0	0	0
Georgia	0	0	0	0	0	0	1	0	0	0	0
Guatemala	0	0	0	0	0	0	0	0	0	0	0
Honduras	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	0	0	0	0	0	0	0	0	0
Iran	0	0	0	0	0	0	0	0	0	0	0
Jamaica	0	0	0	0	0	0	0	0	0	0	0
Jordan	0	0	0	0	0	0	0	0	0	0	0
Kenya	0	0	0	0	0	0	0	1	0	0	0
Kosovo	0	0	0	0	0	0	0	0	0	0	0
Kyrgyzstan	0	0	0	0	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	1	0	0	0	0
FYR Macedonia	0	0	0	0	0	0	0	0	0	0	0
Mexico	1	1	0	0	1	0	0	1	1	1	0

Continued

Policies	Government Policies and initiatives									Private Sector Initiatives		
	1	2	3	5	6	7	8	9	10	11	12	
Country	Legal support	Investment Policies	Exchange rate policy	Import support	Business advisory services	Fee reduction	Ministry for Diaspora	Other Gvt incentive	Local Bank in Host Country	Loans for migrant investment	Deposit schemes for migrants	
Moldova	0	1	0	0	0	0	0	0	0	0	0	
Mongolia	0	0	0	0	0	0	0	0	0	0	0	
Morocco	1	0	0	0	0	1	0	0	1	0	0	
Myanmar	0	0	0	0	0	0	0	0	0	0	0	
Nicaragua	0	0	0	0	0	0	0	0	0	0	0	
Pakistan	0	0	0	1	1	0	0	0	0	0	0	
Panama	0	0	0	0	0	0	0	0	0	0	0	
Paraguay	0	0	0	0	0	0	0	0	0	0	0	
Peru	0	0	0	0	0	0	0	0	0	1	0	
Philippines	0	1	1	0	1	0	0	1	0	0	0	
Poland	0	0	0	0	0	0	0	0	0	0	0	
Romania	0	0	0	0	0	0	0	0	0	0	0	
Serbia	0	0	0	0	0	0	1	1	0	0	0	
Sri Lanka	0	0	0	0	0	0	1	1	0	1	0	
Swaziland	0	0	0	0	0	0	0	0	0	0	0	
Syria	0	0	0	0	0	0	1	0	0	0	0	
Thailand	0	0	0	0	0	0	0	0	0	0	0	
Tunisia	0	0	0	1	1	0	1	0	0	0	1	
Turkey	1	1	1	1	0	1	0	1	1	0	0	
Ukraine	0	0	0	0	0	0	0	0	0	0	0	
Uruguay	0	0	0	0	0	0	0	0	0	0	0	
Vietnam	0	0	0	1	0	0	0	0	0	0	0	

Appendix 3.3 Estimation of the Standard Model (Table 3.6)

Appendix 3.3.1 Test For CFR for Remittances/GDP

```
xtreg remitgdp unempl hcunempl inflation policyv popul gdpipc gdpi2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y1995 y1996
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009 lag_remitgdp
lag_unempl lag_hcunempl lag_inflation lag_popul lag_gdpipc lag_gdpi2 lag_gdpjpc lag_gdpj2, fe
```

```
Fixed-effects (within) regression          Number of obs   =       870
Group variable: id                        Number of groups =        52

R-sq:  within = 0.8421                    Obs per group:  min =         4
        between = 0.9292                  avg =       16.7
        overall = 0.8990                  max =        29

                                           F(47,771)      =       87.50
corr(u_i, Xb) = 0.1580                    Prob > F       =       0.0000
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.031871	.0308733	1.03	0.302	-.0287348	.0924767
hcunempl	.0980467	.0835527	1.17	0.241	-.065971	.2620644
inflation	.0001373	.0003192	0.43	0.667	-.0004893	.0007639
policyv	-.153749	.2441754	-0.63	0.529	-.6330765	.3255784
popul	-.0824847	.1031254	-0.80	0.424	-.2849247	.1199552
gdpipc	-.0003608	.0001509	-2.39	0.017	-.0006569	-.0000646
gdpi2	1.06e-07	2.23e-07	0.48	0.634	-3.32e-07	5.44e-07
gdpjpc	.0010386	.0002949	3.52	0.000	.0004597	.0016175
gdpj2	-7.60e-09	3.30e-09	-2.30	0.021	-1.41e-08	-1.13e-09
y1981	3.138519	2.642475	1.19	0.235	-2.04878	8.325817
y1982	3.627748	2.386527	1.52	0.129	-1.057113	8.31261
y1983	3.340792	2.289269	1.46	0.145	-1.153147	7.834731
y1984	3.329556	2.184255	1.52	0.128	-.9582355	7.617347
y1985	3.548186	2.115454	1.68	0.094	-.6045466	7.700919
y1986	3.104758	2.041117	1.52	0.129	-.9020481	7.111564
y1987	3.152438	1.983332	1.59	0.112	-.7409329	7.045809
y1988	2.62787	1.925099	1.37	0.173	-1.151187	6.406927
y1989	2.640198	1.85968	1.42	0.156	-1.010438	6.290835
y1990	2.470856	1.800102	1.37	0.170	-1.062827	6.004539
y1991	2.783882	1.765636	1.58	0.115	-.682142	6.249907
y1992	2.951051	1.714118	1.72	0.086	-.4138413	6.315942
y1993	2.891846	1.65663	1.75	0.081	-.3601941	6.143885
y1994	2.140829	1.618567	1.32	0.186	-1.036492	5.318151
y1995	2.507635	1.571102	1.60	0.111	-.5765092	5.59178
y1996	2.074409	1.530866	1.36	0.176	-.9307506	5.079569
y1997	1.970362	1.495364	1.32	0.188	-.965106	4.905829
y1998	2.069321	1.464155	1.41	0.158	-.8048823	4.943523
y1999	1.81049	1.435075	1.26	0.207	-1.006629	4.627609
y2000	1.828925	1.404768	1.30	0.193	-.9286988	4.58655
y2001	1.995454	1.375014	1.45	0.147	-.7037615	4.69467
y2002	2.280597	1.357551	1.68	0.093	-.3843379	4.945531
y2003	2.037337	1.340404	1.52	0.129	-.593938	4.668612
y2004	2.035174	1.328472	1.53	0.126	-.5726777	4.643025
y2005	1.79891	1.311235	1.37	0.170	-.7751052	4.372924
y2006	1.531573	1.299672	1.18	0.239	-1.019742	4.082889
y2007	1.249839	1.286112	0.97	0.331	-1.274858	3.774536
y2008	.9497716	1.276384	0.74	0.457	-1.555828	3.455371
y2009	1.32265	1.314653	1.01	0.315	-1.258075	3.903374

```

lag_remitgdp | .8647408   .016868   51.27   0.000   .8316281   .8978535
lag_unempl   | -.0438588   .0299497  -1.46   0.143  -.1026515   .0149338
lag_hcunempl | -.1592602   .0789051  -2.02   0.044  -.3141546  -.0043659
lag_inflation | .0000672   .0001565   0.43   0.668  -.0002401   .0003744
lag_popul    | .0845306   .1001938   0.84   0.399  -.1121544   .2812156
lag_gdppipc  | .0003074   .0001495   2.06   0.040   .0000139   .0006009
lag_gdpi2    | -8.27e-08   3.03e-07  -0.27   0.785  -6.77e-07   5.12e-07
lag_gdpjpc   | -.0008561   .0002965  -2.89   0.004  -.0014381  -.0002741
lag_gdpj2    | 6.31e-09    3.18e-09   1.98   0.048   6.29e-11   1.26e-08
   _cons     | -4.420123   3.51158   -1.26   0.209  -11.31351   2.473268
-----+-----
sigma_u      | 1.4661834
sigma_e      | 1.1918444
rho          | .6021236   (fraction of variance due to u_i)
-----+-----
F test that all u_i=0:   F(51, 771) =      2.72          Prob > F = 0.0000
. testnl _b[lag_remitgdp]*_b[unempl]=-_b[lag_unempl]

```

CFR for each variable

```

. testnl _b[lag_remitgdp]*_b[gdpj2]=-_b[lag_gdpj2]
. testnl _b[lag_remitgdp]*_b[gdpi2]=-_b[lag_gdpi2]
. testnl _b[lag_remitgdp]*_b[gdpjpc]=-_b[lag_gdpjpc]
. testnl _b[lag_remitgdp]*_b[gdppipc]=-_b[lag_gdppipc]
. testnl _b[lag_remitgdp]*_b[popul]=-_b[lag_popul]
. testnl _b[lag_remitgdp]*_b[inflation]=-_b[lag_inflation]
. testnl _b[lag_remitgdp]*_b[hcunempl]=-_b[lag_hcunempl]

```

```
(1)  _b[lag_remitgdp]*_b[unempl] = -_b[lag_unempl]
```

```
(1)  _b[lag_remitgdp]*_b[unempl] = -_b[lag_unempl]
```

```

F(1, 771) =      0.82
Prob > F =      0.3650

```

```
. testnl _b[lag_remitgdp]*_b[hcunempl]=-_b[lag_hcunempl]
```

```
(1)  _b[lag_remitgdp]*_b[hcunempl] = -_b[lag_hcunempl]
```

```

F(1, 771) =      2.81
Prob > F =      0.0939

```

```
. testnl _b[lag_remitgdp]*_b[inflation]=-_b[lag_inflation]
```

```
(1)  _b[lag_remitgdp]*_b[inflation] = -_b[lag_inflation]
```

```

F(1, 771) =      0.47
Prob > F =      0.4935

```

```
. testnl _b[lag_remitgdp]*_b[popul]=-_b[lag_popul]
```

```
(1)  _b[lag_remitgdp]*_b[popul] = -_b[lag_popul]
```

```

F(1, 771) =      1.16

```

Prob > F = 0.2814

. testnl _b[lag_remitgdp]*_b[gdpipc]==-_b[lag_gdpipc]

(1) _b[lag_remitgdp]*_b[gdpipc] = -_b[lag_gdpipc]

F(1, 771) = 0.01
Prob > F = 0.9156

. testnl _b[lag_remitgdp]*_b[gdpjpc]==-_b[lag_gdpjpc]

(1) _b[lag_remitgdp]*_b[gdpjpc] = -_b[lag_gdpjpc]

F(1, 771) = 0.10
Prob > F = 0.7477

. testnl _b[lag_remitgdp]*_b[gdpi2]==-_b[lag_gdpi2]

(1) _b[lag_remitgdp]*_b[gdpi2] = -_b[lag_gdpi2]

F(1, 771) = 0.01
Prob > F = 0.9404

. testnl _b[lag_remitgdp]*_b[gdpj2]==-_b[lag_gdpj2]

(1) _b[lag_remitgdp]*_b[gdpj2] = -_b[lag_gdpj2]

F(1, 771) = 0.05
Prob > F = 0.8303

Joint CFR

```
testnl (_b[lag_remitgdp]*_b[unempl]==-_b[lag_unempl]) (_b[lag_remitgdp]*_b[hcunempl]==-_b[lag_hcunempl]) (_b[lag_remitgdp]*_b[inflation]==-_b[lag_inflation]) (_b[lag_remitgdp]*_b[popul]==-_b[lag_popul]) (_b[lag_remitgdp]*_b[gdpipc]==-_b[lag_gdpipc]) (_b[lag_remitgdp]*_b[gdpjpc]==-_b[lag_gdpjpc]) (_b[lag_remitgdp]*_b[gdpi2]==-_b[lag_gdpi2]) (_b[lag_remitgdp]*_b[gdpj2]==-_b[lag_gdpj2])
```

(1) _b[lag_remitgdp]*_b[unempl] = -_b[lag_unempl]
(2) _b[lag_remitgdp]*_b[hcunempl] = -_b[lag_hcunempl]
(3) _b[lag_remitgdp]*_b[inflation] = -_b[lag_inflation]
(4) _b[lag_remitgdp]*_b[popul] = -_b[lag_popul]
(5) _b[lag_remitgdp]*_b[gdpipc] = -_b[lag_gdpipc]
(6) _b[lag_remitgdp]*_b[gdpjpc] = -_b[lag_gdpjpc]
(7) _b[lag_remitgdp]*_b[gdpi2] = -_b[lag_gdpi2]
(8) _b[lag_remitgdp]*_b[gdpj2] = -_b[lag_gdpj2]

F(8, 771) = 0.82
Prob > F = 0.5838

Appendix 3.3.2 Test For CFR for Remittances per Capita

```
. xtreg remitcapita unempl hcunempl inflation policyv gdpipc gdpi2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y1995 y
> 1996 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009
lag_remitcapita lag_unempl lag_hcunempl lag_inflation lag_gdpipc lag_gdpi2 lag_gdpjpc lag_
> gdpj2, fe
```

```
Fixed-effects (within) regression      Number of obs      =      870
Group variable: id                    Number of groups   =      52

R-sq:  within = 0.6051                 Obs per group: min =      4
      between = 0.9650                 avg =             16.7
      overall = 0.8200                 max =             29

                                         F(45,773)         =      26.32
corr(u_i, Xb) = 0.5899                 Prob > F          =      0.0000
```

remitcapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
unempl	-.3424426	.2673851	-1.28	0.201	-.8673297 .1824444
hcunempl	1.913796	.7125835	2.69	0.007	.5149675 3.312624
inflation	.0002834	.0027499	0.10	0.918	-.0051148 .0056815
policyv	.0127764	2.075096	0.01	0.995	-4.060715 4.086268
gdpipc	-.0011611	.0013014	-0.89	0.373	-.0037159 .0013936
gdpi2	8.05e-08	1.93e-06	0.04	0.967	-3.70e-06 3.86e-06
gdpjpc	.0049749	.0024876	2.00	0.046	.0000916 .0098582
gdpj2	-2.38e-08	2.73e-08	-0.87	0.383	-7.74e-08 2.98e-08
y1981	-301.9683	20.35518	-14.83	0.000	-341.9263 -262.0103
y1982	-300.6006	17.40404	-17.27	0.000	-334.7654 -266.4358
y1983	-300.0956	16.9061	-17.75	0.000	-333.283 -266.9083
y1984	-298.4188	16.43033	-18.16	0.000	-330.6722 -266.1654
y1985	-299.1408	15.85926	-18.86	0.000	-330.2731 -268.0084
y1986	-299.4954	15.44716	-19.39	0.000	-329.8187 -269.172
y1987	-298.7973	15.22183	-19.63	0.000	-328.6784 -268.9163
y1988	-300.2835	15.00558	-20.01	0.000	-329.74 -270.827
y1989	-300.8345	14.70635	-20.46	0.000	-329.7037 -271.9654
y1990	-301.0713	14.41939	-20.88	0.000	-329.3771 -272.7655
y1991	-301.2438	14.20389	-21.21	0.000	-329.1266 -273.361
y1992	-301.6098	13.94718	-21.63	0.000	-328.9887 -274.231
y1993	-300.0073	13.72174	-21.86	0.000	-326.9435 -273.071
y1994	-301.152	13.56902	-22.19	0.000	-327.7885 -274.5155
y1995	-300.6146	13.35902	-22.50	0.000	-326.8389 -274.3904
y1996	-302.0035	13.1859	-22.90	0.000	-327.8879 -276.1191
y1997	-302.7951	13.02527	-23.25	0.000	-328.3642 -277.226
y1998	-301.8801	12.88332	-23.43	0.000	-327.1706 -276.5897
y1999	-302.5656	12.77195	-23.69	0.000	-327.6374 -277.4938
y2000	-302.582	12.67917	-23.86	0.000	-327.4717 -277.6923
y2001	-302.1978	12.51319	-24.15	0.000	-326.7616 -277.6339
y2002	-301.4032	12.41135	-24.28	0.000	-325.7671 -277.0393
y2003	-301.3249	12.3542	-24.39	0.000	-325.5766 -277.0731
y2004	-300.802	12.33524	-24.39	0.000	-325.0165 -276.5874
y2005	-300.5423	12.29141	-24.45	0.000	-324.6708 -276.4138
y2006	-300.1045	12.28406	-24.43	0.000	-324.2185 -275.9904
y2007	-304.6807	12.23821	-24.90	0.000	-328.7048 -280.6566
y2008	-301.0295	12.11653	-24.84	0.000	-324.8147 -277.2443
y2009	-304.6967	12.40582	-24.56	0.000	-329.0498 -280.3436
lag_remitcapita	.6799459	.0312293	21.77	0.000	.6186416 .7412502
lag_unempl	.0801754	.2586109	0.31	0.757	-.4274875 .5878383
lag_hcunempl	-1.803977	.6629591	-2.72	0.007	-3.10539 -.5025631
lag_inflation	.0002494	.0013546	0.18	0.854	-.0024097 .0029085
lag_gdpipc	.0015567	.0013017	1.20	0.232	-.0009985 .0041119
lag_gdpi2	6.18e-08	2.62e-06	0.02	0.981	-5.08e-06 5.20e-06
lag_gdpjpc	-.0047016	.0025635	-1.83	0.067	-.0097338 .0003307
lag_gdpj2	2.35e-08	2.74e-08	0.86	0.391	-3.03e-08 7.73e-08

```

      _cons |    296.3643    23.95624    12.37    0.000    249.3373    343.3913
-----+-----
sigma_u |    9.2804269
sigma_e |   10.315604
rho     |    .44732113    (fraction of variance due to u_i)
-----+-----
F test that all u_i=0:    F(51, 773) =    1.33    Prob > F = 0.0666

```

CFR for each variable

```

. testnl _b[lag_remitcapita]*_b[gdpj2]==_b[lag_gdpj2]
. testnl _b[lag_remitcapita]*_b[gdpi2]==_b[lag_gdpi2]
. testnl _b[lag_remitcapita]*_b[gdpjpc]==_b[lag_gdpjpc]
. testnl _b[lag_remitcapita]*_b[gdpipc]==_b[lag_gdpipc]
. testnl _b[lag_remitcapita]*_b[inflation]==_b[lag_inflation]
. testnl _b[lag_remitcapita]*_b[hcunempl]==_b[lag_hcunempl]
. testnl _b[lag_remitcapita]*_b[unempl]==_b[lag_unempl]

. . testnl _b[lag_remitcapita]*_b[unempl]==_b[lag_unempl]

(1)  _b[lag_remitcapita]*_b[unempl] = -_b[lag_unempl]

      F(1, 773) =      0.98
      Prob > F =      0.3221

.
. . testnl _b[lag_remitcapita]*_b[hcunempl]==_b[lag_hcunempl]

(1)  _b[lag_remitcapita]*_b[hcunempl] = -_b[lag_hcunempl]

      F(1, 773) =      1.74
      Prob > F =      0.1879

.
. . testnl _b[lag_remitcapita]*_b[inflation]==_b[lag_inflation]

(1)  _b[lag_remitcapita]*_b[inflation] = -_b[lag_inflation]

      F(1, 773) =      0.05
      Prob > F =      0.8193

.
. . testnl _b[lag_remitcapita]*_b[gdpipc]==_b[lag_gdpipc]

(1)  _b[lag_remitcapita]*_b[gdpipc] = -_b[lag_gdpipc]

      F(1, 773) =      2.23
      Prob > F =      0.1360

.
. . testnl _b[lag_remitcapita]*_b[gdpjpc]==_b[lag_gdpjpc]

(1)  _b[lag_remitcapita]*_b[gdpjpc] = -_b[lag_gdpjpc]

      F(1, 773) =      1.30
      Prob > F =      0.2552

.
. . testnl _b[lag_remitcapita]*_b[gdpi2]==_b[lag_gdpi2]

```

```
(1) _b[lag_remitcapita]*_b[gdpi2] = -_b[lag_gdpi2]
```

```
F(1, 773) = 0.01  
Prob > F = 0.9322
```

```
.  
. . testnl _b[lag_remitcapita]*_b[gdpj2]=-_b[lag_gdpj2]
```

```
(1) _b[lag_remitcapita]*_b[gdpj2] = -_b[lag_gdpj2]
```

```
F(1, 773) = 0.38  
Prob > F = 0.5354
```

CFR for each variable

```
testnl (_b[lag_remitcapita]*_b[unempl]=-_b[lag_unempl]) (_b[lag_remitcapita]*_b[hcunempl]=-  
_b[lag_hcunempl]) (_b[lag_remitcapita]*_b[inflation]=-_b[lag_inflation]) (_b[lag  
> _remitcapita]*_b[gdpipc]=-_b[lag_gdpipc]) (_b[lag_remitcapita]*_b[gdpjpc]=-_b[lag_gdpjpc])  
(_b[lag_remitcapita]*_b[gdpi2]=-_b[lag_gdpi2]) (_b[lag_remitcapita]*_b[gdpj2]=-_b  
> [lag_gdpj2])
```

```
(1) _b[lag_remitcapita]*_b[unempl] = -_b[lag_unempl]  
(2) _b[lag_remitcapita]*_b[hcunempl] = -_b[lag_hcunempl]  
(3) _b[lag_remitcapita]*_b[inflation] = -_b[lag_inflation]  
(4) _b[lag_remitcapita]*_b[gdpipc] = -_b[lag_gdpipc]  
(5) _b[lag_remitcapita]*_b[gdpjpc] = -_b[lag_gdpjpc]  
(6) _b[lag_remitcapita]*_b[gdpi2] = -_b[lag_gdpi2]  
(7) _b[lag_remitcapita]*_b[gdpj2] = -_b[lag_gdpj2]
```

```
F(7, 773) = 0.83  
Prob > F = 0.5598
```

Appendix 3.3.3 Output of AR (1) for the Specification (1) Table 3.6

```
. xtregar remitgdp unempl hcunempl inflation policyv popul gdpipc gdpj2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y1995 y1996
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009, fe
```

```
FE (within) regression with AR(1) disturbances   Number of obs   =       870
Group variable: id                             Number of groups =       52

R-sq:  within = 0.0903                          Obs per group: min =       4
        between = 0.0285                          avg =      16.7
        overall = 0.0506                          max =       29

                                                F(38,780)       =       2.04
corr(u_i, Xb) = -0.6353                          Prob > F        =       0.0003
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.0387523	.0299277	1.29	0.196	-.0199961	.0975008
hcunempl	.1306577	.07074	1.85	0.065	-.0082056	.2695209
inflation	-.0000491	.0001705	-0.29	0.774	-.0003838	.0002856
policyv	-.3137156	.4887493	-0.64	0.521	-1.273135	.6457042
popul	.0057531	.0440063	0.13	0.896	-.0806317	.0921379
gdpipc	-.0003257	.0001422	-2.29	0.022	-.0006048	-.0000466
gdpj2	1.12e-07	1.16e-07	0.96	0.337	-1.16e-07	3.40e-07
gdpjpc	.0010661	.0002725	3.91	0.000	.0005311	.0016011
gdpj2	-6.87e-09	2.58e-09	-2.66	0.008	-1.19e-08	-1.80e-09
y1981	1.071068	1.268511	0.84	0.399	-1.419032	3.561167
y1982	2.150989	1.439118	1.49	0.135	-.6740134	4.975991
y1983	2.719842	1.642686	1.66	0.098	-.5047671	5-.944452
y1984	3.265369	1.814128	1.80	0.072	-.295782	6.82652
y1985	4.137739	2.011312	2.06	0.040	.1895128	8.085965
y1986	4.512969	2.191221	2.06	0.040	.2115802	8.814357
y1987	4.932435	2.332868	2.11	0.035	.3529928	9.511878
y1988	4.870558	2.409898	2.02	0.044	.1399053	9.601211
y1989	4.936119	2.446134	2.02	0.044	.1343326	9.737905
y1990	4.919508	2.490255	1.98	0.049	.0311137	9.807903
y1991	5.239855	2.557935	2.05	0.041	.2186029	10.26111
y1992	5.613735	2.546999	2.20	0.028	.6139506	10.61352
y1993	5.907882	2.558975	2.31	0.021	.8845886	10.93118
y1994	5.434662	2.502517	2.17	0.030	.5221967	10.34713
y1995	5.461486	2.45484	2.22	0.026	.6426101	10.28036
y1996	5.119699	2.37777	2.15	0.032	.4521121	9.787286
y1997	4.718128	2.276738	2.07	0.039	.2488687	9.187387
y1998	4.479528	2.193563	2.04	0.041	.1735407	8.785515
y1999	4.020924	2.090113	1.92	0.055	-.0819881	8.123836
y2000	3.682273	1.953282	1.89	0.060	-.1520387	7.516585
y2001	3.645655	1.868306	1.95	0.051	-.0218484	7.313158
y2002	3.895514	1.785694	2.18	0.029	.3901784	7.40085
y2003	3.825819	1.679072	2.28	0.023	.529784	7.121854
y2004	3.741775	1.54358	2.42	0.016	.7117117	6.771839
y2005	3.451324	1.424615	2.42	0.016	.6547915	6.247857
y2006	2.966035	1.328995	2.23	0.026	.3572045	5.574866
y2007	2.348434	1.283339	1.83	0.068	-.1707743	4.867642
y2008	1.641214	1.269848	1.29	0.197	-.8515106	4.133939
y2009	1.477503	1.264423	1.17	0.243	-1.004572	3.959577
_cons	-22.71686	.9855219	-23.05	0.000	-24.65145	-20.78227
rho_ar	.88813071					
sigma_u	7.6373231					
sigma_e	1.1907505					
rho_fov	.97626832					(fraction of variance because of u_i)

F test that all $u_i=0$: F(51,780) = 4.22 Prob > F = 0.0000

Appendix 3.3.4 Output of AR (1) for the Specification (2) Table 3.6

```
. xtregar remitcapita unempl hcunempl inflation policyv gdpipc gdpi2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y1995
> y1996 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009, fe
```

```
FE (within) regression with AR(1) disturbances Number of obs = 870
Group variable: id Number of groups = 52

R-sq: within = 0.5169 Obs per group: min = 4
      between = 0.0122 avg = 16.7
      overall = 0.0265 max = 29

corr(u_i, Xb) = -0.6006 F(37,781) = 22.59
Prob > F = 0.0000
```

remitcapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	-.2954742	.2551661	-1.16	0.247	-.7963667	.2054183
hcunempl	1.4711116	.6074613	2.42	0.016	.278666	2.663566
inflation	-.0000205	.0017902	-0.01	0.991	-.0035346	.0034936
policyv	-.1503567	4.001275	-0.04	0.970	-8.004884	7.70417
gdpipc	.0003264	.0009086	0.36	0.720	-.0014572	.0021101
gdpi2	4.22e-07	7.29e-07	0.58	0.563	-1.01e-06	1.85e-06
gdpjpc	.0040286	.0018762	2.15	0.032	.0003456	.0077116
gdpj2	-3.03e-08	1.86e-08	-1.63	0.103	-6.67e-08	6.18e-09
y1981	-78.2155	13.15483	-5.95	0.000	-104.0385	-52.39248
y1982	-134.2574	16.24763	-8.26	0.000	-166.1516	-102.3632
y1983	-173.8476	19.05529	-9.12	0.000	-211.2533	-136.442
y1984	-200.9022	20.75163	-9.68	0.000	-241.6378	-160.1666
y1985	-220.8956	21.70807	-10.18	0.000	-263.5087	-178.2825
y1986	-235.728	22.18943	-10.62	0.000	-279.286	-192.17
y1987	-245.919	22.30939	-11.02	0.000	-289.7125	-202.1256
y1988	-254.3168	21.92171	-11.60	0.000	-297.3492	-211.2843
y1989	-261.1458	21.3486	-12.23	0.000	-303.0532	-219.2384
y1990	-266.6633	20.83314	-12.80	0.000	-307.5588	-225.7677
y1991	-271.1329	20.4752	-13.24	0.000	-311.3259	-230.94
y1992	-274.9165	19.76501	-13.91	0.000	-313.7154	-236.1177
y1993	-277.1189	19.28205	-14.37	0.000	-314.9697	-239.2681
y1994	-279.5965	18.50103	-15.11	0.000	-315.9142	-243.2789
y1995	-281.4957	17.8523	-15.77	0.000	-316.5399	-246.4515
y1996	-284.3244	17.10205	-16.63	0.000	-317.8958	-250.7529
y1997	-287.3884	16.31824	-17.61	0.000	-319.4212	-255.3556
y1998	-289.1027	15.72156	-18.39	0.000	-319.9643	-258.2412
y1999	-291.1983	15.07718	-19.31	0.000	-320.7949	-261.6017
y2000	-293.0253	14.31129	-20.48	0.000	-321.1184	-264.9321
y2001	-294.4929	13.8174	-21.31	0.000	-321.6165	-267.3693
y2002	-294.9786	13.33797	-22.12	0.000	-321.1611	-268.7961
y2003	-295.5315	12.80295	-23.08	0.000	-320.6638	-270.3993
y2004	-295.4582	12.21084	-24.20	0.000	-319.4281	-271.4883
y2005	-295.5377	11.71785	-25.22	0.000	-318.5399	-272.5355
y2006	-295.5784	11.3319	-26.08	0.000	-317.823	-273.3338
y2007	-300.6881	11.13217	-27.01	0.000	-322.5406	-278.8356
y2008	-301.0262	11.03086	-27.29	0.000	-322.6798	-279.3725
y2009	-305.5583	10.97327	-27.85	0.000	-327.0989	-284.0177

```

      _cons |    214.3301    13.87789    15.44    0.000    187.0877    241.5724
-----+-----
      rho_ar |    .69648388
      sigma_u |    36.075486
      sigma_e |    10.303117
      rho_fov |    .92458468    (fraction of variance because of u_i)
-----+-----
F test that all u_i=0:    F(51,781) =    3.63    Prob > F = 0.0000

```

Appendix 3.4.1 Output of AR (1) for the Specification (3) Table 3.7

a) One and Two or More Policy Variables

```

xtregar remitgdp unempl hcunempl inflation pv_1 pv1 popul gdpipc gdpj2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y1995 y1996
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009, fe

```

```

FE (within) regression with AR(1) disturbances    Number of obs    =    870
Group variable: id                                Number of groups  =    52

```

```

R-sq:  within = 0.1000                                Obs per group: min =    4
        between = 0.0296                                avg =    16.7
        overall = 0.0521                                max =    29

```

```

corr(u_i, Xb) = -0.6321                                F(39,779) =    2.22
                                                Prob > F =    0.0000

```

```

-----+-----
remitgdp |          Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
unempl |    .0385996    .0297752     1.30  0.195    -0.0198495    .0970487
hcunempl |    .1206719    .0704074     1.71  0.087    -0.0175388    .2588826
inflation |   -0.0000497    .0001695    -0.29  0.769    -0.0003824    .000283
pv_1 |   -1.390505    .577066     -2.41  0.016    -2.523293    -.2577161
pv1 |    .8541992    .7433119     1.15  0.251    -0.6049325    2.313331
popul |    .0044199    .0443529     0.10  0.921    -0.0826455    .0914853
gdpipc |   -0.0003129    .0001417    -2.21  0.028    -0.0005911    -.0000347
gdpj2 |    1.12e-07    1.16e-07     0.96  0.335    -1.16e-07    3.39e-07
gdpjpc |    .0010401    .0002714     3.83  0.000    .0005074    .0015728
gdpj2 |   -6.55e-09    2.57e-09    -2.55  0.011    -1.16e-08    -1.50e-09
y1981 |    1.053122    1.260665     0.84  0.404    -1.42158    3.527825
y1982 |    2.130913    1.42711     1.49  0.136    -0.6705231    4.932349
y1983 |    2.695068    1.626238     1.66  0.098    -0.4972594    5.887396
y1984 |    3.229503    1.794087     1.80  0.072    -0.2923147    6.75132
y1985 |    4.097841    1.988192     2.06  0.040    .1949926    8.000689
y1986 |    4.473732    2.165765     2.07  0.039    .2223061    8.725158
y1987 |    4.892067    2.30589     2.12  0.034    .3655741    9.418561
y1988 |    4.835486    2.382381     2.03  0.043    .158838    9.512134
y1989 |    4.886779    2.419614     2.02  0.044    .1370443    9.636514
y1990 |    4.877409    2.46407     1.98  0.048    .040405    9.714413
y1991 |    5.209437    2.532108     2.06  0.040    .2388737    10.18
y1992 |    5.580463    2.522619     2.21  0.027    .6285258    10.5324
y1993 |    5.877396    2.535552     2.32  0.021    .9000722    10.85472
y1994 |    5.412335    2.480474     2.18  0.029    .5431295    10.28154
y1995 |    5.445458    2.434131     2.24  0.026    .6672251    10.22369
y1996 |    5.11637     2.358451     2.17  0.030    .4866981    9.746042
y1997 |    4.754322    2.259242     2.10  0.036    .3193984    9.189246
y1998 |    4.523693    2.177348     2.08  0.038    .2495285    8.797857
y1999 |    4.072124    2.07523     1.96  0.050    -0.0015813    8.145829

```

```

y2000 | 3.759629 1.940183 1.94 0.053 -.0489769 7.568235
y2001 | 3.672539 1.856341 1.98 0.048 .0285161 7.316563
y2002 | 3.929595 1.774738 2.21 0.027 .4457594 7.413431
y2003 | 3.865674 1.669149 2.32 0.021 .5891113 7.142236
y2004 | 3.73888 1.535023 2.44 0.015 .7256084 6.752152
y2005 | 3.449436 1.416863 2.43 0.015 .6681145 6.230757
y2006 | 2.960193 1.321933 2.24 0.025 .3652202 5.555165
y2007 | 2.335411 1.276775 1.83 0.068 -.1709167 4.841739
y2008 | 1.629793 1.263566 1.29 0.197 -.8506042 4.110191
y2009 | 1.4888 1.258251 1.18 0.237 -.9811635 3.958763
_cons | -22.27876 .972397 -22.91 0.000 -24.18759 -20.36993
-----
rho_ar | .88943809
sigma_u | 7.5805916
sigma_e | 1.1850822
rho_fov | .97614362 (fraction of variance because of u_i)
-----
F test that all u_i=0: F(51,779) = 4.18 Prob > F = 0.0000

```

Appendix 3.4.2 Output of AR (1) for the Specification (4) Table 3.7

One and Two or More Policy Variables

```

xtregar remitcapita unempl hcunempl inflation pv_1 pv1 gdpipc gdpi2 gdpjpc gdpj2 y1981
y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993 y1994 y199
> 5 y1996 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 y2009, fe

```

```

FE (within) regression with AR(1) disturbances Number of obs = 870
Group variable: id Number of groups = 52

R-sq: within = 0.5170 Obs per group: min = 4
      between = 0.0126 avg = 16.7
      overall = 0.0270 max = 29

corr(u_i, Xb) = -0.6010 F(38,780) = 21.97
Prob > F = 0.0000

```

```

-----
remitcapita | Coef. Std. Err. t P>|t| [95% Conf. Interval]
-----+-----
unempl | -.2926561 .2554142 -1.15 0.252 [-.7940368 .2087245]
hcunempl | 1.455432 .6076269 2.40 0.017 [.2626547 2.64821]
inflation | -.0000296 .0017922 -0.02 0.987 [-.0035476 .0034885]
pv_1 | -2.242193 4.934817 -0.45 0.650 [-11.92929 7.444902]
pv1 | -1.289909 5.733297 -0.22 0.822 [-12.54443 9.964611]
gdpipc | .0003491 .0009088 0.38 0.701 [-.0014347 .002133]
gdpi2 | 4.23e-07 7.29e-07 0.58 0.562 [-1.01e-06 1.85e-06]
gdpjpc | .0040018 .001879 2.13 0.034 [.0003134 .0076903]
gdpj2 | -2.97e-08 1.86e-08 -1.59 0.112 [-6.62e-08 6.90e-09]
y1981 | -78.27952 13.17427 -5.94 0.000 [-104.1407 -52.4183]
y1982 | -134.3387 16.27455 -8.25 0.000 [-166.2858 -102.3916]
y1983 | -173.9237 19.08588 -9.11 0.000 [-211.3895 -136.4579]
y1984 | -200.9608 20.78607 -9.67 0.000 [-241.7641 -160.1576]
y1985 | -220.919 21.74139 -10.16 0.000 [-263.5976 -178.2404]
y1986 | -235.7085 22.22118 -10.61 0.000 [-279.3289 -192.0881]
y1987 | -245.8721 22.33872 -11.01 0.000 [-289.7232 -202.021]
y1988 | -254.2473 21.94747 -11.58 0.000 [-297.3304 -211.1642]
y1989 | -261.0563 21.37132 -12.22 0.000 [-303.0084 -219.1041]
y1990 | -266.5472 20.85376 -12.78 0.000 [-307.4834 -225.6111]

```

y1991		-270.9836	20.49373	-13.22	0.000	-311.213	-230.7542
y1992		-274.7474	19.77812	-13.89	0.000	-313.572	-235.9227
y1993		-276.9404	19.29405	-14.35	0.000	-314.8148	-239.066
y1994		-279.4139	18.51249	-15.09	0.000	-315.7541	-243.0737
y1995		-281.31	17.86315	-15.75	0.000	-316.3755	-246.2445
y1996		-284.148	17.11169	-16.61	0.000	-317.7384	-250.5576
y1997		-287.1633	16.32587	-17.59	0.000	-319.2112	-255.1155
y1998		-288.8884	15.72838	-18.37	0.000	-319.7633	-258.0134
y1999		-290.9986	15.08323	-19.29	0.000	-320.6071	-261.39
y2000		-292.8033	14.31681	-20.45	0.000	-320.9073	-264.6992
y2001		-294.3033	13.82362	-21.29	0.000	-321.4392	-267.1674
y2002		-294.7909	13.34352	-22.09	0.000	-320.9843	-268.5974
y2003		-295.3534	12.808	-23.06	0.000	-320.4956	-270.2112
y2004		-295.2607	12.21864	-24.16	0.000	-319.246	-271.2753
y2005		-295.3716	11.7245	-25.19	0.000	-318.387	-272.3563
y2006		-295.4571	11.33773	-26.06	0.000	-317.7132	-273.201
y2007		-300.6137	11.1376	-26.99	0.000	-322.4769	-278.7504
y2008		-300.9655	11.03624	-27.27	0.000	-322.6298	-279.3013
y2009		-305.4425	10.97852	-27.82	0.000	-326.9935	-283.8916
_cons		214.5074	13.92246	15.41	0.000	187.1775	241.8373

rho_ar		.69593963					
sigma_u		36.07781					
sigma_e		10.308193					
rho_fov		.92452495		(fraction of variance because of u_i)			

F test that all u_i=0:		F(51,780) =	3.61			Prob > F =	0.0000

Appendix 3.4.3 Output of AR (1) for the Specification (5) Table 3.8

Three types of Policy Variables

```
xtregar remitgdp unempl hcunempl inflation pol_tax pol_govt pol_private popul gdpipc gdpi2
gdpjpc gdpj2 y1981 y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1992 y1993
y1994 y1995 y1996 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008
y2009, fe
```

```
FE (within) regression with AR(1) disturbances Number of obs = 870
Group variable: id Number of groups = 52
```

```
R-sq: within = 0.0939 Obs per group: min = 4
      between = 0.0287 avg = 16.7
      overall = 0.0502 max = 29
```

```
F(40,778) = 2.02
corr(u_i, Xb) = -0.6493 Prob > F = 0.0003
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
unempl	.0380058	.0299451	1.27	0.205	-.020777 .0967886
hcunempl	.1301179	.0706921	1.84	0.066	-.008652 .2688877
inflation	-.0000474	.0001707	-0.28	0.781	-.0003824 .0002876
pol_tax	.5625332	.7230655	0.78	0.437	-.8568573 1.981924
pol_govt	-.5734758	.5828769	-0.98	0.325	-1.717674 .570722
pol_private	-1.049482	.7821754	-1.34	0.180	-2.584906 .4859422
popul	.0051887	.0434406	0.12	0.905	-.080086 .0904635
gdpipc	-.0003262	.0001419	-2.30	0.022	-.0006047 -.0000477
gdpi2	1.12e-07	1.16e-07	0.97	0.333	-1.15e-07 3.40e-07
gdpjpc	.0010868	.0002733	3.98	0.000	.0005503 .0016234
gdpj2	-7.02e-09	2.58e-09	-2.72	0.007	-1.21e-08 -1.95e-09
y1981	1.109567	1.269797	0.87	0.382	-1.383068 3.602202
y1982	2.230327	1.444319	1.54	0.123	-.6048961 5.065551
y1983	2.824176	1.651689	1.71	0.088	-.4181183 6.06647
y1984	3.394916	1.826034	1.86	0.063	-.1896208 6.979453
y1985	4.288349	2.025398	2.12	0.035	.3124555 8.264242
y1986	4.677583	2.206426	2.12	0.034	.3463302 9.008836
y1987	5.105132	2.348375	2.17	0.030	.4952304 9.715033
y1988	5.043812	2.424836	2.08	0.038	.2838161 9.803807
y1989	5.051529	2.459964	2.05	0.040	.2225754 9.880484
y1990	5.033363	2.503277	2.01	0.045	.1193852 9.947341
y1991	5.358568	2.570277	2.08	0.037	.3130687 10.40407
y1992	5.743705	2.559912	2.24	0.025	.7185525 10.76886
y1993	6.036665	2.570896	2.35	0.019	.9899496 11.08338
y1994	5.552222	2.513124	2.21	0.027	.6189152 10.48553
y1995	5.571312	2.464339	2.26	0.024	.7337704 10.40885
y1996	5.217002	2.386074	2.19	0.029	.5330966 9.900907
y1997	4.807441	2.284886	2.10	0.036	.3221686 9.292714
y1998	4.557107	2.200682	2.07	0.039	.2371295 8.877085
y1999	4.084935	2.096147	1.95	0.052	-.0298386 8.199708
y2000	3.746089	1.957769	1.91	0.056	-.0970465 7.589224
y2001	3.680892	1.871753	1.97	0.050	.0066077 7.355177
y2002	3.934824	1.788829	2.20	0.028	.4233211 7.446328
y2003	3.853939	1.68138	2.29	0.022	.5533604 7.154518
y2004	3.783184	1.544812	2.45	0.015	.7506903 6.815678
y2005	3.476481	1.42515	2.44	0.015	.6788861 6.274076
y2006	2.973042	1.328984	2.24	0.026	.3642237 5.581861
y2007	2.338893	1.283012	1.82	0.069	-.1796827 4.857468
y2008	1.635191	1.269321	1.29	0.198	-.8565078 4.126891

```

y2009 | 1.482341 1.263837 1.17 0.241 -.9985948 3.963276
_cons | -23.06716 .9950156 -23.18 0.000 -25.0204 -21.11393
-----+-----
rho_ar | .88684028
sigma_u | 7.7684699
sigma_e | 1.1900382
rho_fov | .97707142 (fraction of variance because of u_i)
-----+-----
F test that all u_i=0: F(51,778) = 4.26 Prob > F = 0.0000

```

Appendix 3.4.4 Output of AR (1) for the Specification (6) Table 3.8

Thre types of Policy Variables

```

xtregar remitcapita unempl hcunempl inflation pol_tax pol_govt pol_private gdpipc gdpi2
gdpjpc gdpj2 y1981 y1982 y1983 y1984 y1985 y1986 y1987 y1988 y1989 y1990 y1991 y1
> 992 y1993 y1994 y1995 y1996 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006
y2007 y2008 y2009, fe

```

```

FE (within) regression with AR(1) disturbances Number of obs = 870
Group variable: id Number of groups = 52

R-sq: within = 0.5168 Obs per group: min = 4
between = 0.0123 avg = 16.7
overall = 0.0267 max = 29

corr(u_i, Xb) = -0.6060 F(39,779) = 21.37
Prob > F = 0.0000

```

```

-----+-----
remitcapita | Coef. Std. Err. t P>|t| [95% Conf. Interval]
-----+-----
unempl | -.2986362 .2559895 -1.17 0.244 [-.8011471 .2038747]
hcunempl | 1.468643 .60786 2.42 0.016 [.2754053 2.661881]
inflation | -.0000266 .001795 -0.01 0.988 [-.0035502 .0034971]
pol_tax | .0390963 5.992125 0.01 0.995 [-11.72353 11.80172]
pol_govt | -1.691899 4.902705 -0.35 0.730 [-11.31598 7.932179]
pol_private | -1.049074 6.379281 -0.16 0.869 [-13.57169 11.47354]
gdpipc | .000336 .0009086 0.37 0.712 [-.0014475 .0021195]
gdpi2 | 4.24e-07 7.29e-07 0.58 0.561 [-1.01e-06 1.85e-06]
gdpjpc | .0040712 .0018821 2.16 0.031 [.0003766 .0077658]
gdpj2 | -3.05e-08 1.86e-08 -1.64 0.102 [-6.71e-08 6.10e-09]
y1981 | -78.27285 13.19261 -5.93 0.000 [-104.1701 -52.37558]
y1982 | -134.2735 16.30318 -8.24 0.000 [-166.2769 -102.2701]
y1983 | -173.7975 19.11851 -9.09 0.000 [-211.3273 -136.2676]
y1984 | -200.773 20.82299 -9.64 0.000 [-241.6489 -159.8972]
y1985 | -220.6895 21.77781 -10.13 0.000 [-263.4396 -177.9393]
y1986 | -235.4783 22.24862 -10.58 0.000 [-279.1527 -191.804]
y1987 | -245.6374 22.35936 -10.99 0.000 [-289.5292 -201.7457]
y1988 | -254.0206 21.96263 -11.57 0.000 [-297.1336 -210.9076]
y1989 | -260.8407 21.37133 -12.21 0.000 [-302.7929 -218.8884]
y1990 | -266.3415 20.85044 -12.77 0.000 [-307.2712 -225.4118]
y1991 | -270.7845 20.48777 -13.22 0.000 [-311.0023 -230.5668]
y1992 | -274.4953 19.78024 -13.88 0.000 [-313.3242 -235.6665]
y1993 | -276.7005 19.29481 -14.34 0.000 [-314.5765 -238.8245]
y1994 | -279.2049 18.51208 -15.08 0.000 [-315.5444 -242.8655]
y1995 | -281.1138 17.8627 -15.74 0.000 [-316.1785 -246.049]
y1996 | -283.9646 17.11249 -16.59 0.000 [-317.5566 -250.3725]
y1997 | -286.974 16.33498 -17.57 0.000 [-319.0398 -254.9082]

```

y1998		-288.7101	15.73794	-18.34	0.000	-319.6039	-257.8163
y1999		-290.833	15.09312	-19.27	0.000	-320.461	-261.205
y2000		-292.6787	14.32363	-20.43	0.000	-320.7962	-264.5612
y2001		-294.1719	13.82688	-21.28	0.000	-321.3142	-267.0295
y2002		-294.6392	13.35018	-22.07	0.000	-320.8458	-268.4326
y2003		-295.2207	12.81459	-23.04	0.000	-320.3759	-270.0654
y2004		-295.1249	12.22063	-24.15	0.000	-319.1141	-271.1356
y2005		-295.254	11.72824	-25.17	0.000	-318.2767	-272.2313
y2006		-295.3533	11.34332	-26.04	0.000	-317.6204	-273.0862
y2007		-300.5187	11.1444	-26.97	0.000	-322.3953	-278.6421
y2008		-300.8482	11.04328	-27.24	0.000	-322.5263	-279.1701
y2009		-305.3387	10.98573	-27.79	0.000	-326.9038	-283.7735
_cons		213.2987	13.96081	15.28	0.000	185.8934	240.7039

rho_ar		.69528142					
sigma_u		36.262096					
sigma_e		10.31486					
rho_fov		.92514343	(fraction of variance because of u_i)				

F test that all u_i=0:		F(51,779) =	3.58			Prob > F =	0.0000

Appendix 3.5.1 Test For CFR for Remittances to GDP

Including Governance Indicators

```
xtreg remitgdp unempl hcunempl inflation popul goveffect policyv gdpipc gdpi2 gdpjpc
gdpj2 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 lag_remitgdp
lag_unempl lag_hcunempl lag_inflation lag_popul lag_goveffect lag_gdpipc lag_gdpi2 lag_gdpjpc
lag_gdpj2, fe
```

```
Fixed-effects (within) regression      Number of obs   =      610
Group variable: id                    Number of groups =      52
```

```
R-sq:  within = 0.8167                Obs per group:  min =      3
      between = 0.7999                    avg =     11.7
      overall = 0.7930                    max =     13
```

```
F(32,526) = 73.26
corr(u_i, Xb) = -0.1524                Prob > F = 0.0000
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.0453045	.0394757	1.15	0.252	-.0322448	.1228538
hcunempl	.1028658	.1085385	0.95	0.344	-.1103564	.316088
inflation	.0001609	.0011854	0.14	0.892	-.0021677	.0024895
popul	-.0465143	.1568596	-0.30	0.767	-.3546625	.2616338
goveffect	-.7482451	.4695354	-1.59	0.112	-1.67064	.1741499
policyv	.1464995	.3846428	0.38	0.703	-.6091252	.9021243
gdpipc	-.0002764	.0001724	-1.60	0.109	-.0006149	.0000622
gdpi2	1.71e-07	2.39e-07	0.71	0.476	-3.00e-07	6.41e-07
gdpjpc	.0012824	.0003537	3.63	0.000	.0005875	.0019773
gdpj2	-9.86e-09	3.87e-09	-2.55	0.011	-1.75e-08	-2.27e-09
y1997	1.965952	1.401444	1.40	0.161	-.7871631	4.719066
y1998	1.983649	1.286946	1.54	0.124	-.5445372	4.511835
y1999	1.561461	1.195616	1.31	0.192	-.7873078	3.910229
y2000	1.391957	1.093066	1.27	0.203	-.7553534	3.539268
y2001	1.46658	.9615855	1.53	0.128	-.4224392	3.3556
y2002	1.662486	.8923568	1.86	0.063	-.0905353	3.415506
y2003	1.396365	.8341077	1.67	0.095	-.2422267	3.034956
y2004	1.198749	.7866604	1.52	0.128	-.3466326	2.744131
y2005	.7712183	.6994288	1.10	0.271	-.6027987	2.145235
y2006	.3655893	.6431533	0.57	0.570	-.8978753	1.629054
y2007	-.0793235	.5752616	-0.14	0.890	-1.209416	1.050769
y2008	-.4664055	.4296846	-1.09	0.278	-1.310514	.3777031
lag_remitgdp	.8380756	.0219904	38.11	0.000	.7948758	.8812753
lag_unempl	-.0374952	.039447	-0.95	0.342	-.1149883	.0399978
lag_hcunempl	-.1910517	.1006964	-1.90	0.058	-.3888682	.0067647
lag_inflat~n	-.0008214	.0011687	-0.70	0.483	-.0031173	.0014746
lag_popul	.0526711	.1517851	0.35	0.729	-.2455084	.3508506
lag_goveff~t	.3695265	.4323194	0.85	0.393	-.4797582	1.218811
lag_gdpipc	.000265	.0001669	1.59	0.113	-.0000629	.0005928
lag_gdpi2	-1.47e-07	3.13e-07	-0.47	0.639	-7.62e-07	4.68e-07
lag_gdpjpc	-.000941	.0003403	-2.77	0.006	-.0016094	-.0002725
lag_gdpj2	7.60e-09	3.60e-09	2.11	0.035	5.30e-10	1.47e-08
_cons	-7.444783	4.889355	-1.52	0.128	-17.04984	2.160278
sigma_u	2.5901486					
sigma_e	1.2054356					
rho	.82196951	(fraction of variance due to u_i)				

```
F test that all u_i=0:      F(51, 526) =      2.36      Prob > F = 0.0000
```

CFR for each variable

```
testnl _b[lag_remitgdp]*_b[unempl]=-_b[lag_unempl]
testnl _b[lag_remitgdp]*_b[hcunempl]=-_b[lag_hcunempl]
testnl _b[lag_remitgdp]*_b[inflation]=-_b[lag_inflation]
testnl _b[lag_remitgdp]*_b[popul]=-_b[lag_popul]
testnl _b[lag_remitgdp]*_b[goveffect]=-_b[lag_goveffect]
testnl _b[lag_remitgdp]*_b[gdpipc]=-_b[lag_gdpipc]
testnl _b[lag_remitgdp]*_b[gdpjpc]=-_b[lag_gdpjpc]
testnl _b[lag_remitgdp]*_b[gdpi2]=-_b[lag_gdpi2]
testnl _b[lag_remitgdp]*_b[gdpj2]=-_b[lag_gdpj2]
testnl _b[lag_remitgdp]*_b[unempl]=-_b[lag_unempl]
```

```
(1) _b[lag_remitgdp]*_b[unempl] = -_b[lag_unempl]
```

```
F(1, 526) = 0.00
Prob > F = 0.9852
```

```
.
. testnl _b[lag_remitgdp]*_b[hcunempl]=-_b[lag_hcunempl]
```

```
(1) _b[lag_remitgdp]*_b[hcunempl] = -_b[lag_hcunempl]
```

```
F(1, 526) = 2.61
Prob > F = 0.1066
```

```
.
. testnl _b[lag_remitgdp]*_b[inflation]=-_b[lag_inflation]
```

```
(1) _b[lag_remitgdp]*_b[inflation] = -_b[lag_inflation]
```

```
F(1, 526) = 0.21
Prob > F = 0.6474
```

```
.
. testnl _b[lag_remitgdp]*_b[popul]=-_b[lag_popul]
```

```
(1) _b[lag_remitgdp]*_b[popul] = -_b[lag_popul]
```

```
F(1, 526) = 0.29
Prob > F = 0.5891
```

```
.
. testnl _b[lag_remitgdp]*_b[goveffect]=-_b[lag_goveffect]
```

```
(1) _b[lag_remitgdp]*_b[goveffect] = -_b[lag_goveffect]
```

```
F(1, 526) = 0.68
Prob > F = 0.4112
```

```
.
. testnl _b[lag_remitgdp]*_b[gdpipc]=-_b[lag_gdpipc]
```

```
(1) _b[lag_remitgdp]*_b[gdpipc] = -_b[lag_gdpipc]
```

```
F(1, 526) = 0.38
Prob > F = 0.5402
```

```
.
. testnl _b[lag_remitgdp]*_b[gdpjpc]=-_b[lag_gdpjpc]
```

```
(1) _b[lag_remitgdp]*_b[gdpjpc] = -_b[lag_gdpjpc]
```

```
F(1, 526) = 0.56
Prob > F = 0.4537
```

```
. testnl _b[lag_remitgdp]*_b[gdpi2]==_b[lag_gdpi2]
```

```
(1) _b[lag_remitgdp]*_b[gdpi2] = -_b[lag_gdpi2]
```

```
F(1, 526) = 0.00
Prob > F = 0.9767
```

```
. testnl _b[lag_remitgdp]*_b[gdpj2]==_b[lag_gdpj2]
```

```
(1) _b[lag_remitgdp]*_b[gdpj2] = -_b[lag_gdpj2]
```

```
F(1, 526) = 0.20
Prob > F = 0.6574
```

Joint CFR

```
testnl (_b[lag_remitgdp]*_b[unempl]==_b[lag_unempl]) (_b[lag_remitgdp]*_b[hcunempl]==_b[lag_hcunempl]) (_b[lag_remitgdp]*_b[inflation]==_b[lag_inflation])
(_b[lag_remitgdp]*_b[popul]==_b[lag_popul]) (_b[lag_remitgdp]*_b[goveffect]==_b[lag_goveffect]) (_b[lag_remitgdp]*_b[gdpipc]==_b[lag_gdpipc])
(_b[lag_remitgdp]*_b[gdpjpc]==_b[lag_gdpjpc]) (_b[lag_remitgdp]*_b[gdpi2]==_b[lag_gdpi2])
(_b[lag_remitgdp]*_b[gdpj2]==_b[lag_gdpj2])
```

```
(1) _b[lag_remitgdp]*_b[unempl] = -_b[lag_unempl]
(2) _b[lag_remitgdp]*_b[hcunempl] = -_b[lag_hcunempl]
(3) _b[lag_remitgdp]*_b[inflation] = -_b[lag_inflation]
(4) _b[lag_remitgdp]*_b[popul] = -_b[lag_popul]
(5) _b[lag_remitgdp]*_b[goveffect] = -_b[lag_goveffect]
(6) _b[lag_remitgdp]*_b[gdpipc] = -_b[lag_gdpipc]
(7) _b[lag_remitgdp]*_b[gdpjpc] = -_b[lag_gdpjpc]
(8) _b[lag_remitgdp]*_b[gdpi2] = -_b[lag_gdpi2]
(9) _b[lag_remitgdp]*_b[gdpj2] = -_b[lag_gdpj2]
```

```
F(9, 526) = 0.70
Prob > F = 0.7073
```

Appendix 3.6.1 Test For CFR for Remittances per capita GDP

including Governance Indicators

```
xtreg remitcapita unempl hcunempl inflation goveffect policyv gdpipc gdpi2 gdpjpc gdpj2
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008 lag_re
> mitcapita lag_inflation lag_unempl lag_hcunempl lag_goveffect lag_gdpipc lag_gdpi2
lag_gdpjpc lag_gdpj2, fe
```

```
Fixed-effects (within) regression      Number of obs      =      610
Group variable: id                    Number of groups   =      52

R-sq:  within = 0.6563                 Obs per group: min =      3
      between = 0.1173                  avg =             11.7
      overall = 0.1745                  max =             13

F(30,528)                             =      33.61
corr(u_i, Xb) = -0.7233                 Prob > F           =      0.0000
```

remitcapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
unempl	-.0679475	.1755964	-0.39	0.699	-.4129009 .2770059
hcunempl	-.0017155	.4655533	-0.00	0.997	-.9162796 .9128486
inflation	-.0011841	.0052584	-0.23	0.822	-.011514 .0091458
goveffect	-1.861454	2.062632	-0.90	0.367	-5.913426 2.190517
policyv	1.197276	1.670415	0.72	0.474	-2.084199 4.47875
gdpipc	.000696	.0007629	0.91	0.362	-.0008027 .0021946
gdpi2	-2.45e-07	1.04e-06	-0.24	0.814	-2.29e-06 1.80e-06
gdpjpc	.002631	.0015479	1.70	0.090	-.0004099 .0056719
gdpj2	-1.27e-08	1.68e-08	-0.76	0.450	-4.56e-08 2.03e-08
y1997	10.93501	5.64181	1.94	0.053	-.1481388 22.01816
y1998	9.932564	5.199766	1.91	0.057	-.2822045 20.14733
y1999	7.927156	4.863997	1.63	0.104	-1.628006 17.48232
y2000	6.114116	4.512067	1.36	0.176	-2.749692 14.97792
y2001	5.086845	3.970006	1.28	0.201	-2.712101 12.88579
y2002	4.813041	3.680104	1.31	0.191	-2.416402 12.04248
y2003	4.321369	3.461281	1.25	0.212	-2.478203 11.12094
y2004	3.804193	3.322618	1.14	0.253	-2.722981 10.33137
y2005	2.730688	3.001631	0.91	0.363	-3.165917 8.627294
y2006	1.724986	2.811721	0.61	0.540	-3.798546 7.248519
y2007	.7155533	2.543281	0.28	0.779	-4.280639 5.711746
y2008	1.993663	1.895397	1.05	0.293	-1.729782 5.717108
lag_remitcapita	.1984357	.0199522	9.95	0.000	.1592402 .2376312
lag_inflation	-.0029971	.0051972	-0.58	0.564	-.0132068 .0072125
lag_unempl	.0495357	.174315	0.28	0.776	-.2929005 .3919718
lag_hcunempl	.1814684	.4446774	0.41	0.683	-.6920857 1.055022
lag_goveffect	2.706631	1.915969	1.41	0.158	-1.057227 6.470489
lag_gdpipc	.0006653	.000748	0.89	0.374	-.000804 .0021347
lag_gdpi2	1.71e-07	1.39e-06	0.12	0.902	-2.56e-06 2.90e-06
lag_gdpjpc	-.0001858	.00151	-0.12	0.902	-.0031522 .0027806
lag_gdpj2	-3.83e-09	1.58e-08	-0.24	0.809	-3.50e-08 2.73e-08
_cons	-55.64447	19.1149	-2.91	0.004	-93.19507 -18.09387
sigma_u	20.373116				
sigma_e	5.3609989				
rho	.93524101	(fraction of variance due to u_i)			

```
F test that all u_i=0:      F(51, 528) =      26.44      Prob > F = 0.0000
```

CFR for each variable

```
testnl _b[lag_remitcapita]*_b[unempl]==-_b[lag_unempl]
testnl _b[lag_remitcapita]*_b[hcunempl]==-_b[lag_hcunempl]
testnl _b[lag_remitcapita]*_b[inflation]==-_b[lag_inflation]
testnl _b[lag_remitcapita]*_b[goveffect]==-_b[lag_goveffect]
testnl _b[lag_remitcapita]*_b[gdpipc]==-_b[lag_gdpipc]
testnl _b[lag_remitcapita]*_b[gdpjpc]==-_b[lag_gdpjpc]
testnl _b[lag_remitcapita]*_b[gdpi2]==-_b[lag_gdpi2]
testnl _b[lag_remitcapita]*_b[gdpj2]==-_b[lag_gdpj2]
```

```
testnl _b[lag_remitcapita]*_b[unempl]==-_b[lag_unempl]
```

```
(1) _b[lag_remitcapita]*_b[unempl] = -_b[lag_unempl]
```

```
F(1, 528) = 0.06
Prob > F = 0.8089
```

```
.
. . testnl _b[lag_remitcapita]*_b[hcunempl]==-_b[lag_hcunempl]
```

```
(1) _b[lag_remitcapita]*_b[hcunempl] = -_b[lag_hcunempl]
```

```
F(1, 528) = 0.23
Prob > F = 0.6313
```

```
.
. . testnl _b[lag_remitcapita]*_b[inflation]==-_b[lag_inflation]
```

```
(1) _b[lag_remitcapita]*_b[inflation] = -_b[lag_inflation]
```

```
F(1, 528) = 0.38
Prob > F = 0.5386
```

```
.
. . testnl _b[lag_remitcapita]*_b[goveffect]==-_b[lag_goveffect]
```

```
(1) _b[lag_remitcapita]*_b[goveffect] = -_b[lag_goveffect]
```

```
F(1, 528) = 2.01
Prob > F = 0.1570
```

```
.
. . testnl _b[lag_remitcapita]*_b[gdpipc]==-_b[lag_gdpipc]
```

```
(1) _b[lag_remitcapita]*_b[gdpipc] = -_b[lag_gdpipc]
```

```
F(1, 528) = 1.77
Prob > F = 0.1838
```

```
.
. . testnl _b[lag_remitcapita]*_b[gdpjpc]==-_b[lag_gdpjpc]
```

```
(1) _b[lag_remitcapita]*_b[gdpjpc] = -_b[lag_gdpjpc]
```

```
F(1, 528) = 0.07
Prob > F = 0.7889
```

```
.
. . testnl _b[lag_remitcapita]*_b[gdpi2]==-_b[lag_gdpi2]
```

```
(1) _b[lag_remitcapita]*_b[gdpi2] = -_b[lag_gdpi2]
```

```
F(1, 528) = 0.01
Prob > F = 0.9182
```

```

. . testnl _b[lag_remitcapita]*_b[gdpj2]==-_b[lag_gdpj2]

(1)  _b[lag_remitcapita]*_b[gdpj2] = -_b[lag_gdpj2]

      F(1, 528) =          0.24
      Prob > F =          0.6225

```

Joint CFR

```

testnl (_b[lag_remitcapita]*_b[unempl]==-_b[lag_unempl]) (_b[lag_remitcapita]*_b[hcunempl]==-_b[lag_hcunempl]) (_b[lag_remitcapita]*_b[inflation]==-_b[lag_inflation]) (_b[lag_remitcapita]*_b[goveffect]==-_b[lag_goveffect]) (_b[lag_remitcapita]*_b[gdpipc]==-_b[lag_gdpipc]) (_b[lag_remitcapita]*_b[gdpjpc]==-_b[lag_gdpjpc]) (_b[lag_remitcapita]*_b[gdpj2]==-_b[lag_gdpj2])

(1)  _b[lag_remitcapita]*_b[unempl] = -_b[lag_unempl]
(2)  _b[lag_remitcapita]*_b[hcunempl] = -_b[lag_hcunempl]
(3)  _b[lag_remitcapita]*_b[inflation] = -_b[lag_inflation]
(4)  _b[lag_remitcapita]*_b[goveffect] = -_b[lag_goveffect]
(5)  _b[lag_remitcapita]*_b[gdpipc] = -_b[lag_gdpipc]
(6)  _b[lag_remitcapita]*_b[gdpjpc] = -_b[lag_gdpjpc]
(7)  _b[lag_remitcapita]*_b[gdpi2] = -_b[lag_gdpi2]
(8)  _b[lag_remitcapita]*_b[gdpj2] = -_b[lag_gdpj2]

      F(8, 528) =          0.66
      Prob > F =          0.7250

```

Appendix 3.6.2 Output of AR (1) for the Specification (7) Table 3.9

Dependent Variable: Remittances/GDP

```

xtregar remitgdp unempl hcunempl inflation goveffect policyv popul gdpipc gdpi2 gdpjpc gdpj2
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008, fe
FE (within) regression with AR(1) disturbances   Number of obs   =       610
Group variable: id                               Number of groups  =       52

R-sq:  within = 0.1005                               Obs per group: min =       3
       between = 0.0485                               avg =       11.7
       overall = 0.0523                               max =       13

corr(u_i, Xb) = -0.9081                               F(22,536)         =       2.72
                                                    Prob > F          =       0.0000

```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.0509364	.0383898	1.33	0.185	-.0244765	.1263494
hcunempl	.1543919	.0857947	1.80	0.072	-.0141433	.322927
inflation	.0005763	.0009026	0.64	0.523	-.0011967	.0023494
goveffect	-.6048614	.434143	-1.39	0.164	-1.457692	.2479691
policyv	-.3504468	.6077919	-0.58	0.564	-1.544393	.8434994
popul	-.0444073	.1057373	-0.42	0.677	-.2517832	.1636373
gdpipc	-.0002292	.0001644	-1.39	0.164	-.0005521	.0000937
gdpi2	1.19e-07	1.35e-07	0.88	0.381	-1.47e-07	3.84e-07
gdpjpc	.0013057	.0003105	4.21	0.000	.0006958	.0019155
gdpj2	-8.62e-09	2.85e-09	-3.03	0.003	-1.42e-08	-3.03e-09
y1997	.2972052	.3071139	0.97	0.334	-.3060893	.9004996
y1998	.717814	.5017995	1.43	0.153	-.2679207	1.703549
y1999	.7660206	.6239725	1.23	0.220	-.4597108	1.991752
y2000	.806414	.6603208	1.22	0.223	-.49072	2.103548
y2001	1.153942	.7206701	1.60	0.110	-.2617422	2.569626
y2002	1.710013	.750684	2.28	0.023	.2353691	3.184656
y2003	1.91077	.7135678	2.68	0.008	.5090381	3.312503
y2004	1.936703	.5901186	3.28	0.001	.7774742	3.095932
y2005	1.665144	.4524796	3.68	0.000	.7762935	2.553995
y2006	1.184305	.3345947	3.54	0.000	.5270274	1.841583
y2007	.560761	.3362588	1.67	0.096	-.0997858	1.221308
y2008	-.0800824	.318101	-0.25	0.801	-.7049599	.5447952
_cons	-24.72905	1.458933	-16.95	0.000	-27.59498	-21.86312
rho_ar	.86930884					
sigma_u	13.81682					
sigma_e	1.2025968					
rho_fov	.99248124	(fraction of variance because of u_i)				
F test that all u_i=0: F(51,536) = 4.74 Prob > F = 0.0000						

Appendix 3.6.3 Output of AR (1) for the Specification (9) Table 3.9

```
. xtregar remitgdp unempl hcunempl inflation goveffect pv_1 pv1 popul gdpipc gdpi2 gdpjpc
gdpj2 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008, fe
```

```
FE (within) regression with AR(1) disturbances   Number of obs   =   610
Group variable: id                             Number of groups =   52

R-sq:  within = 0.1146                          Obs per group:  min =   3
        between = 0.0481                          avg =   11.7
        overall = 0.0511                          max =   13

                                                F(23,535)      =   3.01
corr(u_i, Xb) = -0.9236                          Prob > F       =   0.0000
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.0509132	.0381137	1.34	0.182	-.0239576	.125784
hcunempl	.1438939	.0853415	1.69	0.092	-.0237515	.3115394
inflation	.0005673	.0008951	0.63	0.527	-.0011911	.0023256
goveffect	-.6362683	.4308982	-1.48	0.140	-1.482728	.2101916
pv_1	-1.238687	.6006065	-2.06	0.040	-2.418523	-.0588507
pv1	1.197213	.7976222	1.50	0.134	-.369642	2.764069
popul	-.0539018	.1067028	-0.51	0.614	-.2635096	.155706
gdpipc	-.0002095	.0001636	-1.28	0.201	-.000531	.0001119
gdpi2	1.22e-07	1.34e-07	0.91	0.364	-1.42e-07	3.86e-07
gdpjpc	.0012739	.0003081	4.13	0.000	.0006686	.0018792
gdpj2	-8.18e-09	2.84e-09	-2.88	0.004	-1.37e-08	-2.61e-09
y1997	.3257325	.301095	1.08	0.280	-.2657409	.9172059
y1998	.7505392	.4906627	1.53	0.127	-.2133226	1.714401
y1999	.803944	.6099884	1.32	0.188	-.3943221	2.00221
y2000	.8635384	.6462682	1.34	0.182	-.4059961	2.133073
y2001	1.157377	.705821	1.64	0.102	-.2291434	2.543897
y2002	1.723987	.7357943	2.34	0.019	.2785864	3.169387
y2003	1.934499	.699949	2.76	0.006	.5595134	3.309484
y2004	1.902857	.5792025	3.29	0.001	.7650667	3.040647
y2005	1.631676	.4447616	3.67	0.000	.7579832	2.50537
y2006	1.147634	.3311404	3.47	0.001	.4971388	1.798128
y2007	.5167934	.335305	1.54	0.124	-.1418825	1.175469
y2008	-.1177321	.3169747	-0.37	0.710	-.7403997	.5049356
_cons	-23.89032	1.427243	-16.74	0.000	-26.69401	-21.08663
rho_ar	.87215792					
sigma_u	15.084542					
sigma_e	1.1942709					
rho_fov	.99377087	(fraction of variance because of u_i)				

F test that all u_i=0: F(51,535) = 4.67 Prob > F = 0.0000

Appendix 3.6.4 Output of AR (1) for the Specification (11) Table 3.9

```
. xtregar remitgdp unempl hcunempl inflation goveffect pol_tax pol_govt pol_private popul
gdpipc gdpi2 gdpjpc gdpj2 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y20
> 06 y2007 y2008, fe
```

```
FE (within) regression with AR(1) disturbances   Number of obs   =       610
Group variable: id                             Number of groups =       52

R-sq:  within = 0.1032                          Obs per group:  min =        3
        between = 0.0485                          avg =       11.7
        overall = 0.0517                          max =        13

                                                F(24,534)       =       2.56
corr(u_i, Xb) = -0.9198                        Prob > F        =       0.0001
```

remitgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.049925	.0384355	1.30	0.195	-.0255783	.1254284
hcunempl	.1507214	.0859153	1.75	0.080	-.018052	.3194949
inflation	.000587	.0009028	0.65	0.516	-.0011864	.0023604
goveffect	-.568333	.4351342	-1.31	0.192	-1.423118	.2864517
pol_tax	.5150877	.9263771	0.56	0.578	-1.304703	2.334878
pol_govt	-.5528938	.6951651	-0.80	0.427	-1.918488	.8126999
pol_private	-.8909731	.8317286	-1.07	0.285	-2.524834	.7428881
popul	-.0503722	.106397	-0.47	0.636	-.2593802	.1586359
gdpipc	-.000228	.0001646	-1.39	0.167	-.0005513	.0000953
gdpi2	1.20e-07	1.35e-07	0.89	0.375	-1.46e-07	3.86e-07
gdpjpc	.0013171	.0003115	4.23	0.000	.0007051	.001929
gdpj2	-8.69e-09	2.86e-09	-3.04	0.002	-1.43e-08	-3.08e-09
y1997	.2940515	.3082565	0.95	0.341	-.3114927	.8995956
y1998	.7095908	.50157	1.41	0.158	-.2757016	1.694883
y1999	.752391	.6230016	1.21	0.228	-.4714434	1.976225
y2000	.7955653	.6585326	1.21	0.228	-.498067	2.089198
y2001	1.12201	.7194259	1.56	0.119	-.2912421	2.535262
y2002	1.690482	.7496052	2.26	0.025	.2179451	3.163019
y2003	1.888299	.7125378	2.65	0.008	.4885777	3.28802
y2004	1.930851	.5890683	3.28	0.001	.7736762	3.088027
y2005	1.653583	.4517688	3.66	0.000	.7661205	2.541045
y2006	1.161716	.3349819	3.47	0.001	.5036721	1.81976
y2007	.5290529	.3378215	1.57	0.118	-.1345693	1.192675
y2008	-.1014854	.3188545	-0.32	0.750	-.7278485	.5248776
_cons	-24.54254	1.454159	-16.88	0.000	-27.39911	-21.68596
rho_ar	.86997757					
sigma_u	14.737112					
sigma_e	1.2030156					
rho_fov	.99338038	(fraction of variance because of u_i)				

F test that all u_i=0: F(51,534) = 4.66 Prob > F = 0.0000

Appendix 3.6.6 Output of AR (1) for the Specification (10) Table 3.9

xtregar remitcapita unempl hcunempl inflation goveffect pv_1 pv1 gdpipc gdpj2 gdpjpc gdpj2
y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006 y2007 y2008,fe

FE (within) regression with AR(1) disturbances Number of obs = 610
Group variable: id Number of groups = 52

R-sq: within = 0.3182 Obs per group: min = 3
 between = 0.0519 avg = 11.7
 overall = 0.0937 max = 13

 F(22,536) = 11.37
corr(u_i, Xb) = -0.7916 Prob > F = 0.0000

remitcapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
unempl	.1492213	.1683824	0.89	0.376	-.1815491 .4799918
hcunempl	-.4169252	.391618	-1.06	0.288	-1.186219 .352369
inflation	.0003425	.005445	0.06	0.950	-.0103537 .0110387
goveffect	-2.204772	2.211753	-1.00	0.319	-6.549539 2.139994
pv_1	-3.081262	2.858185	-1.08	0.281	-8.695879 2.533356
pv1	-1.419829	3.246273	-0.44	0.662	-7.796808 4.957149
gdpipc	.0021023	.0004399	4.78	0.000	.0012382 .0029663
gdpj2	-2.02e-07	3.70e-07	-0.55	0.585	-9.29e-07 5.24e-07
gdpjpc	.0025486	.0012423	2.05	0.041	.0001083 .0049889
gdpj2	-1.33e-08	1.05e-08	-1.26	0.209	-3.40e-08 7.46e-09
y1997	6.151454	4.2892	1.43	0.152	-2.274249 14.57716
y1998	8.384335	5.862168	1.43	0.153	-3.131305 19.89998
y1999	7.848524	6.138665	1.28	0.202	-4.210267 19.90732
y2000	5.902483	5.708046	1.03	0.302	-5.310401 17.11537
y2001	4.806269	5.349047	0.90	0.369	-5.701397 15.31394
y2002	4.500133	4.908352	0.92	0.360	-5.141832 14.1421
y2003	4.096419	4.26745	0.96	0.338	-4.286558 12.4794
y2004	3.591243	3.417709	1.05	0.294	-3.122504 10.30499
y2005	2.316822	2.586998	0.90	0.371	-2.765077 7.39872
y2006	.6430929	1.848724	0.35	0.728	-2.98854 4.274726
y2007	-1.968107	1.576289	-1.25	0.212	-5.064568 1.128355
y2008	-.1723701	1.405499	-0.12	0.902	-2.933333 2.588593
_cons	-60.97556	16.25169	-3.75	0.000	-92.90037 -29.05076
rho_ar	.45129412				
sigma_u	24.684764				
sigma_e	6.0758687				
rho_fov	.94287665				(fraction of variance because of u_i)

F test that all u_i=0: F(51,536) = 19.51 Prob > F = 0.0000

Appendix 3.6.7 Output of AR (1) for the Specification (12) Table 3.9

```
xtregar remitcapita unempl hcunempl inflation goveffect pol_tax pol_govt pol_private gdpipc
gdpi2 gdpjpc gdpj2 y1997 y1998 y1999 y2000 y2001 y2002 y2003 y2004 y2005 y2006
> y2007 y2008, fe
```

```
FE (within) regression with AR(1) disturbances Number of obs = 610
Group variable: id Number of groups = 52
```

```
R-sq: within = 0.3180 Obs per group: min = 3
      between = 0.0495 avg = 11.7
      overall = 0.0898 max = 13
```

```
corr(u_i, Xb) = -0.8003 F(23,535) = 10.85
Prob > F = 0.0000
```

remitcapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unempl	.1410751	.169398	0.83	0.405	-.1916918	.4738419
hcunempl	-.413036	.392612	-1.05	0.293	-1.184286	.358214
inflation	.000483	.0054538	0.09	0.929	-.0102306	.0111966
goveffect	-2.053225	2.22404	-0.92	0.356	-6.422148	2.315698
pol_tax	1.005862	4.393705	0.23	0.819	-7.625168	9.636892
pol_govt	-1.933933	3.449098	-0.56	0.575	-8.709368	4.841502
pol_private	-2.482571	3.68297	-0.67	0.501	-9.717427	4.752284
gdpipc	.0021009	.0004442	4.73	0.000	.0012282	.0029735
gdpi2	-2.02e-07	3.70e-07	-0.55	0.585	-9.30e-07	5.25e-07
gdpjpc	.0026626	.0012381	2.15	0.032	.0002304	.0050948
gdpj2	-1.45e-08	1.05e-08	-1.38	0.169	-3.52e-08	6.21e-09
y1997	6.287114	4.286208	1.47	0.143	-2.132748	14.70698
y1998	8.580367	5.853603	1.47	0.143	-2.918497	20.07923
y1999	8.049466	6.129475	1.31	0.190	-3.991323	20.09026
y2000	6.060195	5.701985	1.06	0.288	-5.14083	17.26122
y2001	4.952	5.342038	0.93	0.354	-5.541943	15.44594
y2002	4.659383	4.902424	0.95	0.342	-4.970978	14.28974
y2003	4.210009	4.264276	0.99	0.324	-4.166768	12.58679
y2004	3.715775	3.411635	1.09	0.277	-2.986068	10.41762
y2005	2.393702	2.58417	0.93	0.355	-2.682663	7.470067
y2006	.6571778	1.85117	0.36	0.723	-2.979276	4.293631
y2007	-2.004174	1.582451	-1.27	0.206	-5.112753	1.104406
y2008	-.2002742	1.407967	-0.14	0.887	-2.966096	2.565548
_cons	-62.91359	16.17712	-3.89	0.000	-94.69206	-31.13513
rho_ar	.45136566					
sigma_u	25.241274					
sigma_e	6.0824659					
rho_fov	.94511885	(fraction of variance because of u_i)				

```
F test that all u_i=0: F(51,535) = 18.73 Prob > F = 0.0000
```

Appendix 4.1 Definition of Variables and the Questionnaire

Dependent Variables	Abbreviation of the Variable	Description	Type of the Variable
Consumption	W_i	The share of expenditure on Current Consumption	Continuous
Durable Goods	W_i	The share of expenditure on Durable Goods	Continuous
Education	W_i	The share of Expenditure on Education	Continuous
Total household Expenditure (logx)	$\log x_i$	Total Household Expenditure	Continuous
Dependent Variables		Description	Type of Variable
Age of the HH	AGEHH	Age of the Head of household	Continuous
Age of the Household Head ² (AgeHH ²)	AGEHH ²	Square term of the Age of the Head of household	Continuous
Number of Children	C15	Number of Children below the age of 15	Continuous
Number of children ²	C15 ²	Square term of the Number of Children below the age of 15	Continuous
Number of Adults	A	Number of adult Household members, above the age of 15	Continuous
Number of adults ²	A ²	Inflation Rate in country i	Continuous
Education of the HH	EDHH	Years the head of household spent in education	Continuous
Gender of the HH	G	Gender of the Head of household	Dummy 1 if Female
Self-Employed	SE	If the Head of household is Self-Employed	Dummy, 1 if self-employed
Housing Status (HS=1 owner of a house)	HO	If the Household lives in its own house	Dummy, 1 if owning a house
Dummy of remittances*logx (D_rem*logx)	(D_rem*logxi)	The interaction term between dummy of remittances and log of expenditure (Ia and Ib) Interaction term between dummy of remittances and log of income (Ic, and II and III)	Interaction and continuous

Migrants Advise on remittances*Rremit*logx (D_rem*MA*logx)	(D_rem*logxi*MA)	The interaction term between dummy of remittances and log of expenditure and if the Household receives advise on spending (Ia and Ib) Interaction term between dummy of remittances and log of income and if the Household receives advise on spending (Ic, and II and III)	Interaction and continuous
Frequency of visits*Rremit*logxs (D_rem*FV*logx)	(D_rem*logxi*FV)	The interaction term between dummy of remittances and log of expenditure and frequency of visits (Ia and Ib) Interaction term between dummy of remittances and log of income and frequency of visits (Ic, and II and III)	Interaction and continuous
Years Since Migration*Rremit*logxs (D_rem*YSM*logx)	(D_rem*logxi*YSM)	The interaction term between dummy of remittances and log of expenditure and years since migration (Ia and Ib) Interaction term between dummy of remittances and years since migration (Ic, and II and III)	Interaction and continuous
Years Since Migration*Rremit*logxs (D_rem*YSM*logx) ²	(D_rem*logxi*YSM) ²	The interaction term between dummy of remittances and log of expenditure and years since migration (squared) (Ia and Ib) Interaction term between dummy of remittances and years since migration (squared) (Ic, and II and III)	Interaction and continuous

Remittance Survey

Management Information

M-1. Respondent Identification Number _____

M-2. Sampling Point: _____

M-3. Month of Interview

12. December /2009 1. January/2010

M-4. Date of Interview: _____

M-5. Region

- | | |
|------------------------|----------------------|
| 1. Prishtinë/Pristina | 4. Gjakovë/Djakovica |
| 2. Mitrovicë/Mitrovica | 5. Gjilan/Gnjilane |
| 3. Prizren | 6. Pejë/Pec |
| 7. Ferizaj/Urosevac | |

M-6. Residence

1. Rural area
2. Village
3. Town/City

M-7. Code Municipality

- | | |
|------------------------|-------------------------|
| 1. Prishtinë/Pristina | 21. Ferizaj/Urosevac |
| 2. Mitrovicë/Mitrovica | 22. Kaçanik/Kacanik |
| 3. Gjilan/Gnjilane | 23. Fushë Kosovë/ |
| 4. Pejë/Pec | 24. Obiliq/Obilic |
| 5. Prizren | 25. Novobërdë/Novo Brdo |
| 6. Gjakovë/Djakovica | 26. Zubin Potok |
| 7. Podujevë/Podujevo | 27. Shtërpçë/Strpce |
| 8. Vushtrri/Vucitrn | 28. Zveçan/Zvecan |
| 9. Skenderaj/Srbica | 29. Gillogovc/Glogovac |
| 10. Leposaviq/Leposac | 30. Malishevë/Malisevo |
| 11. Klinë/Klina | 31. Junik/Junik |
| 12. Istog/Istok | |
| 13. Deçan/Decani | |
| 14. Dragash/Dragash | |
| 15. Suharekë/Suva Reka | |
| 16. Rahovec/Orahovac | |
| 17. Viti/Vitina | |
| 18. Kamenicë/Kamenica | |
| 19. Lipjan/Lipljan | |
| 20. Shtime/Stimlje | |

M-8. Day of the Week Interview Completed

- | | | | |
|-------------|-----------|-------------|--------------|
| 1. Sunday | 2. Monday | 3. Tuesday | 4. Wednesday |
| 5. Thursday | 6. Friday | 7. Saturday | |

M-9. Interviewer Code: _____

M-10. Interview Completed on the ...

M-10. Interview Completed on the ...

1. first visit to that house?
2. second (return) visit to that house? or
3. third visit to that house?

M-11. Supervisor Code: _____

M-12. Record Time (using 24 hour clock) Interview Began: ____ : ____

M-13. Record Time (using 24 hour clock) Interview was Completed: ____ : ____
(Fill in all four data positions)

M-14. Record Length of Interview in Minutes: ____ _
(Record times greater than 99 minutes as 99)

M-15. Key-puncher Code: _____

Begin Sampling Procedure Here

1. After selecting a house or apartment using the random route technique,
2. Introduce yourself: "Good morning/afternoon/evening. My name is _____.
I am working for UBO Consulting, We are conducting a survey of public opinion throughout Kosovo and want to interview the head of your household. Answers to the survey will be strictly confidential, according to international research standards."
3. If the designated respondent is at home and refuses the interview or another family member blocks the interview, politely leave the house and to the next appropriate house or apartment on that route.
4. If the designated respondent is not at home, attempt to schedule an interview for later that day (in rural areas) or at any other time in the fieldwork period (in urban areas). Record the date and time of that appointment: Date: _____ Time: _____

Q1. How many people are in your family (including yourself)? _____

Q2. Which is your housing status?

1. Private apartment/ house
2. Rented apartment/house
3. Apartment/house without paying (rent)
4. Temporary shelter (collective shelter, tent, etc.)
5. Other, please specify _____
6. Don't know

Q3. Please list the members of your family, age, gender, education and employment. Please begin with head of household.

Nr.	Initials	Gender	Age	Years of education	Employment status *
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

- * 1 – employed
 2 – not employed (actively looking for work)
 3- not employed (not looking for work)
 4- not applicable

Q4. How do you evaluate the present social-economic situation of your family (Please rank them by order from 1 “being very good” to 4 “Very difficult”)?

		Very good	Good (suitable)	Difficult	Very difficult	N/A
1	Nourishment/Food	1	2	3	4	9
2	Housing	1	2	3	4	9
3	Clothes	1	2	3	4	9
4	Health	1	2	3	4	9
5	Education	1	2	3	4	9
6	Leisure	1	2	3	4	9
7	Productive Assets*	1	2	3	4	9
8	Other (specify)	1	2	3	4	9

* Land, Tractors, Sheep, Cows, etc.

Q5. Approximately how much did your household spend in average per month on each of the following items...

	Items	Amount (EUR)
Q5.1	Food	
Q5.2	Non food (Alcohol, cigarettes, everyday household goods, e.g. hygienic products, detergents)	
Q5.3	Semi durable goods (clothes, shoes, furniture)	
Q5.4	Durable goods (home appliances, machinery, etc.)	
Q5.5	Housing (rent and assessed rent, public utilities – phone, water, electricity)	
Q5.6	Health (medicines and medical services)	
Q5.7	Education	
Q5.8	Total household expenditure in last month	

A. RESPONDENT PROFILE

Q6. Currently are you.....

1. Married
2. Not married
3. Divorced
4. Widow
5. Free cohabitation
6. NA

Q7. What is your ethnicity/what group do you belong to?

- | | |
|-------------|--------------------------------|
| 1. Albanian | 6. Roma |
| 2. Serb | 7. Ashkali |
| 3. Bosnian | 8. Egyptian |
| 4. Goran | 9. Other, please specify _____ |
| 5. Turk | 10. Don't know |

Q8. Could you tell us how much did you earn monthly (in average) during 2009?

1. I did not earn at all
2. Specify _____
3. Don't know

Q9. Currently, you are...

- 9.1 Unemployed
 - 1a. Not receiving social assistance
 - 1b. Receiving social assistance
- 9.2 Permanently employed [go to Q12]
 - 2a. In Public Sector
 - 2b. In Private Sector
 - 2b.1 Employee
 - 2b.2 Employer
 - 2b.3 Self-employed

9.3 Seasonally/Non-Permanent Employment (go to Q12)

- 9.4 Pensioner
- 9.5 Housewife
- 9.6 Student
- 9.7 Other. Please specify? _____
- 9.8 DK/NA

Q10. If you are unemployed, are you actively looking for a job?

- 1. Yes
- 2. No

Q10a. If yes, are you registered at the local Unemployment Centre?

- 1. Yes
- 2. No

Q11. What is the minimum level of monthly wage for which you would accept to work?

- 1. 0 – 50 €
- 2. 51 – 100 €
- 3. 101 – 150 €
- 4. 151 – 200 €
- 5. 201 – 250€
- 6. 251 – 300 €
- 7. 301 – 350 €
- 8. 351 – 400 €
- 9. 401 – 450 €
- 10. Above 451 €
- 11. Don't know/Ref.

Q12. Do you have specific plans to migrate in the near future (during 2010)?

- 1. Yes; Where _____
- 2. No

Q13. At what level of monthly income would you be willing to migrate?

- 1. Less than 500 €
- 2. 501 – 1000 €
- 3. 1001 – 1500 €
- 4. 1501 – 2000 €
- 5. 2001 – 2500 €
- 6. 2501 – 3000 €
- 7. More than 3000 €
- 8. Don't know/Ref.

Q14. What is your total household monthly income, from all sources of revenues of all members (without including remittances from abroad)?

- 1. 0 – 100 €
- 2. 101 – 200 €
- 3. 201 – 400€
- 4. 401 – 600€
- 5. 601 – 800 €
- 6. 801€ and above
- 7. Don't know/Ref.

Q15. Can you please specify your monthly average incomes from all your sources (Average of last three months)?

No	Monthly average income	No of persons	Total <u>Monthly</u> Income
1	Permanent Employment (Contract)		
2	Non-permanent Employment		
3	Income from permanent self-employment		
4	Pension		
5	Social Assistance		
6	Housewife		
7	Student		
8	Other specify		
9	Total		

Q16. On the last occasion you needed to see a doctor or medical specialist, to what extent did each of the following factors make it difficult for you to do so?

	Very difficult	Fairly difficult	Average	Fairly easy	Very easy
1 Cost of seeing the doctor	1	2	3	4	5
2 Cost of buying medicines	1	2	3	4	5

Q17. For the members of your family who attend formal education, to what extent each of the following factors make it difficult for them to attend regularly?

	Very difficult	Fairly difficult	Average	Fairly easy	Very easy
1 Cost of travelling to education facility	1	2	3	4	5
2 Cost of buying books	1	2	3	4	5
3 Cost of paying the tuition fees	1	2	3	4	5

Q18. How many family members live outside of Kosovo? _____

- Q19. Do you receive money or goods from anyone living as migrant as outside Kosovo?**
1. Yes
 2. No (THIS SURVEY ENDS HERE, WE THANK YOU FOR YOUR COOPERATION)

A. RECEIVERS PROFILE

- Q20. What is your relation to remittent(s)? (more than one answer)**
1. Mothe 8. Daughter
 2. Father9. Uncle
 3. Husband10. Aunt
 4. Wife 11. Cousin
 5. Brother 12. Friend
 6. Sister 13. Other (please specify) _____
 7. Son

Q21. Could you please provide some more detailed information related to remittent?

- 21a. Year of migration: _____
 21b. Country of migration _____

Q22. Employment /occupation of the remittent:

22.1 Unemployed

- 1a. Not receiving social assistance
- 1b. Receiving social assistance

22.2 Permanently employed

- 2a. In Public Sector
- 2b. In Private Sector
 - 2b.1 Employee
 - 2b.2 Employer
 - 2b.3 Self-employed

- 22.3 Seasonally/Non-Permanent Employment
- 22.4 Pensioner
- 22.5 Housewife
- 22.6 Student
- 22.7 Other. Please specify? _____
- 22.8 DK/NA

Q23. What were the key reasons for your family member(s) to migrate? (Select and paste from the list provided below)

1. Most Important []
2. Second most important []
3. Third most important []

Reasons list

1. Economic Reasons
2. Political Reasons
3. Education
4. Marriage /Family reunion
5. War/Refugee
- Other specify: _____
7. DK/NA

Q24. What is the legal status of a remittent?

1. with visa;
2. with residence permit;
3. with citizenship; or
4. illegal;
5. other _____
6. DK/NA

D.CHARACTERISTICS OF REMITTANCES

Q25. When did you start receiving money from abroad?
 _____ (Year)

Q26. Based on your best estimate, was that amount more, less or at the same level as in 2008?

1. More
2. Less
3. At the same level
4. I don't know
5. Refusal

Q27. Do you expect your HH to receive more or less money in 2010, when compared to 2009?

1. More
2. Less
3. At the same level
4. I don't know
5. Refusal

Q28. Who is the decision-maker regarding spending money received? (Individuals' position within your household)

- | | |
|------------|---------------------------------|
| 1. Sender | 8. Son |
| 2. Mother | 9. Daughter |
| 3. Father | 10. Uncle |
| 4. Husband | 11. Aunt |
| 5. Wife | 12. Cousin |
| 6. Brother | 13. Friend |
| 7. Sister | 14. Other(please specify) _____ |

Q29. In your opinion, what are the most important purposes/reasons for your family member transferring money to Kosovo?

1. Most Important []
2. Second most important []
3. Third most important []

Reasons list

1. Support family
2. Saving in bank (Savings of the remittent)
3. Buying property
4. Invest in a business
5. Lend to friends and family
6. Other specify
7. DK/NA

Q30. On average how often does the remittent living abroad visit Kosovo on annual basis?

1. Less than once a year
2. Once a year
3. Twice a year
4. Three to four times a years
5. Several times during the year
6. Other _____

Q31. How frequently has your family member or relative sent you money over the last 12 months?

1. Weekly
3. Four times a year
5. Once a year
2. Monthly
4. Two times a year
6. Other____(please specify)

Q32. Could you please assess the total value of cash in Euros received during 2009? € _____

Q33. Of these Euros received during 2009, would you tell us about the amounts in each period?

Period	Amount	Percent
January - March		
April - June		
July - September		
October - December		
Total		100%

Q34. Of the money received in total during 2009, please specify the channels and respective shares through which you have received the money from.

Means	Percent
Bank Transfers	
Credit/Debit cards *	
Money transfer agencies	
Post office	
Personally- by a migrated member of the HH	
Personally by a migrated friend	
Total	100%

* issued abroad

Q35. What is the average cost (in percentage of remitted funds) of remitting through the channels specified below?

Means	Average cost in (%)	Don't know
Bank Transfers		
Credit/Debit cards *		
Money transfer agencies		
Post office		
Personally- by a migrated member of the HH		
Personally by a migrated friend		

Q 36. Did you receive remittances in-kind during the last 12 months?

1. Yes
2. No [Skip Q36.a]

Q36.a. If yes, please specify:

1. Land/Home
2. Vehicle
3. Home Appliances/Furniture
4. Machinery (tractor, combine, etc)
5. None
6. Other _____

Q37. What is the estimated value of these in-kind remittances? _____

Q38. How many people in your household have benefited from remittances during the last 12 months?

1. 1
2. 2-3
3. 4-5
4. 5-6
5. More than 6, please specify
6. Don't know/Ref.

Q39. Can you please tell us the contribution of the remittance for the following expenditure in average for one month?

	Items	In
Q39.1	Food	
Q39.2	Non food (Alcohol, cigarettes, everyday household goods, e.g. hygienic products, detergents)	
Q39.3	Semi durable goods (clothes, shoes, furniture)	
Q39.4	Durable goods (home appliances, machinery, etc.)	
Q39.5	Housing (rent and assessed rent, public utilities – phone, water, electricity)	
Q39.6	Health (medicines and medical services)	
Q39.7	Education	
Q39.8	Total household expenditure in last month	

Appendix 4.2 The Estimation of the current consumption category

Stata Output for the Specification (Ia)

```
reg currentconsumption lnx agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemployed adv_r_logx freq_r_logx dremlogx ysm_r_logx ysm_r_logx2
```

Source	SS	df	MS	Number of obs =	3760
Model	165498.473	16	10343.6546	F(16, 3743) =	44.61
Residual	867961.393	3743	231.889231	Prob > F =	0.0000
				R-squared =	0.1601
				Adj R-squared =	0.1566
Total	1033459.87	3759	274.929467	Root MSE =	15.228

currentconsump~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnx2	-4.979117	.2097978	-23.73	0.000	-5.390446 -4.567788
agehh	-.346474	.1085062	-3.19	0.001	-.559211 -.133737
agehh2	.0028232	.0011071	2.55	0.011	.0006526 .0049938
numberofchildren	1.769686	.4283275	4.13	0.000	.9299077 2.609464
nchild2	-.0254232	.100654	-0.25	0.801	-.2227651 .1719188
numberofadults	1.062803	.582238	1.83	0.068	-.0787315 2.204338
nad2	.0232023	.0620287	0.37	0.708	-.098411 .1448156
edu_hh	.2844362	.0738429	3.85	0.000	.13966 .4292125
gender	2.47969	.7138024	3.47	0.001	1.08021 3.879169
housingstatus	3.96786	.9338682	4.25	0.000	2.13692 5.7988
selfemployed	-1.49768	.9013544	-1.66	0.097	-3.264874 .2695136
adv_r_logx	.6350509	.2224905	2.85	0.004	.1988365 1.071265
freq_r_logx	-.2254387	.1003271	-2.25	0.025	-.4221398 -.0287376
dremlogx	.4768056	.3502476	1.36	0.173	-.2098891 1.1635
ysm_r_logx	-.0128326	.038543	-0.33	0.739	-.0884 .0627347
ysm_r_logx2	.0002972	.0010716	0.28	0.782	-.0018038 .0023982
_cons	90.86041	2.969478	30.60	0.000	85.03846 96.68236

Test for Heteroskedasticity (Ia)

```
estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
```

```
Ho: Constant variance
```

```
Variables: fitted values of currentconsumption
```

```
chi2(1) = 68.34
```

```
Prob > chi2 = 0.0000
```

Stata Output for the Specification (Ia); log of expenditure

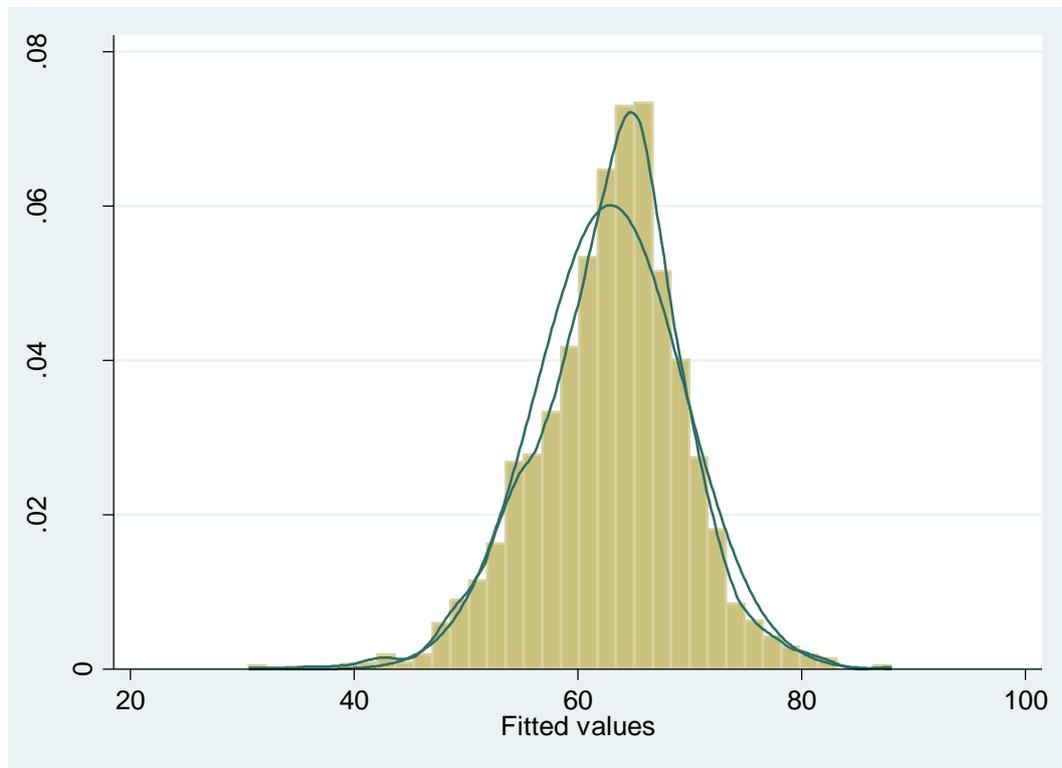
```
. reg currentconsumption lnx agehh agehh2 numberofchildren nchild2 numberofadults nad2
edu_hh gender housingstatus selfemployed adv_r_logx freq_r_logx dremlogx ysm_r_logx
ysm_r_logx2, robust
```

Linear regression

```
Number of obs = 3760
F( 16, 3743) = 36.77
Prob > F = 0.0000
R-squared = 0.1601
Root MSE = 15.228
```

currentconsump~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnx	-4.979117	.2397882	-20.76	0.000	-5.449245	-4.508989
agehh	-.346474	.1094652	-3.17	0.002	-.5610912	-.1318569
agehh2	.0028232	.0011248	2.51	0.012	.0006179	.0050285
numberofchildren	1.769686	.3927592	4.51	0.000	.9996429	2.539729
nchild2	-.0254232	.0827014	-0.31	0.759	-.1875674	.136721
numberofadults	1.062803	.5791849	1.83	0.067	-.0727456	2.198352
nad2	.0232023	.0613906	0.38	0.705	-.0971601	.1435646
edu_hh	.2844362	.0803284	3.54	0.000	.1269446	.4419279
gender	2.47969	.6869304	3.61	0.000	1.132896	3.826484
housingstatus	3.96786	1.051481	3.77	0.000	1.906329	6.029392
selfemployed	-1.49768	.8883943	-1.69	0.092	-3.239464	.244104
adv_r_logx	.6350509	.2101412	3.02	0.003	.2230485	1.047053
freq_r_logx	-.2254387	.0945254	-2.38	0.017	-.4107649	-.0401125
dremlogx	.4768056	.3182643	1.50	0.134	-.1471826	1.100794
ysm_r_logx	-.0128326	.035686	-0.36	0.719	-.0827985	.0571332
ysm_r_logx2	.0002972	.0010496	0.28	0.777	-.0017606	.002355
_cons	90.86041	3.145933	28.88	0.000	84.6925	97.02832

Distribution of the Residuals (Ia)



Skewness and Kurtosis Test on Normality (Ia)

sktest residuals

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
residuals	3.8e+03	0.0000	0.0000	.	0.0000

Inner Quartile Range (Ia)

iqr residuals

mean=	62.92	std.dev.=	6.635	(n=	3760)
median=	63.57	pseudo std.dev.=	5.96	(IQR=	8.039)
10 trim=	63.13				
				low	high
				-----	-----
		inner fences		46.96	79.12
		# mild outliers		45	30
		% mild outliers		1.20%	0.80%
		outer fences		34.9	91.18
		# severe outliers		4	0
		% severe outliers		0.11%	0.00%

Ramsey RESET Test for Functional Form (Ia)

ovtest

```
Ramsey RESET test using powers of the fitted values of currentconsumption
Ho: model has no omitted variables
      F(3, 3740) =      27.38
      Prob > F =      0.0000
```

Stata Output for the Specification (Ib); Absolute Values of expenditure and remittances

```
. reg currentconsumption totalexpenditure exp2 agehh agehh2 numberofchildren nchild2
numberofadults nad2 edu_hh gender housingstatus selfem
> ployed advrexp freqrexp exprem exprem2 ysmrexp ysmrexp2, robust
```

```
Linear regression                               Number of obs =      3760
                                                F( 17, 3741) =      .
                                                Prob > F =      .
                                                R-squared =      0.1754
                                                Root MSE =      15.093
```

currentconsump~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
totalexpenditure	-.0359366	.0023146	-15.53	0.000	-.0404747	-.0313986
exp2	6.72e-06	1.26e-06	5.35	0.000	4.26e-06	9.18e-06
agehh	-.3489365	.1077692	-3.24	0.001	-.5602285	-.1376444
agehh2	.002934	.0011045	2.66	0.008	.0007685	.0050994
numberofchildren	1.675568	.3904019	4.29	0.000	.9101463	2.440989
nchild2	.0031366	.0823624	0.04	0.970	-.158343	.1646162
numberofadults	.7081879	.5711553	1.24	0.215	-.4116182	1.827994
nad2	.0587366	.0610393	0.96	0.336	-.0609369	.1784101
edu_hh	.2486573	.0793423	3.13	0.002	.0930989	.4042158
gender	2.221613	.6767134	3.28	0.001	.8948496	3.548376
housingstatus	3.837439	1.049173	3.66	0.000	1.780432	5.894446
selfemployed	-1.501585	.8719166	-1.72	0.085	-3.211064	.2078929
advrexp	3.05e-06	7.90e-06	0.39	0.699	-.0000124	.0000185
freqrexp	-3.98e-06	3.76e-06	-1.06	0.290	-.0000113	3.39e-06
exprem	.0000281	.0000132	2.13	0.034	2.18e-06	.000054
exprem2	-2.21e-11	1.76e-11	-1.26	0.209	-5.67e-11	1.24e-11
ysmrexp	-6.33e-07	1.20e-06	-0.53	0.599	-2.99e-06	1.73e-06
ysmrexp2	2.52e-08	2.97e-08	0.85	0.396	-3.30e-08	8.35e-08
_cons	72.72473	2.977413	24.43	0.000	66.88722	78.56224

Ramsey RESET Test for Functional Form (Ib)

ovtest

```
Ramsey RESET test using powers of the fitted values of currentconsumption
Ho: model has no omitted variables
      F(3, 3739) =      16.58
      Prob > F =      0.0000
```

Stata Output for the Specification (Ic); log of income

```
. reg currentconsumption logxi agehh agehh2 numberofchildren nchild2 numberofadults nad2
edu_hh gender housingstatus selfemployed ad
> vrincc freqrinc dremlogxi ysmrinc ysminc2, robust
```

```
Linear regression                                Number of obs =    3760
                                                F( 16,  3743) =     9.36
                                                Prob > F      =    0.0000
                                                R-squared    =    0.0356
                                                Root MSE    =   16.318
```

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
currentconsump~n						
logxi	-1.069412	.3934331	-2.72	0.007	-1.840776	-.2980476
agehh	-.456109	.1152542	-3.96	0.000	-.6820761	-.2301419
agehh2	.0036435	.0011825	3.08	0.002	.0013251	.0059619
numberofchildren	1.65485	.4438765	3.73	0.000	.7845868	2.525114
nchild2	-.0264426	.1007079	-0.26	0.793	-.2238903	.171005
numberofadults	-.5887553	.5810957	-1.01	0.311	-1.72805	.5505399
nad2	.097107	.0613163	1.58	0.113	-.0231096	.2173235
edu_hh	.0859541	.0869555	0.99	0.323	-.0845308	.256439
gender	2.610598	.7242948	3.60	0.000	1.190547	4.030649
housingstatus	3.546114	1.047126	3.39	0.001	1.49312	5.599107
selfemployed	.7217201	.9054145	0.80	0.425	-1.053434	2.496874
advrinc	.6008632	.213829	2.81	0.005	.1816305	1.020096
freqrinc	-.2810079	.0926834	-3.03	0.002	-.4627228	-.0992931
dremlogxi	.2845014	.3252086	0.87	0.382	-.353102	.9221047
ysmrinc	-.0040017	.0359683	-0.11	0.911	-.074521	.0665177
ysminc2	-.0002211	.0010385	-0.21	0.831	-.0022573	.001815
_cons	76.46328	3.787605	20.19	0.000	69.03731	83.88925

Ramsey RESET Test for Functional Form (Ic)

```
ovtest
```

```
Ramsey RESET test using powers of the fitted values of currentconsumption
Ho: model has no omitted variables
      F(3, 3740) =      1.12
      Prob > F =      0.3377
```

Joint Significance Test

```
test adv_r_loginc freq_r_loginc ysm_r_loginc ysm_r_loginc2
```

```
( 1) adv_r_loginc = 0
( 2) freq_r_loginc = 0
( 3) ysm_r_loginc = 0
( 4) ysm_r_loginc2 = 0

      F( 4, 3743) =      4.15
      Prob > F =      0.0023
```

```
. test adv_r_loginc freq_r_loginc dremilninc ysm_r_loginc ysm_r_loginc2
```

```
( 1) adv_r_loginc = 0
( 2) freq_r_loginc = 0
( 3) dremilninc = 0
( 4) ysm_r_loginc = 0
( 5) ysm_r_loginc2 = 0

      F( 5, 3743) =      3.44
      Prob > F =      0.0042
```

Appendix 4.3 The Estimation of the Durable Goods and Education

Appendix 4.3.1 Durable Goods Category

```
Tobit durablegoods lninc agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemployed adv_r_loginc freq_r_loginc dremilninc ysm_r_loginc
ysm_r_loginc2, ll
Tobit regression
```

Number of obs = 3760
LR chi2(16) = 278.24
Prob > chi2 = 0.0000
Pseudo R2 = 0.0273

Log likelihood = -4951.3657

durablegoods	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lninc	5.97191	.5937067	10.06	0.000	4.80789	7.13593
agehh	.5694754	.176509	3.23	0.001	.2234122	.9155386
agehh2	-.005711	.0018234	-3.13	0.002	-.0092859	-.002136
numberofch~n	-1.817703	.7617259	-2.39	0.017	-3.311141	-.3242644
nchild2	.0467212	.20133	0.23	0.817	-.3480058	.4414483
numberofad~s	.1801346	.921342	0.20	0.845	-1.626246	1.986516
nad2	-.0669877	.0973269	-0.69	0.491	-.2578067	.1238312
edu_hh	.0990567	.1210338	0.82	0.413	-.138242	.3363554
gender	-6.489356	1.24936	-5.19	0.000	-8.938847	-4.039864
housingsta~s	9.912523	1.821006	5.44	0.000	6.342261	13.48278
selfemployed	-2.431991	1.477467	-1.65	0.100	-5.32871	.464727
adv_r_loginc	-.3079575	.3377334	-0.91	0.362	-.9701169	.354202
freq_r_log~c	-.1820669	.1554041	-1.17	0.241	-.4867518	.122618
dremilninc	1.018241	.4912508	2.07	0.038	.0550953	1.981386
ysm_r_loginc	-.0775996	.0515545	-1.51	0.132	-.1786772	.0234779
ysm_r_logi~2	.0003804	.0002316	1.64	0.101	-.0000737	.0008344
_cons	-67.91292	5.874642	-11.56	0.000	-79.43073	-56.39511
/sigma	17.59413	.4976941			16.61835	18.56991

Obs. summary: 2867 left-censored observations at durablegoods<=0
893 uncensored observations
0 right-censored observations

Conditional Marginal Effects

```
. mfx compute, predict(pr(0,.))
```

Marginal effects after Tobit

```
y = Pr(durablegoods>0) (predict, pr(0,.))
= .22723407
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lninc	.1023682	.00981	10.43	0.000	.08314	.121597	5.82133	
agehh	.0097617	.00302	3.24	0.001	.00385	.015673	49.1051	
agehh2	-.0000979	.00003	-3.14	0.002	-.000159	-.000037	2614.17	
number~n	-.0311584	.01305	-2.39	0.017	-.056729	-.005588	.910372	
nchild2	.0008009	.00345	0.23	0.817	-.005964	.007565	2.28378	
number~s	.0030878	.01579	0.20	0.845	-.027862	.034038	3.89229	
nad2	-.0011483	.00167	-0.69	0.491	-.004417	.002121	18.1146	
edu_hh	.001698	.00207	0.82	0.413	-.002368	.005764	10.9138	
gender*	-.1001058	.01691	-5.92	0.000	-.133239	-.066972	.152394	
housin~s*	.1382587	.01934	7.15	0.000	.100349	.176168	.921277	
selfem~d*	-.0400728	.02332	-1.72	0.086	-.085778	.005633	.132979	
adv_r~c	-.0052789	.00579	-0.91	0.362	-.016623	.006065	.320276	
freq_r~c	-.0031209	.00266	-1.17	0.241	-.008338	.002097	1.51207	
dremil~c	.0174543	.0084	2.08	0.038	.000981	.033927	.948945	
ysm_r~c	-.0013302	.00088	-1.51	0.132	-.003061	.000401	12.674	
ysm_r~c2	6.52e-06	.00000	1.64	0.100	-1.3e-06	.000014	1325.77	

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Unconditional Marginal Effects

```
. mfx compute, predict(e(0,.))
```

Marginal effects after Tobit

```
y = E(durablegoods|durablegoods>0) (predict, e(0,.))
= 10.191279
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lninc	1.380772	.13411	10.30	0.000	1.11792	1.64362	5.82133	
agehh	.1316691	.04073	3.23	0.001	.051849	.21149	49.1051	
agehh2	-.0013204	.00042	-3.14	0.002	-.002145	-.000496	2614.17	
number~n	-.4202731	.17599	-2.39	0.017	-.7652	-.075346	.910372	
nchild2	.0108025	.04655	0.23	0.816	-.080437	.102042	2.28378	
number~s	.0416491	.21302	0.20	0.845	-.375854	.459152	3.89229	
nad2	-.0154883	.0225	-0.69	0.491	-.059586	.02861	18.1146	
edu_hh	.022903	.02798	0.82	0.413	-.031932	.077738	10.9138	
gender*	-1.393133	.24748	-5.63	0.000	-1.87819	-.908079	.152394	
housin~s*	2.001122	.31754	6.30	0.000	1.37876	2.62349	.921277	
selfem~d*	-.5456784	.32144	-1.70	0.090	-1.1757	.084342	.132979	
adv_r~c	-.0712032	.07808	-0.91	0.362	-.224231	.081825	.320276	
freq_r~c	-.0420959	.03592	-1.17	0.241	-.112492	.0283	1.51207	
dremil~c	.2354285	.11348	2.07	0.038	.013005	.457852	.948945	
ysm_r~c	-.0179419	.01192	-1.51	0.132	-.041297	.005413	12.674	
ysm_r~c2	.000088	.00005	1.64	0.100	-.000017	.000193	1325.77	

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 4.3.1 Education Category

```
. Tobit education logxi agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemployed advrinc freqrinc dremlogxi ysminc2 ysmricn, ll
```

```
Tobit regression                               Number of obs   =       3760
                                                LR chi2(16)    =       496.03
                                                Prob > chi2    =       0.0000
Log likelihood = -8720.9723                    Pseudo R2      =       0.0277
```

education	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
logxi	1.348761	.4746186	2.84	0.005	.4182244 2.279297
agehh	.6157609	.144563	4.26	0.000	.3323309 .8991909
agehh2	-.0080144	.0014935	-5.37	0.000	-.0109425 -.0050863
numberofchildren	.9634236	.5422311	1.78	0.076	-.0996735 2.026521
nchild2	-.1252548	.1244272	-1.01	0.314	-.3692064 .1186968
numberofadults	7.175494	.8008886	8.96	0.000	5.605274 8.745715
nad2	-.4871115	.0833423	-5.84	0.000	-.6505122 -.3237109
edu_hh	.4060273	.1011207	4.02	0.000	.2077703 .6042843
gender	-1.125031	.9598673	-1.17	0.241	-3.006945 .7568826
housingstatus	-3.894995	1.208417	-3.22	0.001	-6.264215 -1.525774
selfemployed	-6.914165	1.29187	-5.35	0.000	-9.447003 -4.381327
advrinc	.1558246	.2839411	0.55	0.583	-.4008696 .7125188
freqrinc	.3064942	.1249209	2.45	0.014	.0615746 .5514138
dremlogxi	-.6453433	.4362858	-1.48	0.139	-1.500724 .2100377
ysminc2	-.0002846	.0013722	-0.21	0.836	-.002975 .0024057
ysmricn	.0339193	.0486272	0.70	0.486	-.0614191 .1292578
_cons	-38.43818	4.574478	-8.40	0.000	-47.40689 -29.46947
/sigma	17.43608	.3287561			16.79152 18.08064

```
Obs. summary:      2005 left-censored observations at education<=0
                   1755 uncensored observations
                   0 right-censored observations
```

Conditional Marginal Effects

```
. mfx compute, predict(pr(0,.))
```

Marginal effects after Tobit

```
y = Pr(education>0) (predict, pr(0,.))
= .46378275
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
logxi	.0307328	.01081	2.84	0.004	.009547 .051918	5.82133
agehh	.0140307	.00329	4.26	0.000	.007578 .020484	49.1051
agehh2	-.0001826	.00003	-5.37	0.000	-.000249 -.000116	2614.17
number~n	.0219525	.01234	1.78	0.075	-.002233 .046138	.910372
nchild2	-.002854	.00283	-1.01	0.314	-.008409 .002701	2.28378
number~s	.1635003	.01818	8.99	0.000	.127872 .199128	3.89229
nad2	-.0110993	.0019	-5.85	0.000	-.014815 -.007384	18.1146
edu_hh	.0092517	.0023	4.02	0.000	.004742 .013761	10.9138
gender*	-.0255718	.02175	-1.18	0.240	-.068197 .017054	.152394
housin~s*	-.0889331	.0275	-3.23	0.001	-.142838 -.035028	.921277
selfem~d*	-.1528907	.02713	-5.64	0.000	-.206058 -.099723	.132979
advrinc	.0035506	.00647	0.55	0.583	-.009131 .016232	.320276
freqrinc	.0069838	.00285	2.45	0.014	.001403 .012565	1.51207
dremlo~i	-.0147047	.00994	-1.48	0.139	-.034196 .004786	.948945
ysminc2	-6.49e-06	.00003	-0.21	0.836	-.000068 .000055	223.068
ysmricn	.0007729	.00111	0.70	0.485	-.001399 .002945	12.674

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Unconditional Marginal Effects

```
. mfx compute, predict(e(0,.))
```

Marginal effects after Tobit

```
y = E(education|education>0) (predict, e(0,.))
= 13.351447
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
logxi	.4640214	.16312	2.84	0.004	.144303 .783739	5.82133
agehh	.2118435	.04966	4.27	0.000	.114521 .309166	49.1051
agehh2	-.0027572	.00051	-5.38	0.000	-.003762 -.001753	2614.17
number~n	.3314518	.18636	1.78	0.075	-.033804 .696707	.910372
nchild2	-.0430921	.0428	-1.01	0.314	-.126973 .040788	2.28378
number~s	2.468624	.27326	9.03	0.000	1.93305 3.0042	3.89229
nad2	-.1675836	.02856	-5.87	0.000	-.223565 -.111602	18.1146
edu_hh	.1396878	.03474	4.02	0.000	.071591 .207785	10.9138
gender*	-.3818674	.32135	-1.19	0.235	-1.01171 .247976	.152394
housin~s*	-1.419012	.4657	-3.05	0.002	-2.33177 -.506253	.921277
selfem~d*	-2.183248	.37195	-5.87	0.000	-2.91225 -1.45424	.132979
advrinc	.0536092	.09769	0.55	0.583	-.137859 .245077	.320276
freqrinc	.1054448	.04298	2.45	0.014	.021214 .189676	1.51207
dremlo~i	-.2220209	.15011	-1.48	0.139	-.516238 .072196	.948945
ysmricn	.0116694	.01673	0.70	0.485	-.021119 .044458	12.674
ysminc2	-.0000979	.00047	-0.21	0.836	-.001023 .000827	223.068

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 4.4 Tobit Diagnostic Tests

A suggested method to evaluate the if Tobit is the appropriate method is dividing the estimated coefficient (β) with the standard error of the regression (σ) and to compare the results with the Probit coefficients

Probit Coefficients for Durable Goods

```
probit  dudurablegoods logxi agehh agehh2  numberofchildren nchild2 numberofadults nad2
edu_hh gender housingstatus selfemployed  advrinc  freqrinc  dremlogxi ysminc2
> ysmricn
```

```
Iteration 0:  log likelihood = -2061.1608
Iteration 1:  log likelihood = -1900.2669
Iteration 2:  log likelihood = -1898.6639
Iteration 3:  log likelihood = -1898.6625
Iteration 4:  log likelihood = -1898.6625
```

```
Probit regression                                Number of obs   =       3760
                                                LR chi2(16)    =       325.00
                                                Prob > chi2    =       0.0000
Log likelihood = -1898.6625                    Pseudo R2      =       0.0788
```

dudurablegoods	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
logxi	.4136682	.0357124	11.58	0.000	.3436731	.4836633
agehh	.0385059	.0106897	3.60	0.000	.0175544	.0594574
agehh2	-.0003932	.0001106	-3.56	0.000	-.0006099	-.0001766
numberofchildren	-.1033023	.0450257	-2.29	0.022	-.1915511	-.0150535
nchild2	.0024267	.0116704	0.21	0.835	-.0204468	.0253003
numberofadults	.0438728	.0559641	0.78	0.433	-.0658148	.1535604
nad2	-.0046208	.0058976	-0.78	0.433	-.0161799	.0069383
edu_hh	-.0002097	.0072879	-0.03	0.977	-.0144938	.0140744
gender	-.4190591	.0748073	-5.60	0.000	-.5656786	-.2724396
housingstatus	.5663264	.1079192	5.25	0.000	.3548088	.7778441
selfemployed	-.1235431	.089964	-1.37	0.170	-.2998693	.052783
advrinc	-.0266084	.0206041	-1.29	0.197	-.0669916	.0137749
freqrinc	-.0117565	.0094193	-1.25	0.212	-.0302181	.006705
dremlogxi	.0848537	.0309046	2.75	0.006	.0242819	.1454255
ysmnc2	.0001387	.0000969	1.43	0.152	-.0000513	.0003287
ysmricn	-.0047565	.0034265	-1.39	0.165	-.0114722	.0019593
_cons	-4.516722	.3429829	-13.17	0.000	-5.188956	-3.844488

Probit Coefficients for Educaiton

```
. probit dueducation logxi agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemployed advrinc freqrinc dremlogxi ysminc2 ysmr
> icn
```

```
Iteration 0: log likelihood = -2597.9161
Iteration 1: log likelihood = -2347.193
Iteration 2: log likelihood = -2345.1401
Iteration 3: log likelihood = -2345.138
Iteration 4: log likelihood = -2345.138
```

```
Probit regression                               Number of obs   =       3760
                                                LR chi2(16)    =       505.56
                                                Prob > chi2    =       0.0000
Log likelihood = -2345.138                    Pseudo R2      =       0.0973
```

-----	-----	-----	-----	-----	-----	-----
dueducation	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	-----
logxi	.086465	.0313111	2.76	0.006	.0250965	.1478336
agehh	.0333147	.0094447	3.53	0.000	.0148034	.051826
agehh2	-.00044	.0000972	-4.53	0.000	-.0006305	-.0002495
numberofchildren	.1436404	.0361446	3.97	0.000	.0727984	.2144825
nchild2	-.0147644	.0083949	-1.76	0.079	-.031218	.0016892
numberofadults	.4125372	.0520154	7.93	0.000	.3105888	.5144855
nad2	-.0270518	.0054704	-4.95	0.000	-.0377735	-.0163301
edu_hh	.033166	.0065566	5.06	0.000	.0203152	.0460167
gender	-.1231511	.0622675	-1.98	0.048	-.2451932	-.001109
housingstatus	-.0543654	.0807337	-0.67	0.501	-.2126006	.1038698
selfemployed	-.4445233	.0812512	-5.47	0.000	-.6037729	-.2852738
advrinc	.0050982	.0195139	0.26	0.794	-.0331483	.0433448
freqrinc	.0122245	.0087001	1.41	0.160	-.0048273	.0292764
dremlogxi	-.0053908	.029623	-0.18	0.856	-.0634509	.0526692
ysminc2	.0000206	.0000948	0.22	0.828	-.0001653	.0002064
ysmricn	.001411	.0033315	0.42	0.672	-.0051186	.0079406
_cons	-2.587893	.2969004	-8.72	0.000	-3.169807	-2.005979

Appendix 4.5 Comparison of Tobit Coefficient/Standard Error of Regression with the Probit Coefficient

Appendix 4.5.1 Durable Goods

VARIABLES	Tobit Durable Goods	SE/B	Probit Durable Goods
Log(Income)	5.98*** (0.000)	0.340	0.414*** (0.000)
Age of the HH	0.569*** (0.001)	0.032	0.039*** (0.000)
Age of the HH^2	-0.0057*** (0.002)	-0.0003	-0.0004*** (0.000)
Number of Children	-1.818** (0.017)	-0.103	-0.103*** (0.000)
Number of Children^2	0.047 (0.817)	0.003	0.002 (0.835)
Number of Adults	0.180 (0.845)	0.01	0.044 (0.433)
Number of Adults^2	-0.06699 (0.491)	-0.004	-0.005 (0.433)
Education of the HH	0.0991 (0.413)	0.006	0.000 (0.977)
Gender of the HH	-6.489*** (0.000)	-0.369	-0.419*** (0.000)
Housing Status	9.913*** (0.000)	0.564	0.566*** (0.000)
Self-Employed	-2.432 (0.100)	-0.138	-0.124 (0.170)
Migrants Advise on remittances*Rremit*logx	-0.308 (0.362)	-0.018	-0.027 (0.197)
Frequency of visits*Rremit*logx	-0.1821 (0.241)	-0.010	-0.012 (0.212)
D_Remitt*log(income)	1.02** (0.038)	0.058	0.085*** (0.006)
Years Since Migration*Rremit*logx	-0.0776 (0.132)	-0.004	-0.005 (0.152)
(Years Since Migration*Rremit*logx)^2	0.0004 (0.101)	0.00002	0.0001 (0.165)
Constant	-67.92*** (0.000)	-3.861	-4.517*** (0.000)
Sigma	17.59 (0.498)		
Observations	3,760		3,760

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Appendix 4.5.2 Education Category

VARIABLES	Tobit Education	SE/B	Probit Education
Log(Income)	1.348*** (0.005)	0.077	0.086*** (0.006)
Age of the HH	0.6158*** (0.000)	0.035	0.033*** (0.000)
Age of the HH^2	-0.008*** (0.000)	0.000	0.000*** (0.000)
Number of Children	0.963* (0.076)	0.055	0.144*** (0.000)
Number of Children^2	-0.125 (0.314)	-0.007	-0.015* (0.079)
Number of Adults	7.17*** (0.000)	0.411	0.413*** (0.000)
Number of Adults^2	-0.487*** (0.000)	-0.028	-0.027*** (0.000)
Education of the HH	0.406*** (0.000)	0.023	0.033*** (0.000)
Gender of the HH	-1.125 (0.241)	-0.065	-0.12** (0.048)
Housing Status	-3.89*** (0.001)	-0.223	-0.054 (0.501)
Self-Employed	-6.91*** (0.000)	-0.396	-0.445*** (0.000)
Migrants Advise on remittances*Rremit*logx	0.1558246 (0.583)	0.009	0.005 (0.749)
Frequency of visits*Rremit*logx	0.3065** (0.014)	0.018	0.012 (0.160)
D_Remitt*log(income)	-0.6453433 (0.139)	-0.037	-0.005 (0.856)
Years Since Migration*Rremit*logx	0.0339193 (0.836)	0.002	0.001 (0.828)
(Years Since Migration*Rremit*logx)^2	-0.0002846 (0.486)	0.000	0.000 (0.872)
Constant	-38.43*** (0.000)	-2.204	-2.58*** (0.000)
Sigma	17.44 (0.329)		
Observations	3,760		3,760

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Appendix 5.1 Variable Definition

Variables	Abbreviations	Description
	Pr_Active	
Pr_Employed	LFP	The variable taking into account whether the individual is employed or not
Age	Age and Age ²	Variable taking into account the age of the individual and its square term (hence the combined age effect)
Education Level	Ed	A dummy variable in three levels: <ol style="list-style-type: none"> 1) Preliminary education (base category) 2) Secondary education 3) University Education
Region	L	A dummy variable taking into account the regions: <ol style="list-style-type: none"> 1) Prishtina (base category) 2) Mitrovica 3) Prizren 4) Peja 5) Gjilan
Rural Households	Ur	A dummy variable taking into account whether the household is: <ol style="list-style-type: none"> 1) Urban (base) 2) Rural with Productive Assets 3) Rural without productive assets
House Ownership	HO	A dummy variable taking into account whether the individuals owns a house
Children under 7	Ch7	The number of children up to the age of 7.
Children from 7 to 17	Ch17	The number of children between the age of 7 and 17
Seniors	Sen	The number of seniors in the household
Unemployed Adults	UnAd	The number of adults in the household who are unemployed
Pension and Social Income per capita	NWIS	The monthly amount of pension and social income that the individual's household receives, per capita
Remittances per capita	NWIR	The amount of monthly remittances the individual's household receives, per capita
Maximum education apart from observation	Wi	The maximum years spent in education by another household member apart from the individual on the observation

Appendix 4.5.3 Estimation of the Regressions for Remittance Recipient Households Only

Estimation of the first specification (Log of Expenditure)

```
. reg currentconsumption lnx agehh agehh2 numberofchildren nchild2 numberofadults nad2
edu_hh gender housingstatus selfe
> mployed adv_r_logx freq_r_logx dremlogx ysm_r_logx ysm_r_logx2
```

Source	SS	df	MS	Number of obs =	610
Model	26401.4841	16	1650.09276	F(16, 593) =	8.30
Residual	117957.826	593	198.917076	Prob > F =	0.0000
				R-squared =	0.1829
				Adj R-squared =	0.1608
Total	144359.31	609	237.043202	Root MSE =	14.104

currentconsump~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnx	-35.65616	8.361484	-4.26	0.000	-52.07788 -19.23443
agehh	-.1918323	.2685492	-0.71	0.475	-.7192555 .3355909
agehh2	.0021788	.00266	0.82	0.413	-.0030454 .0074029
numberofchildren	3.023555	.8049912	3.76	0.000	1.442575 4.604536
nchild2	-.1891217	.1577152	-1.20	0.231	-.49887 .1206265
numberofadults	1.10231	1.282235	0.86	0.390	-1.415964 3.620584
nad2	-.0138787	.126541	-0.11	0.913	-.2624018 .2346444
edu_hh	.116135	.1780219	0.65	0.514	-.233495 .4657651
gender	-1.206327	1.587869	-0.76	0.448	-4.324858 1.912203
housingstatus	1.33431	2.092981	0.64	0.524	-2.776247 5.444867
selfemployed	-1.001251	1.75439	-0.57	0.568	-4.446824 2.444322
adv_r_logx	.5817183	.2139757	2.72	0.007	.161476 1.001961
freq_r_logx	-.1621215	.0945165	-1.72	0.087	-.3477492 .0235063
dremlogx	70.0394	18.67722	3.75	0.000	33.35785 106.7209
ysm_r_logx	-.028018	.0363085	-0.77	0.441	-.0993269 .0432909
ysm_r_logx2	.0006178	.001007	0.61	0.540	-.00136 .0025956
_cons	-117.9917	55.68846	-2.12	0.035	-227.3623 -8.621119

Ramsey RESET Test

```
. ovtest
```

```
Ramsey RESET test using powers of the fitted values of currentconsumption
```

```
Ho: model has no omitted variables
```

```
F(3, 590) = 4.74
```

```
Prob > F = 0.0028
```

Estimation of the first specification (Absolute Value of Expenditure)

```
reg currentconsumption totalexpenditure exp2 agehh agehh2 numberofchildren nchild2
numberofadults nad2 edu_hh gender h
> ousingstatus selfemployed advrexp freqrexp exprem exprem2 ysmrexp ysmrexp2, robust
```

```
Linear regression                               Number of obs =      610
                                                F( 17,   591) =      .
                                                Prob > F      =      .
                                                R-squared     =    0.1719
                                                Root MSE     =    14.222
```

currentconsump~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
totalexpenditure	-.0353873	.0092321	-3.83	0.000	-.0535191	-.0172555
exp2	6.75e-06	7.35e-06	0.92	0.359	-7.68e-06	.0000212
agehh	-.2041339	.2555913	-0.80	0.425	-.7061116	.2978439
agehh2	.002234	.0025127	0.89	0.374	-.0027008	.0071689
numberofchildren	3.304714	.7144865	4.63	0.000	1.901472	4.707955
nchild2	-.2280378	.0980541	-2.33	0.020	-.4206147	-.035461
numberofadults	1.788573	1.316586	1.36	0.175	-.7971834	4.37433
nad2	-.0916047	.1245611	-0.74	0.462	-.336241	.1530316
edu_hh	.0579419	.1772492	0.33	0.744	-.290173	.4060569
gender	-1.764879	1.595485	-1.11	0.269	-4.898389	1.368632
housingstatus	1.424999	2.145383	0.66	0.507	-2.788503	5.6385
selfemployed	-1.200153	1.745072	-0.69	0.492	-4.627449	2.227143
advrexp	2.35e-06	7.86e-06	0.30	0.765	-.0000131	.0000178
freqrexp	-1.74e-06	3.72e-06	-0.47	0.640	-9.06e-06	5.58e-06
exprem	.0000331	.0000157	2.11	0.036	2.23e-06	.000064
exprem2	-3.34e-11	2.02e-11	-1.65	0.099	-7.31e-11	6.34e-12
ysmrexp	-6.88e-07	1.20e-06	-0.57	0.568	-3.05e-06	1.67e-06
ysmrexp2	2.41e-08	2.94e-08	0.82	0.411	-3.36e-08	8.19e-08
_cons	68.93259	7.39052	9.33	0.000	54.41771	83.44747

Ramsey RESET Test

```
. ovtest
```

```
Ramsey RESET test using powers of the fitted values of currentconsumption
Ho: model has no omitted variables
      F(3, 588) =      7.61
      Prob > F =      0.0001
```

Estimation of the first specification (Log of Income)

```
reg currentconsumption loginc agehh agehh2 numberofchildren nchild2 numberofadults nad2
edu_hh gender housingstatus s
> elfemployed advrinc freqrinc dremlogxi ysmricn ysminc2, robust
note: dremlogxi omitted because of collinearity
```

Linear regression

```
Number of obs = 610
F( 15, 594) = 3.25
Prob > F = 0.0000
R-squared = 0.0690
Root MSE = 15.042
```

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
Loginc	-.6534403	.7567764	-0.86	0.388	-2.139723	.8328427
agehh	-.3306918	.2808844	-1.18	0.240	-.8823393	.2209556
agehh2	.0031725	.0027778	1.14	0.254	-.0022831	.0086281
numberofchildren	3.353118	.7301558	4.59	0.000	1.919117	4.787119
nchild2	-.3184745	.0935868	-3.40	0.001	-.5022757	-.1346733
numberofadults	.6998233	1.294928	0.54	0.589	-1.843371	3.243018
nad2	-.0635685	.1247687	-0.51	0.611	-.30861	.1814729
edu_hh	-.0982386	.1920554	-0.51	0.609	-.4754289	.2789516
gender	-1.81264	1.769047	-1.02	0.306	-5.286988	1.661708
housingstatus	1.491459	2.312299	0.65	0.519	-3.049817	6.032734
selfemployed	-.0696895	1.812971	-0.04	0.969	-3.630302	3.490923
advrinc	.548656	.2197638	2.50	0.013	.1170474	.9802647
freqrinc	-.2313872	.0952319	-2.43	0.015	-.4184193	-.044355
ysmricn	-.0122871	.0362497	-0.34	0.735	-.0834802	.0589061
ysminc2	-.0000964	.0010142	-0.10	0.924	-.0020883	.0018955
_cons	72.4293	8.720805	8.31	0.000	55.30193	89.55666

Ramsey RESET Test

```
. ovtest
```

```
Ramsey RESET test using powers of the fitted values of currentconsumption
Ho: model has no omitted variables
F(3, 591) = 1.53
Prob > F = 0.2063
```

Tobit Estimation for Durable Goods

```
. tobit durablegoods lnx agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemplo
> yed adv_r_logx freq_r_logx ysm_r_logx ysm_r_logx2, ll
```

```
Tobit regression                               Number of obs   =       610
                                                LR chi2(15)    =      117.87
                                                Prob > chi2    =       0.0000
Log likelihood = -807.47494                    Pseudo R2      =       0.0680
```

durablegoods	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnx2	4.975718	.7346864	6.77	0.000	3.532824 6.418612
agehh	.2363563	.3110526	0.76	0.448	-.3745383 .847251
agehh2	-.0047136	.0031254	-1.51	0.132	-.0108517 .0014246
numberofchildren	-.4631788	1.399832	-0.33	0.741	-3.212392 2.286034
nchild2	-.2543819	.3839995	-0.66	0.508	-1.008541 .4997774
numberofadults	3.58524	1.616827	2.22	0.027	.4098573 6.760622
nad2	-.296555	.1537825	-1.93	0.054	-.5985776 .0054676
edu_hh	-.6150256	.2127419	-2.89	0.004	-1.032842 -.1972092
gender	-5.530517	2.018625	-2.74	0.006	-9.495015 -1.56602
housingstatus	9.924233	3.199179	3.10	0.002	3.641176 16.20729
selfemployed	1.059655	2.07442	0.51	0.610	-3.01442 5.13373
adv_r_logx	-.3374481	.2463782	-1.37	0.171	-.8213247 .1464285
freq_r_logx	-.0973341	.1124357	-0.87	0.387	-.3181532 .1234849
ysm_r_logx	-.0423785	.0389253	-1.09	0.277	-.1188261 .0340692
ysm_r_logx2	.0008712	.001079	0.81	0.420	-.001248 .0029904
_cons	-46.71233	10.12206	-4.61	0.000	-66.59165 -26.83301
/sigma	12.22356	.7906908			10.67067 13.77644

```
Obs. summary:      446 left-censored observations at durablegoods<=0
                   164 uncensored observations
                   0 right-censored observations
```

```
. mfx compute, predict(pr(0,.))
```

Marginal effects after tobit

```
y = Pr(durablegoods>0) (predict, pr(0,.))
= .22969477
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lnx2	.123511	.01643	7.52	0.000	.091312 .15571	6.70143
agehh	.005867	.00772	0.76	0.447	-.009271 .021005	52.5574
agehh2	-.000117	.00008	-1.51	0.131	-.000269 .000035	2963.68
number~n	-.0114974	.03478	-0.33	0.741	-.07966 .056665	1.04098
nchild2	-.0063145	.0095	-0.66	0.506	-.024941 .012312	2.83443
number~s	.0889955	.03976	2.24	0.025	.011069 .166922	4.34098
nad2	-.0073613	.0038	-1.94	0.052	-.0148 .000077	22.4262
edu_hh	-.0152666	.00521	-2.93	0.003	-.025474 -.005059	10.3508
gender*	-.1219951	.03835	-3.18	0.001	-.197164 -.046826	.183607
housin~s*	.1818784	.0384	4.74	0.000	.106608 .257149	.916393
selfem~d*	.0268313	.05352	0.50	0.616	-.078064 .131726	.181967
adv_r~x	-.0083764	.0061	-1.37	0.170	-.020341 .003589	2.00067
freq_r~x	-.0024161	.00278	-0.87	0.385	-.007869 .003037	9.38685
ysm_r~x	-.0010519	.00096	-1.09	0.275	-.002942 .000838	79.9154
ysm_r~2	.0000216	.00003	0.81	0.419	-.000031 .000074	1413.62

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. mfx compute, predict(e(0,.))
```

Marginal effects after tobit

```
y = E(durablegoods|durablegoods>0) (predict, e(0,.))
= 7.1034586
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lnx2	1.15606	.15913	7.26	0.000	.844163 1.46796	6.70143
agehh	.0549151	.07226	0.76	0.447	-.086714 .196545	52.5574
agehh2	-.0010952	.00072	-1.51	0.131	-.002516 .000325	2963.68
number~n	-.1076151	.32546	-0.33	0.741	-.745506 .530276	1.04098
nchild2	-.0591032	.089	-0.66	0.507	-.233536 .115329	2.83443
number~s	.8329958	.37239	2.24	0.025	.103126 1.56287	4.34098
nad2	-.0689017	.0355	-1.94	0.052	-.138475 .000671	22.4262
edu_hh	-.1428952	.0489	-2.92	0.003	-.238731 -.04706	10.3508
gender*	-1.183849	.39468	-3.00	0.003	-1.95741 -.410291	.183607
housingstatus	1.908397	.49996	3.82	0.000	.928494 2.8883	.916393
selfem~d*	.2503352	.49824	0.50	0.615	-.726206 1.22688	.181967
adv_r~x	-.0784028	.05715	-1.37	0.170	-.190423 .033617	2.00067
freq_r~x	-.0226146	.02608	-0.87	0.386	-.073723 .028494	9.38685
ysm_r~x	-.0098462	.00903	-1.09	0.276	-.027551 .007859	79.9154
ysm_r~2	.0002024	.00025	0.81	0.419	-.000289 .000694	1413.62

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Tobit Estimation for Educaiton

```
. tobit education lnx agehh agehh2 numberofchildren nchild2 numberofadults nad2 edu_hh
gender housingstatus selfemployed
> adv_r_logx freq_r_logx ysm_r_logx ysm_r_logx2, ll
```

```
Tobit regression                               Number of obs   =       610
                                                LR chi2(15)    =      115.10
                                                Prob > chi2    =       0.0000
Log likelihood = -1513.8018                    Pseudo R2      =       0.0366
```

education	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnx2	1.630079	.6424077	2.54	0.011	.3684168 2.891741
agehh	.389874	.3172831	1.23	0.220	-.2332569 1.013005
agehh2	-.0071211	.0031902	-2.23	0.026	-.0133865 -.0008556
numberofchildren	-1.322325	.9156958	-1.44	0.149	-3.120714 .4760641
nchild2	.1366018	.1710871	0.80	0.425	-.1994062 .4726098
numberofadults	5.218814	1.556306	3.35	0.001	2.162293 8.275334
nad2	-.382448	.1516363	-2.52	0.012	-.6802556 -.0846405
edu_hh	-.2203397	.2127373	-1.04	0.301	-.638147 .1974677
gender	2.817067	1.837902	1.53	0.126	-.7924968 6.426631
housingstatus	.1815006	2.444851	0.07	0.941	-4.620087 4.983088
selfemployed	-6.903948	2.259023	-3.06	0.002	-11.34058 -2.46732
adv_r_logx	.0878111	.2482576	0.35	0.724	-.3997567 .575379
freq_r_logx	.2241621	.1088517	2.06	0.040	.0103818 .4379424
ysm_r_logx	.0394654	.0415252	0.95	0.342	-.0420883 .1210191
ysm_r_logx2	-.0005242	.0011431	-0.46	0.647	-.0027693 .0017208
_cons	-24.2302	9.556235	-2.54	0.011	-42.99826 -5.46215
/sigma	14.81599	.6390888			13.56084 16.07113

```
Obs. summary:      286 left-censored observations at education<=0
                   324 uncensored observations
                   0 right-censored observations
```

```
mfx compute, predict(pr(0,.))
```

```
Marginal effects after tobit
```

```
y = Pr(education>0) (predict, pr(0,.))
= .52711155
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lnx2	.0437909	.0172	2.55	0.011	.010075	.077507		6.70143
agehh	.0104737	.00853	1.23	0.219	-.006236	.027183		52.5574
agehh2	-.0001913	.00009	-2.23	0.026	-.000359	-.000023		2963.68
number~n	-.0355233	.02467	-1.44	0.150	-.083874	.012828		1.04098
nchild2	.0036697	.0046	0.80	0.425	-.005344	.012683		2.83443
number~s	.1401996	.0418	3.35	0.001	.058275	.222124		4.34098
nad2	-.0102742	.00408	-2.52	0.012	-.018262	-.002287		22.4262
edu_hh	-.0059193	.00572	-1.04	0.301	-.017126	.005287		10.3508
gender*	.0751219	.04855	1.55	0.122	-.020038	.170281		.183607
housin~s*	.0048775	.06572	0.07	0.941	-.123929	.133684		.916393
selfem~d*	-.18365	.0579	-3.17	0.002	-.297132	-.070168		.181967
adv_r~x	.002359	.00667	0.35	0.724	-.010715	.015433		2.00067
freq_r~x	.006022	.00293	2.06	0.040	.00028	.011764		9.38685
ysm_r~x	.0010602	.00112	0.95	0.342	-.001127	.003247		79.9154
ysm_r~2	-.0000141	.00003	-0.46	0.647	-.000074	.000046		1413.62

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. mfx compute, predict(e(0,.))
```

```
Marginal effects after tobit
```

```
y = E(education|education>0) (predict, e(0,.))
= 12.195167
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
lnx2	.6169403	.2421	2.55	0.011	.142425	1.09146		6.70143
agehh	.1475566	.11997	1.23	0.219	-.087582	.382695		52.5574
agehh2	-.0026951	.0012	-2.24	0.025	-.005056	-.000334		2963.68
number~n	-.5004638	.34723	-1.44	0.150	-1.18103	.180099		1.04098
nchild2	.0517	.06478	0.80	0.425	-.075269	.178669		2.83443
number~s	1.975178	.58662	3.37	0.001	.825426	3.12493		4.34098
nad2	-.1447461	.05728	-2.53	0.012	-.25701	-.032482		22.4262
edu_hh	-.0833925	.08048	-1.04	0.300	-.241122	.074337		10.3508
gender*	1.105507	.74793	1.48	0.139	-.360417	2.57143		.183607
housin~s*	.0684844	.91967	0.07	0.941	-1.73404	1.87101		.916393
selfem~d*	-2.397754	.71242	-3.37	0.001	-3.79407	-1.00144		.181967
adv_r~x	.0332341	.09398	0.35	0.724	-.150954	.217422		2.00067
freq_r~x	.0848392	.04122	2.06	0.040	.004053	.165626		9.38685
ysm_r~x	.0149366	.01572	0.95	0.342	-.015868	.045741		79.9154
ysm_r~2	-.0001984	.00043	-0.46	0.647	-.001046	.00065		1413.62

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 5.2 Stata Output for Estimated Models Using Remittances per Capita

Appendix 5.2.1 Probability of being Active

Males' probability of being active

```
probit _dactive1 c.age c.age#c.age i.educ i.region i.urban i.ownshouse ch_under7 from7to17
seniors unempladults pensionandsocialpercapita remittancespercapita maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -3611.0796
Iteration 1: log likelihood = -2847.8325
Iteration 2: log likelihood = -2833.6384
Iteration 3: log likelihood = -2833.5869
Iteration 4: log likelihood = -2833.5869
```

```
Probit regression                               Number of obs   =       6888
                                                LR chi2(18)    =      1554.99
                                                Prob > chi2    =       0.0000
                                                Pseudo R2     =       0.2153

Log likelihood = -2833.5869
```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
_dactive1						
age	.2910758	.0101353	28.72	0.000	.2712111	.3109406
age	0	(omitted)				
c.age#c.age	-.0036407	.0001299	-28.02	0.000	-.0038954	-.0033861
educ						
1	0	(base)				
2	.4514108	.0529509	8.53	0.000	.3476289	.5551926
3	.8791686	.0831154	10.58	0.000	.7162655	1.042072
region						
1	0	(base)				
2	.1912731	.061757	3.10	0.002	.0702316	.3123146
3	.3697468	.0561498	6.59	0.000	.2596952	.4797984
4	.3340002	.0580866	5.75	0.000	.2201526	.4478478
5	.3038278	.0593018	5.12	0.000	.1875983	.4200572
urban						
1	0	(base)				
2	.2405352	.0505184	4.76	0.000	.1415211	.3395494
3	.0358489	.0441393	0.81	0.417	-.0506626	.1223604
ownshouse						
0	0	(base)				
1	.0768017	.0740409	1.04	0.300	-.0683158	.2219192
ch_under7	.0714693	.0332753	2.15	0.032	.0062508	.1366878
from7to17	-.0716087	.0181912	-3.94	0.000	-.1072627	-.0359547
seniors	-.095982	.0355166	-2.70	0.007	-.1655932	-.0263707
unempladults	-.1506501	.0124712	-12.08	0.000	-.1750933	-.126207
pensionandsocialpercapita	-.0054667	.0010819	-5.05	0.000	-.0075872	-.0033462
remittancespercapita	.0001753	.0004713	0.37	0.710	-.0007484	.0010991
maxedu	-.0371919	.0084852	-4.38	0.000	-.0538227	-.0205612
_cons	-3.963967	.2229102	-17.78	0.000	-4.400863	-3.527071

Marginal Effects

. margins, dydx(*)

Average marginal effects
Model VCE : OIM

Number of obs = 6888

Expression : Pr(_dactive1), predict()

dy/dx w.r.t. : age 2.educ 3.educ 2.region 3.region 4.region 5.region 2.urban 3.urban

1.ownshouse ch_under7 from7to17

seniors unempladults pensionandsocialpercapita remittancespercapita maxedu

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
age	.0099484	.0005218	19.07	0.000	.0089257	.0109711
educ						
1	0	(base)				
2	.1186244	.0148179	8.01	0.000	.0895819	.1476669
3	.2032094	.0183902	11.05	0.000	.1671653	.2392534
region						
1	0	(base)				
2	.0477345	.0152204	3.14	0.002	.0179032	.0775659
3	.0876225	.0131774	6.65	0.000	.0617953	.1134497
4	.0800061	.0136817	5.85	0.000	.0531904	.1068218
5	.0734309	.0140991	5.21	0.000	.0457971	.1010646
urban						
1	0	(base)				
2	.0532475	.0108297	4.92	0.000	.0320217	.0744733
3	.008458	.0103864	0.81	0.415	-.011899	.0288149
ownshouse						
0	0	(base)				
1	.0179763	.0176669	1.02	0.309	-.0166503	.0526028
ch_under7	.0163971	.0076309	2.15	0.032	.0014408	.0313534
from7to17	-.0164291	.0041616	-3.95	0.000	-.0245857	-.0082725
seniors	-.0220211	.0081376	-2.71	0.007	-.0379704	-.0060717
unempladults	-.0345635	.0027852	-12.41	0.000	-.0400223	-.0291047
pensionandsocialpercapita	-.0012542	.0002469	-5.08	0.000	-.0017382	-.0007702
remittancespercapita	.0000402	.0001081	0.37	0.710	-.0001717	.0002522
maxedu	-.0085329	.0019416	-4.39	0.000	-.0123384	-.0047275

Note: dy/dx for factor levels is the discrete change from the base level.

Females' probability of being active

```
. probit _dactive1 c.age c.age##c.age i.educ i.region i.urban i.ownshouse ch_under7
from7to17 seniors unempladults pensi
> onandsocialpercapita remittancespercapita maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -4157.4635
Iteration 1: log likelihood = -3409.998
Iteration 2: log likelihood = -3402.0523
Iteration 3: log likelihood = -3402.0355
Iteration 4: log likelihood = -3402.0355
```

```
Probit regression                               Number of obs   =          6175
                                                LR chi2(18)    =       1510.86
                                                Prob > chi2    =         0.0000
                                                Pseudo R2     =         0.1817

Log likelihood = -3402.0355
```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
_dactive1					
age	.098757	.0097871	10.09	0.000	.0795745 .1179394
age	0	(omitted)			
c.age#c.age	-.0014072	.0001293	-10.88	0.000	-.0016606 -.0011538
educ					
1	0	(base)			
2	.7530968	.0427009	17.64	0.000	.6694046 .8367891
3	1.592086	.0799236	19.92	0.000	1.435439 1.748734
region					
1	0	(base)			
2	-.1302054	.0591041	-2.20	0.028	-.2460472 -.0143635
3	-.0554086	.0557292	-0.99	0.320	-.1646357 .0538186
4	.6523423	.0530348	12.30	0.000	.5483959 .7562886
5	.2770183	.0531094	5.22	0.000	.1729258 .3811107
urban					
1	0	(base)			
2	-.2808515	.0491487	-5.71	0.000	-.3771813 -.1845218
3	-.0188185	.0409627	-0.46	0.646	-.0991039 .0614669
ownshouse					
0	0	(base)			
1	-.1339149	.0654316	-2.05	0.041	-.2621585 -.0056713
ch_under7	.0123939	.0279438	0.44	0.657	-.042375 .0671627
from7to17	-.0708568	.016217	-4.37	0.000	-.1026416 -.039072
seniors	-.0263815	.0333412	-0.79	0.429	-.0917291 .038966
unempladults	-.1095885	.0122665	-8.93	0.000	-.1336304 -.0855466
pensionandsocialpercapita	-.0010476	.0010911	-0.96	0.337	-.0031862 .001091
remittancespercapita	-.0000731	.0003103	-0.24	0.814	-.0006813 .000535
maxedu	-.0260763	.0064943	-4.02	0.000	-.0388048 -.0133477
_cons	-1.575273	.2082377	-7.56	0.000	-1.983411 -1.167134

Marginal Effects

. margins, dydx(*)

Average marginal effects
Model VCE : OIM

Number of obs = 6175

Expression : Pr(_dactive1), predict()

dy/dx w.r.t. : age 2.educ 3.educ 2.region 3.region 4.region 5.region 2.urban 3.urban

1.ownshouse ch_under7 from7to17

seniors unempladults pensionandsocialpercapita remittancespercapita maxedu

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
age	-.0003299	.000459	-0.72	0.472	-.0012295	.0005697
educ						
1	0	(base)				
2	.2487803	.0134988	18.43	0.000	.2223232	.2752374
3	.5315376	.0229056	23.21	0.000	.4866434	.5764319
region						
1	0	(base)				
2	-.0392944	.0177073	-2.22	0.026	-.074	-.0045888
3	-.0169482	.0170369	-0.99	0.320	-.05034	.0164436
4	.2127411	.0168097	12.66	0.000	.1797947	.2456875
5	.0885978	.01701	5.21	0.000	.0552588	.1219368
urban						
1	0	(base)				
2	-.0864564	.014864	-5.82	0.000	-.1155894	-.0573235
3	-.0059749	.0130039	-0.46	0.646	-.0314621	.0195124
ownshouse						
0	0	(base)				
1	-.042264	.0208415	-2.03	0.043	-.0831126	-.0014154
ch_under7	.0038673	.0087189	0.44	0.657	-.0132215	.0209561
from7to17	-.0221099	.0050405	-4.39	0.000	-.031989	-.0122308
seniors	-.008232	.0104025	-0.79	0.429	-.0286204	.0121565
unempladults	-.0341956	.0037594	-9.10	0.000	-.0415639	-.0268272
pensionandsocialpercapita	-.0003269	.0003404	-0.96	0.337	-.0009941	.0003403
remittancespercapita	-.0000228	.0000968	-0.24	0.814	-.0002126	.000167
maxedu	-.0081367	.0020193	-4.03	0.000	-.0120944	-.004179

Note: dy/dx for factor levels is the discrete change from the base level.

Appendix 5.2.2 Probability of being employed

Males probability of being employed

```
probit _deployed c.age c.age#c.age i.educ i.region i.urban i.ownshouse ch_under7 from7to17
seniors unempladults pens
> ionandsocialpercapita remittancespercapita maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -3282.1231
Iteration 1: log likelihood = -2443.3408
Iteration 2: log likelihood = -2434.3804
Iteration 3: log likelihood = -2434.378
Iteration 4: log likelihood = -2434.378
```

```
Probit regression                               Number of obs   =       5387
                                                LR chi2(18)    =      1695.49
                                                Prob > chi2    =       0.0000
Log likelihood = -2434.378                    Pseudo R2      =       0.2583
```

-----_deployed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
age	.1192612	.0127341	9.37	0.000	.0943028 .1442196
age	0	(omitted)			
c.age#c.age	-.0011461	.0001657	-6.92	0.000	-.0014708 -.0008214
educ					
1	0	(base)			
2	.2471079	.0641487	3.85	0.000	.1213789 .372837
3	.551158	.0959224	5.75	0.000	.3631535 .7391625
region					
1	0	(base)			
2	.1394869	.0707214	1.97	0.049	.0008755 .2780984
3	.3087118	.0635596	4.86	0.000	.1841373 .4332863
4	-.252074	.063525	-3.97	0.000	-.3765808 -.1275672
5	.0060322	.0654582	0.09	0.927	-.1222636 .134328
urban					
1	0	(base)			
2	.1806352	.0536055	3.37	0.001	.0755703 .2857001
3	-.1071511	.0484115	-2.21	0.027	-.2020358 -.0122663
ownshouse					
0	0	(base)			
1	.4227699	.0783425	5.40	0.000	.2692215 .5763183
ch_under7	.051722	.0342899	1.51	0.131	-.015485 .118929
from7to17	-.0265576	.0196887	-1.35	0.177	-.0651467 .0120316
seniors	-.00329	.0383839	-0.09	0.932	-.078521 .071941
unempladults	-.3842031	.0150182	-25.58	0.000	-.4136382 -.354768
pensionandsocialpercapita	-.0128624	.0015951	-8.06	0.000	-.0159887 -.0097362
remittancespercapita	-.000292	.0003514	-0.83	0.406	-.0009807 .0003967
maxedu	.0422828	.0104887	4.03	0.000	.0217254 .0628403
_cons	-2.226171	.2739983	-8.12	0.000	-2.763198 -1.689144

Females probability of being employed

```
. probit _deployed c.age c.age##c.age i.educ i.region i.urban i.ownshouse ch_under7
from7tol7 seniors unempladulpts pens
> ionandsocialpercapita remittancespercapita maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -1700.0835
Iteration 1: log likelihood = -1175.7391
Iteration 2: log likelihood = -1171.2037
Iteration 3: log likelihood = -1171.189
Iteration 4: log likelihood = -1171.189
```

```
Probit regression                               Number of obs   =       2474
                                                LR chi2(18)    =    1057.79
                                                Prob > chi2    =       0.0000
                                                Pseudo R2     =       0.3111

Log likelihood = -1171.189
```

-----+-----							
-----+-----	_deployed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
	age	.0504879	.020423	2.47	0.013	.0104597	.0905162
	age	0	(omitted)				
	c.age#c.age	-.0003706	.0002719	-1.36	0.173	-.0009036	.0001623
	educ						
	1	0	(base)				
	2	.5673093	.0897029	6.32	0.000	.3914948	.7431238
	3	1.575741	.1234279	12.77	0.000	1.333827	1.817655
	region						
	1	0	(base)				
	2	-.4951613	.1040841	-4.76	0.000	-.6991624	-.2911603
	3	-.0373249	.1084553	-0.34	0.731	-.2498934	.1752436
	4	-.1411839	.0888973	-1.59	0.112	-.3154194	.0330515
	5	-.3022668	.0877396	-3.45	0.001	-.4742333	-.1303003
	urban						
	1	0	(base)				
	2	-.1294158	.0877807	-1.47	0.140	-.3014628	.0426313
	3	-.3865675	.071449	-5.41	0.000	-.526605	-.24653
	ownshouse						
	0	0	(base)				
	1	.2959875	.1027466	2.88	0.004	.0946078	.4973672
	ch_under7	-.1515538	.0507893	-2.98	0.003	-.2510989	-.0520087
	from7tol7	-.1545074	.0305031	-5.07	0.000	-.2142923	-.0947225
	seniors	.0043785	.059062	0.07	0.941	-.1113808	.1201379
	unempladulpts	-.4721622	.0249009	-18.96	0.000	-.5209672	-.4233573
	pensionandsocialpercapita	-.0043111	.0022162	-1.95	0.052	-.0086548	.0000326
	remittancespercapita	-.000235	.0003967	-0.59	0.553	-.0010125	.0005424
	maxedu	.0040617	.0113209	0.36	0.720	-.0181269	.0262503
	_cons	-.8207472	.4087019	-2.01	0.045	-1.621788	-.0197063

Marginal Effects

. margins, dydx(*)

Average marginal effects
Model VCE : OIM

Number of obs = 2474

Expression : Pr(_demployed), predict()

dy/dx w.r.t. : age 2.educ 3.educ 2.region 3.region 4.region 5.region 2.urban 3.urban

1.ownshouse ch_under7 from7to17

seniors unempladults pensionandsocialpercapita remittancespercapita maxedu

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
age	.0065423	.0007705	8.49	0.000	.005032	.0080525
educ						
1	0	(base)				
2	.1594112	.0239471	6.66	0.000	.1124758	.2063466
3	.4429735	.0317148	13.97	0.000	.3808137	.5051334
region						
1	0	(base)				
2	-.1307332	.0268133	-4.88	0.000	-.1832863	-.07818
3	-.0099567	.0289419	-0.34	0.731	-.0666818	.0467684
4	-.0376819	.0237196	-1.59	0.112	-.0841715	.0088077
5	-.080473	.0231945	-3.47	0.001	-.1259334	-.0350127
urban						
1	0	(base)				
2	-.035457	.0240623	-1.47	0.141	-.0826182	.0117041
3	-.1046604	.019231	-5.44	0.000	-.1423525	-.0669683
ownshouse						
0	0	(base)				
1	.0783486	.0266747	2.94	0.003	.0260671	.1306302
ch_under7	-.0405898	.0135343	-3.00	0.003	-.0671166	-.014063
from7to17	-.0413808	.0080546	-5.14	0.000	-.0571676	-.025594
seniors	.0011727	.0158183	0.07	0.941	-.0298306	.032176
unempladults	-.1264565	.0051771	-24.43	0.000	-.1366033	-.1163096
pensionandsocialpercapita	-.0011546	.0005923	-1.95	0.051	-.0023154	6.17e-06
remittancespercapita	-.000063	.0001062	-0.59	0.553	-.0002711	.0001452
maxedu	.0010878	.003032	0.36	0.720	-.0048549	.0070305

Note: dy/dx for factor levels is the discrete change from the base level.

Appendix 5.3 Stata Output for Estimated Models Using Remittances Absolute Value

Appendix 5.3.1 Probability of being active

Males probability of being active

```
. probit _dactive1 c.age c.age##c.age i.educ i.region i.urban i.ownshouse ch_under7
from7tol7 seniors unempladults pensi
> onandsocialpercapita remittances maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -3611.0796
Iteration 1: log likelihood = -2846.3531
Iteration 2: log likelihood = -2831.7853
Iteration 3: log likelihood = -2831.7251
Iteration 4: log likelihood = -2831.7251
```

```
Probit regression                               Number of obs   =       6888
                                                LR chi2(18)    =      1558.71
                                                Prob > chi2    =       0.0000
                                                Pseudo R2     =       0.2158

Log likelihood = -2831.7251
```

	_dactive1	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
	age	.2906373	.0101352	28.68	0.000	.2707727 .3105019
	age	0	(omitted)			
	c.age#c.age	-.0036349	.0001299	-27.98	0.000	-.0038895 -.0033803
	educ					
	1	0	(base)			
	2	.4542223	.0529945	8.57	0.000	.3503549 .5580896
	3	.8834613	.0831699	10.62	0.000	.7204513 1.046471
	region					
	1	0	(base)			
	2	.1890307	.0617732	3.06	0.002	.0679574 .310104
	3	.3566982	.0563759	6.33	0.000	.2462034 .467193
	4	.3297918	.0580396	5.68	0.000	.2160363 .4435472
	5	.2993699	.0593179	5.05	0.000	.1831091 .4156308
	urban					
	1	0	(base)			
	2	.2330348	.0505873	4.61	0.000	.1338856 .3321841
	3	.0350103	.0441479	0.79	0.428	-.051518 .1215387
	ownshouse					
	0	0	(base)			
	1	.0748254	.0741345	1.01	0.313	-.0704755 .2201263
	ch_under7	.0719499	.0332743	2.16	0.031	.0067335 .1371663
	from7tol7	-.0715721	.0181687	-3.94	0.000	-.1071821 -.0359621
	seniors	-.0968368	.0355171	-2.73	0.006	-.166449 -.0272246
	unempladults	-.1523527	.0125056	-12.18	0.000	-.1768633 -.1278421
	pensionandsocialpercapita	-.0054881	.0010814	-5.08	0.000	-.0076076 -.0033686
	remittances	.0001782	.0000977	1.82	0.068	-.0000132 .0003697
	maxedu	-.0377691	.0084932	-4.45	0.000	-.0544156 -.0211227
	_cons	-3.945684	.2231816	-17.68	0.000	-4.383112 -3.508256

Females probability of being active

```
. probit _dactive1 c.age#c.age##c.age i.educ i.region i.urban i.ownshouse ch_under7
from7to17 seniors unempladults pensi
> onandsocialpercapita remittances maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -4157.4635
Iteration 1: log likelihood = -3409.9837
Iteration 2: log likelihood = -3402.0479
Iteration 3: log likelihood = -3402.031
Iteration 4: log likelihood = -3402.031
```

```
Probit regression                               Number of obs   =          6175
                                                LR chi2(18)    =       1510.86
                                                Prob > chi2    =         0.0000
                                                Pseudo R2     =         0.1817

Log likelihood = -3402.031
```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
_dactive1					
age	.0988336	.0097834	10.10	0.000	.0796584 .1180088
age	0	(omitted)			
c.age#c.age	-.0014084	.0001292	-10.90	0.000	-.0016616 -.0011551
educ					
1	0	(base)			
2	.7530532	.0427001	17.64	0.000	.6693626 .8367437
3	1.591889	.0799123	19.92	0.000	1.435264 1.748515
region					
1	0	(base)			
2	-.1308009	.0591231	-2.21	0.027	-.24668 -.0149218
3	-.0577695	.0559466	-1.03	0.302	-.1674228 .0518838
4	.6507222	.0529838	12.28	0.000	.5468759 .7545685
5	.2760435	.0531279	5.20	0.000	.1719146 .3801723
urban					
1	0	(base)			
2	-.2827905	.0492178	-5.75	0.000	-.3792556 -.1863254
3	-.018753	.0409627	-0.46	0.647	-.0990384 .0615325
ownshouse					
0	0	(base)			
1	-.1336463	.0654429	-2.04	0.041	-.261912 -.0053806
ch_under7	.0125436	.0279413	0.45	0.653	-.0422204 .0673075
from7to17	-.070654	.0162032	-4.36	0.000	-.1024117 -.0388963
seniors	-.0266482	.0333507	-0.80	0.424	-.0920145 .038718
unempladults	-.1097008	.0122817	-8.93	0.000	-.1337726 -.0856291
pensionandsocialpercapita	-.0010496	.0010915	-0.96	0.336	-.003189 .0010897
remittances	.0000185	.0000735	0.25	0.801	-.0001256 .0001626
maxedu	-.0259996	.0064872	-4.01	0.000	-.0387142 -.013285
_cons	-1.577647	.2079965	-7.58	0.000	-1.985312 -1.169981

Appendix 5.3.2 Probability of being employed

Males probability of being employed

```
probit _demployed c.age c.age##c.age i.educ i.region i.urban i.ownshouse ch_under7 from7to17
seniors unempladults pens
> ionandsocialpercapita remittances maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -3282.1231
Iteration 1: log likelihood = -2440.7887
Iteration 2: log likelihood = -2431.9599
Iteration 3: log likelihood = -2431.9573
Iteration 4: log likelihood = -2431.9573
```

```
Probit regression                               Number of obs   =       5387
                                                LR chi2(18)    =      1700.33
                                                Prob > chi2    =       0.0000
                                                Pseudo R2     =       0.2590

Log likelihood = -2431.9573
```

-----	-----	-----	-----	-----	-----	-----	-----
_demployed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]		
-----	-----	-----	-----	-----	-----	-----	-----
age	.1179374	.0127442	9.25	0.000	.0929592	.1429157	
age	0	(omitted)					
c.age#c.age	-.0011277	.0001658	-6.80	0.000	-.0014527	-.0008027	
educ							
1	0	(base)					
2	.2507043	.0641741	3.91	0.000	.1249253	.3764832	
3	.5583311	.0959876	5.82	0.000	.3701989	.7464633	
region							
1	0	(base)					
2	.1398792	.0707533	1.98	0.048	.0012052	.2785533	
3	.286604	.0638516	4.49	0.000	.1614572	.4117508	
4	-.2605724	.063483	-4.10	0.000	-.3849969	-.136148	
5	.0016769	.0654667	0.03	0.980	-.1266356	.1299893	
urban							
1	0	(base)					
2	.1669329	.0537312	3.11	0.002	.0616217	.272244	
3	-.1078562	.0484218	-2.23	0.026	-.2027613	-.0129512	
ownshouse							
0	0	(base)					
1	.4270334	.0784721	5.44	0.000	.273231	.5808358	
ch_under7	.0540251	.0342912	1.58	0.115	-.0131844	.1212345	
from7to17	-.0255028	.019675	-1.30	0.195	-.0640651	.0130595	
seniors	-.0036582	.0383779	-0.10	0.924	-.0788774	.0715611	
unempladults	-.3867575	.0150857	-25.64	0.000	-.416325	-.35719	
pensionandsocialpercapita	-.012916	.0015991	-8.08	0.000	-.0160501	-.0097819	
remittances	.0001746	.0000801	2.18	0.029	.0000177	.0003316	
maxedu	.0414932	.0104929	3.95	0.000	.0209276	.0620588	
_cons	-2.200393	.2744172	-8.02	0.000	-2.738241	-1.662546	
-----	-----	-----	-----	-----	-----	-----	-----

Marginal Effects

. margins, dydx(*)

Average marginal effects
Model VCE : OIM

Number of obs = 5387

Expression : Pr(_deployed), predict()

dy/dx w.r.t. : age 2.educ 3.educ 2.region 3.region 4.region 5.region 2.urban 3.urban

1.ownshouse ch_under7 from7to17

seniors unempladults pensionandsocialpercapita remittances maxedu

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
age	.0102866	.0005316	19.35	0.000	.0092447	.0113285
educ						
1	0	(base)				
2	.0682371	.0181055	3.77	0.000	.032751	.1037232
3	.1419042	.0244493	5.80	0.000	.0939844	.1898241
region						
1	0	(base)				
2	.0350995	.0176801	1.99	0.047	.0004471	.0697519
3	.0693939	.0154159	4.50	0.000	.0391792	.0996086
4	-.070844	.0172387	-4.11	0.000	-.1046313	-.0370567
5	.0004339	.0169388	0.03	0.980	-.0327657	.0336334
urban						
1	0	(base)				
2	.0406774	.0128485	3.17	0.002	.0154948	.06586
3	-.0279388	.012619	-2.21	0.027	-.0526716	-.003206
ownshouse						
0	0	(base)				
1	.1158862	.0224367	5.17	0.000	.0719111	.1598614
ch_under7	.0136462	.0086575	1.58	0.115	-.0033221	.0306145
from7to17	-.0064418	.0049677	-1.30	0.195	-.0161783	.0032948
seniors	-.000924	.0096938	-0.10	0.924	-.0199236	.0180755
unempladults	-.0976911	.003124	-31.27	0.000	-.1038141	-.0915681
pensionandsocialpercapita	-.0032625	.0003989	-8.18	0.000	-.0040442	-.0024807
remittances	.0000441	.0000202	2.18	0.029	4.51e-06	.0000837
maxedu	.0104808	.0026413	3.97	0.000	.0053039	.0156576

Note: dy/dx for factor levels is the discrete change from the base level.

Females probability of being employed

```
. probit _deployed c.age c.age#c.age i.educ i.region i.urban i.ownshouse ch_under7
from7tol7 seniors unempladulpts pens
> ionandsocialpercapita remittances maxedu
```

```
note: age omitted because of collinearity
Iteration 0: log likelihood = -1700.0835
Iteration 1: log likelihood = -1175.8751
Iteration 2: log likelihood = -1171.3463
Iteration 3: log likelihood = -1171.3317
Iteration 4: log likelihood = -1171.3317
```

```
Probit regression                               Number of obs   =       2474
                                                LR chi2(18)    =    1057.50
                                                Prob > chi2    =       0.0000
                                                Pseudo R2     =       0.3110

Log likelihood = -1171.3317
```

-----	-----	-----	-----	-----	-----	-----	-----
_deployed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]		
-----	-----	-----	-----	-----	-----	-----	-----
age	.0509787	.020422	2.50	0.013	.0109522	.0910052	
age	0	(omitted)					
c.age#c.age	-.0003777	.0002719	-1.39	0.165	-.0009106	.0001552	
educ							
1	0	(base)					
2	.56639	.0897008	6.31	0.000	.3905796	.7422003	
3	1.574494	.1234164	12.76	0.000	1.332602	1.816386	
region							
1	0	(base)					
2	-.4946407	.1041144	-4.75	0.000	-.6987011	-.2905803	
3	-.0382705	.1085484	-0.35	0.724	-.2510214	.1744804	
4	-.1432013	.0888729	-1.61	0.107	-.3173889	.0309863	
5	-.3030547	.0877412	-3.45	0.001	-.4750243	-.131085	
urban							
1	0	(base)					
2	-.1310991	.0877813	-1.49	0.135	-.3031473	.040949	
3	-.3862108	.0714349	-5.41	0.000	-.5262206	-.246201	
ownshouse							
0	0	(base)					
1	.2970946	.1028165	2.89	0.004	.0955781	.4986112	
ch_under7	-.1513499	.050787	-2.98	0.003	-.2508906	-.0518092	
from7tol7	-.1540568	.0304898	-5.05	0.000	-.2138156	-.0942979	
seniors	.0042088	.0591013	0.07	0.943	-.1116276	.1200453	
unempladulpts	-.4717412	.0249005	-18.95	0.000	-.5205454	-.422937	
pensionandsocialpercapita	-.0043232	.0022195	-1.95	0.051	-.0086734	.0000271	
remittances	-.0000235	.0000989	-0.24	0.812	-.0002173	.0001703	
maxedu	.0043873	.0113164	0.39	0.698	-.0177923	.026567	
_cons	-.8342967	.4083385	-2.04	0.041	-1.634626	-.0339678	
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