THE EFFECT OF REMITTANCES ON HOUSEHOLD EXPENDITURES AND LABOR SUPPLY IN ETHIOPIA: EVIDENCE FROM ETHIOPIAN RURAL HOUSEHOLD SURVEY.

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This to certify that the thesis presented by Genet Ejeta, entitled: The effect of remittances on household expenditures and labor supply in Ethiopia evidence from Ethiopian Rural Household Survey and submitted in partial fulfillment of the requirements for the degree of master science (Economic Policy Analysis) compiled with the regulations of the university and meets the accepted standards with respect to the originality and quality.

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ABSTRACT

The study examined the impacts of remittances on household expenditures and labor supply in rural households in Ethiopia. Specifically, the paper investigates the extents to which receipts of remittances affect the consumption and investment behaviors of rural households. The study employs two-part model (Hurdle model analyses in order to estimate the impact of household expenditure within Engle's Curve framework .The result indicates that there is no strong link between receipt of remittances and productive investment expenditures. The study finds that households receiving remittances spend, on average ceteris paribus, a larger share of their budget on consumption of food and a smaller share on than do households receiving no remittances. This implies that migration and remittances are used as a short term coping strategies and hardly used as stepping-stone to productive investment options. Therefore, designing policies that increase the inflow and usage of remittances are vital. Policies include: improving the operation and service of financial institutions, providing incentives and training for remittance recipients to be designed.

This paper also examines the impact that remittances has on the remittance-receiving households' labor supply decisions, specifically examining how they affect off-farm work effect of using panel data. The study aims to investigate how the received remittances are affecting the recipient household's labor supply by applying the neoclassical model of labor-leisure choice, and by analyzing data on ERHS. The finding from Tobit model shows that remittances affect labor supply negatively for both men and women (especially women) and these results thereby contribute to the understanding of how this aspect of migration affects the households and source countries' economy.

Key Words and Phrases: remittances, labor supply, household expenditures and investment, rural households, panel data.

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List of Acronyms

AIDS	Almost Ideal Demand System
ALSMS	Albania Living Standards Measurement Survey
CGE	Computable General Equilibrium
CLAD	Censored Least Absolute Deviation
CSAE	Center for the Study of African Economies
ENIGH	Encuesta Nacional de Ingresoy Gastos de los Hogares
ERHS	Ethiopian Rural Household Survey
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IFPRI	International Food and Policy and Research Institute
ILSMS	Integrated Living Standards Measurement Survey
IMF	International Monetary Fund
IOM	International Organization for Migration
MoFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
OLS	Ordinary Least Squares
ODA	Overseas Development Assistance
SSA	Sub Saharan Africa
WB	World Bank

CHAPTER ONE

Introduction

1.1 BACKGROUND OF THE STUDY

The economy of Ethiopia is largely based on agriculture, which accounts for 46.6% of the gross domestic product (GDP), 60% of exports and 85% of total employment. Ethiopia is one of the fastest growing economies in the world and is Africa's second most populous country but its agriculture is plagued by periodic drought, soil degradation caused by overgrazing, deforestation, high population density, high levels of taxation and poor infrastructure making it difficult and expensive to get goods to market (CIA, 2009).

Migration has received increasing attention in the development discussion over the last years. This is due to the sheer magnitude of national and international migration and the perceived development opportunities .This holds when considering the flows of money generated by migrants in the form of remittances. Both internal and international migrants are the source of finance for families back home in the developing world. Ethiopia is one of the migrant sending countries in the world with over 3% of the population living and working outside Ethiopia (IOM, 2010). Ethiopia has experienced political instability, war, famine, and economic hardship over the course of its history. Over the last three decades, Sub-Saharan Africa (SSA) has suffered environmental disasters, political conflict, and socio-economic shocks that have contributed to migration flows in this region. The desertification of arable land has displaced people and reduced agricultural productivity. The resulting loss of agricultural income and increasing demographic pressures have resulted in out-migration to urban areas despite worsening urban employment conditions. Ethiopia is one of the Sub-Saharan African countries that faced many types of migration over the years. It is both the origin and a destination country for either voluntary or involuntary migrants, and many migrants have also used it as a transit area. The face of migration in and from Ethiopia has been changing, from large refugee outflows in the 1980s

and 1990s to different forms of labor migration in the present decade as people seek employment opportunities abroad.[1]

The large refugee flows in from the 1980s and 1990s have led to the emergence of the Ethiopian Diaspora that now numbers approximately one million people living abroad. At present, highly skilled emigration remains a challenge as doctors increasingly migrate to better off African countries such as Botswana and South Africa, but the majority of flows are now characterized by low skilled migration. The changing nature of migration in Ethiopia has led to changing mandates in migration for government institutions, international organizations, unions and NGOs (Siegel and Kushminder, 2011). The stock of migrants as percentage of population is 0.7%. The top destination countries for emigrants are Sudan, the United States, Djibouti, Kenya, Saudi Arabia, Canada, Germany, Italy and Sweden due to better employment and economic opportunities there (World Bank, 2011).

Migration within Ethiopian borders has been common. People migrate from rural to urban areas dominantly and to developing countries for better living conditions like better wage and better economic opportunities. Migrations are the significant contributors for the yearly records of remittances flow to Ethiopia and to the all sub-Saharan African countries. Remittance has averaged 1.3 % of GDP over the last 30 years (World Bank, 2008). The level of annual remittance flow has increased by over 8 fold in 2006 compared to its level in 1997 (MOFED, 2007). Ethiopia is one of the largest remittance receiving countries in sub-Saharan Africa .The inflow of international remittances exhibits an increasing trend from 46 million USD in 2003 to 387 million USD in 2010 (World Bank,2011). International remittances constitute the largest source of foreign exchange, exceeding export revenues, FDI, and other capital inflows. Nowadays, remittances contributing to almost one third of foreign exchange earnings during 2007 and the amount of international remittance flow has increased from 855 million in 1996/97 to 9.3 billion in 2006/2007 (National Bank of Ethiopia, 2007).However, many believe that this contribution could be much higher if the amount of remittance that flow to the country through the informal channels can be controlled. Ethiopia is the 8th largest remittance receiver in Sub-

[1] **The number of refugees from Ethiopia increased from 55,000 in 1972 to over a million in 1992. Motives to flee have changed over time; however migrants initially fled for political reasons and to escape conflict. In later years the motives of Ethiopian migrants to flee from their country shifted to macroeconomic motives (Ibid).**

Saharan Africa in 2010, with an inflow of remittances reaching 387 million USD, to be compared with net Foreign Direct Investment inflows of 100 million USD and net Overseas Development Assistance (ODA) at 3.3 billion USD (World Bank, 2011). Generally, remittance in Africa is estimated to be the 2nd important source of income next to net official development assistance (ODA) but more important than net foreign direct investment (FDI) inflow (World Bank, 2011). The inflow of migrant money sent through official channels has increased 8 fold in the last ten years. The large amount of remittances affects practically every aspect of the Ethiopian economy. Besides, since 2003 private remittances coming through the official channel has exceeded export earnings .Ethiopia has not fully tapped its potentials for mobilizing remittances .The current flows of remittances are estimated at only one sixth of remittances that could be mobilized potentially. If fully mobilized remittances flow to Ethiopia could be raised to a level greater than the current amount of ODA flows into the country (Brehanu etal, 2004 , quoted in Aredo, 2005).

Developing countries government like Ethiopia encourage emigration to generate foreign exchange earnings required to make up for deficit in the balance of payments, promote investment and to address problems of poverty. At the micro level remittances can be used for smoothing the food consumption level of the remittance receiver, providing capital for investment purposes and for providing old age security (schriedar &knerr, 2000).

1.2 STATEMENT OF THE PROBLEM

Remittances are a valuable gift to the recipient individuals and country. Migrant transfers constitute an important source of income for Ethiopian households .The debate on the role of remittances hinges on three main observations. First, that although remittances might not be explicitly invested in productive businesses, they can be spent on investment-type goods (e.g., health, education, housing or other durables). Second, those remittances, as every other source of income, are fungible, thus even if they are not directly spent on investment in business and or in human capital, they may free other resources for spending on such investments. Third, that increased spending on consumer goods may be beneficial for local development in some contexts, as increased demand for these goods may create incentives for the establishment of new retail businesses (unless the goods are imported) and consequently may generate new local employment opportunities (Castalado,2007).

Nowadays there is an increasing interest from both researchers and policy makers about the role of remittances at the household level. Despite an increased interest in the role of remittances in Ethiopia, relatively little is known about the micro level of remittances. Also, the microeconomic effects of remittances have been controversial. Historically, migration was mainly related with urban areas. In recent years this trend seems reversed due to a significant number of rural youth going to the Middle East and developed countries legally or illegally (Kassahun, 2013).The effect of remittances on incomes, expenditures and Productive activities of rural households is of particular interest for these studies .

Migration is part of a household strategy to overcome market failures such as imperfect credit and insurance markets. Remittances that provide households with an income not correlated with farm income can loosen production and investment constraints and finance investments in new production technologies and input. Apart from the direct effects of remittances, there can also be multiplier effects on income, employment and production in the migration sending country (Taylor 1999).This paper investigates the impact of migration and remittances on household expenditures and on what goods and services remittance receiving rural households in the origin country by looking their expenditures. Despite the increase in migration and remittance flows to the country there is little study undertaken on use of remittances in order to fills the gap the study tries to answer how much of remittances income is allocated on consumption expenditures and productive investment expenditures (on different expenditure categories and the budget of the households). Nevertheless, clear and consistent evidence still lacks on the use of remittances at the household level and which activities are successful in redirecting them towards productive sectors. This study tries to avoid those problems and to address what impact, if any, household's receipt of remittances income has on productive investments which are considered to be a driver of growth in rural areas and a potential creator of local economic alternatives to migration. In addition the study will compare the spending extent of remittance and non-remittance receiving households across a broad range of consumption and investment goods, including food, education and housing. In another way remittances could affect household decision-making is by impact on recipient households' decision on how much labor it should supply, depending on if the receiving households see it as more profitable to supply more leisure after the extra type of income or not (Jadotte, 2009). In addition this study will examine the effects of remittances on labor supply in rural households in Ethiopia. The effect of remittances on labor supply is

unpredictable and becoming an empirical question. Remittances stimulate productive investment and entrepreneurship (business enterprises) in households that can create jobs. But there exists a moral hazard problem connected to remittance flows. When receiving an extra income the recipient's income increases, which can undermine their incentives to work, which in turn, would slow down economic growth (Barajas et al 2009). An increase in the non-labor income available to a household leads to an increase in reservation wages of household members and a decrease in the opportunity cost of leisure (Killingsworth 1983), which may cause a decrease their likelihood to enter or stay in the labor market .Hence, from a theoretical perspective, the sign of the effect of migration accompanied by remittances is indeterminate. Evidences from studies on other migrant sending countries seems to point to a decline in labor force participation (e.g., Amuedo-Dorantes and Pozo,2006; Acosta, 2006; Rodriguez and Tiongson, 2001. This study aims to investigate how the received remittances are affecting the recipient rural households labor supply by applying the neoclassical model of labor-leisure choice and revisit the literature on the impact of remittances on labour supply .

Moreover, analyzing the effect of remittances at household level from rural perspective adds to the empirical literature that will help to see the performance on the use of remittances. Therefore, this study will contribute to the existing literature by investigating a panel data model .To the best of my knowledge the study on the use of remittances in rural Ethiopia has not been done using panel data model. This means that this study fills the void in this research field for Ethiopia.

1.3 Objectives of the Study

The general objective of this study is to present micro economic evidence on the effects of the migrant remittances on household's expenditure behavior (and how they are spent on different consumption expenditure and investment expenditure categories) in rural households in Ethiopia. The specific objectives are:

- To investigate if there are differences between remittance receiving households and non receiving households in spending their income.
- To study what proportions of remittances are used for investment and how much on consumption?

- To study the effect of remittance income on the hours of work in remittance-receiving households using panel data.
- To draw policy implications based on the results of the study.

1.4 Significance of the Study

Remittances have a potential positive impact as a development tool. These development effects are consumption, savings, growth, investment, income distribution, poverty and better living standards. This paper is designed to contribute to the existing literature by providing econometric evidence at the microeconomic level of the household. It makes use of a detailed household survey from 1999-2009 and analyses the effects remittances play on the different expenditure categories and the budgets of the households and labor supply. This paper is aimed at providing anew statically robust evidence on how remittances are used and its impact on labor supply in Ethiopia. The results may have broader relevance to the remittances and development debate as well. Generally, this study will provide tools for policy makers how to channel remittances to the productive use to enhance economic development. Also, household data can capture both the formal and informal transfer so that it is possible to see the impact of remittances on household's expenditure and to come up with appropriate policy recommendations.

1.5 Limitations of the Study

It is difficult to take the survey as a representative survey for national survey. However, the survey is representative for rural Ethiopia. This due to the Ethiopian Rural household survey comprised only data on rural households that briefly shows the behavior of households under study. So, policy makers and practitioners used the results from this study in order to make policy analysis and appropriate policy objectives only for rural households in Ethiopia.

1.6 Organization of the Study

This paper is consisting of five chapters .The first chapter is an introductory topic to the study. The second chapter provides a brief review of theoretical literature and empirical evidence which are related to the topic under the study. In chapter three methodology and estimation techniques are presented. It also presents theoretical measure of household expenditure and econometric

method of estimation .Chapter four presents descriptive and econometric results obtained from the study. The final chapter will provide concluding remarks and policy recommendations.

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CHAPTER TWO

Literature Review

2.1. Theoretical Literature Review

2.1.1. Theoretical Framework

Migrant remittances are considered as the sum of workers remittance, compensation of employees and migrant's transfers (World Bank, 2007). Remittances are categorized into three different sections of the balance of payments (IMF, 1993).

- Worker's remittances are the value of monetary transfers sent home from workers residing abroad for more than one year. Workers and migrant remittances incorporate transfers when migrants send home part of their earnings in the form of cash or goods to support their families. And they have been growing rapidly in the past few years and represent the largest sources of foreign income in many developing countries (Ratha, 2003). Current transfer on current account balance.
- Compensation of employees is the gross earnings of workers residing abroad for less than a year including in kind benefits. Income transfer on current account balance.
- Migrant transfers represent the net wealth of migrants who move from one country of employment to another. Capital transfers on capital account balance.

The relationship between remittance and household expenditures can be explained theoretically by treating remittances as a source of income of the households receiving them. Traditional consumption models such as the lifecycle and permanent income theories of consumption state that the source of income doesn't matter in consumption behavior, as households tend to smooth consumption. Thus, we should expect that households receiving remittances behave like any other households with all other things the same. Several studies using a behavioral approach also show that sources and amount of income both play roles in placing them in certain accounts. Remittance income is fungible; we can't see separately how it is being spent because families spending remittances on consumption goods can devote other income to investments. Becker (1965, 1974,) states that a representative unitary household allocates resources and distributes income so as to maximize total household welfare. Remittances are important mechanisms for

household welfare. The relationship between migrant and family is characterized by altruism motive. This implies that migrants send home remittances during economic downturns and to help families avoid periods of income shortfall. The decision to migrate depends on individual decision.

There are relevant theories on migration. At present there is no single theory widely accepted by social scientists to account for the emergence and persistence of international migration (Massey et al, 1998). For analytical simplicity, we can classify theories of migration broadly as follows:

A. Neo-classical

B. Structuralist

C. Structuration and Household Strategy

A. Neo-classical Theory

This paradigm depends on individual choice by rational economic agents whose goal is to maximize utility. Its drawback is it ignores structural factors, such as international division of labor dictated by the world capitalist system and the social and cultural factors, such as the gender differences in customary norms on mobility.

B. Structuralist Theory

They emphasize on the role of structural factors, such as geographical characteristics and changes in the international patterns of production, in explaining migration. This paradigm has been criticized for downplaying individual choice and reproduction.

C. Structuration and Household Strategy Theory

In response to the limitations of the neo-classical and structuralist paradigms, structuration and household strategy models were developed to explain international migration .This approach maintains that the individual has some power to decide how to respond to structural factors such as international border controls and changes in the international demand for labor. Migration is affected by the reproductive labor of family members as it is frequently a household as well as individual livelihood strategy, and the former ipso facto involves the household. Household Strategy models focus on how gender and age hierarchies within households shape migration patterns (Chant 1992).

There are also theories on migration those are:

1. **Conventional theory of migration**

The conventional literature on migration decision has little to say about the role of private transfers in the migration process and the motives behind remittances. By viewing migration as an individual optimizing choice, it focuses solely on the objective of maximizing expected earnings.

2. New Economics of Labour Migration (NELM)

In this theory household is the unit of analysis (rather than the individual) behaving rationally and taking collective decisions to overcome liquidity and credit constraints. According to (Stark and Bloom, 1985) NELM says the decision to migrate is a joint decision by the migrant and family and takes into consideration the family shares the trade-offs, costs, and benefits. The NELM views migration as a risk-minimization strategy of the family by diversifying sources of income saying that remittances are motivated by altruism or concern of the remitter for their families receiving the remittances (Lucas & Stark, 1985).

3. Social network (social capital)

Social capital states that there is a social role that remittances play since the exchange happens between members of a social network (Portes, 1995). It may be that the senders are accumulating social obligations from the receivers and the receivers seen as services to their family members is also the view that remittances are a repayment to non-migrant members for their support in the migrant's education (Lucas & Stark, 1985).In this theory migration depends on personal relations between migrants and non-migrants to promote migration phenomena. Migrants can also transfer knowledge about better technologies to improve efficiency in home or agricultural production, or increase awareness about health and education issues that can result in improved human development outcomes (McKenzie and Sasin, 2007).

4. Human Capital Theory

Human capital sees migration as an investment decision and a result of rational cost benefit analysis (Sjaastad, 1962). With regards to human capital theory of migration, the prospective migrants choose the destinations that are maximizing the net present value of their expected future income, less various direct and indirect costs of migration (Massey et al, 1993). According

to this theory factors such as the educational level, age, skill, risk taking capacity, capacity to face new situations and entrepreneurship (Taylor and Martin,2001).

2.1.2 Motivations to Remit and the Implications for Remittances

Understanding motivations to remit is important in studying the way households receiving remittances actually spend their income. While the difficulty to quantify the motives for remittance is acknowledged, some economists have attempted to model the reason for remittances on the part of remitters to identify two approaches: Endogenous and portfolio approaches. In portfolio approach the remitter considers relative rate of return, price and other economic variables before remitting. Self interest is prime motive in the endogenous approach. In general analytic literatures on remittances identify three categories of motives. Such are Altruism, Self interest and inter temporal contractual agreement.

2.1.2.1 Altruism motive

In this case remittances are sent back home due to altruistic feelings of migrants to enhance the well being of his /her family. If the senders transfer the money based on their willingness to support their family-the altruism motive-household's use the money to smooth their consumption or for any other household expenditure and investment purpose. The flow of remittances is countercyclical. As altruistic individuals, migrants care about the welfare of other family members, friends, spouse, social circles and relatives. Their own satisfaction is increased when they remit money to meet the consumption needs of the household members who stay behind. The altruistic migrant would be inclined to send more money when there is a shock and risk on household members. The assumption of altruism does not explain the variance in magnitude or frequency of remittances sent home by migrants, nor does it address the strength of ties between remitters and origin households

2.1.2.2 Self Interest Motive

In this case migrant sends remittances in order to maximize his/her benefits. In this motive the migrant is a net saver and likes to invest some portion of their asset at home. The migrant assigns family members or relative to follow-up and administer the investment. As self-interested individuals, migrants are thought to be motivated to remit for a number of reasons, including, among others, a desire to share risk, a desire to diversify portfolio, or a desire to return to the

home country. From the perspective of risk sharing, remittances are viewed as premium to insure against idiosyncratic (e.g., loss of job) or covariate risks (e.g., drought). If diversification is the driving force, they would try to equalize return to investment in both host and home countries. In other words, they would invest in home country until the marginal return to their investments in host countries is no higher than the marginal return to their investments in the home country (Poirine ,1997).

2.1.2.3 Strategic Motive

Remittances may be both the cause and the consequence of migration; therefore, it is necessary to treat those two interdependent decisions in an encompassing framework. Among various plausible approaches some suggested that remittances may be part of a strategic interaction aiming at positive selection among migrants. According to the justification by Rapoport and Docquier (2006) migrants are heterogeneous in skills and individual productivity is not perfectly observable on the labor market of the host country (at least for a given period of time), employers apply statistical discrimination so that migrant workers are paid the average productivity of the minority group to which they belong. The predictions of the model are migration will be selective right from the start. Selectivity and remittances are positively related. Second, remittances will be targeted to those at home who have earning power since there would be no need to "bribe" those who would not credibly threaten to engage in labor migration. Thirdly, remittances come to an end once the high-quality workers are identified. Fourthly, the formation of groups is more likely when the [inter country] differential in wage is large.

2.1.2.4 Inter Temporal Contractual Agreement

The inter temporal contractual agreement comprises all kinds of contractual agreement between the migrant and the household left behind, such as insurance and risk sharing, exchange and implicit family contract/loan agreement (Thankom and Hulaya,2011).

A. Insurance and risk taking motive (Implicit family contract: coinsurance)

In this motive emigration becomes a coinsurance strategy with remittances playing the role of an insurance claim. Families living abroad would insure their families against drops in incomes with the exact terms of insurance depending on the bargaining power of the families and the migrant. To diversify economic risks the household members send some of its members. The families use retaliation strategies to enforce if a migrant fails to remit. Default to remit may be sanctioned by

denying the migrants rights to future solidarity, inheritance, or return to the village for retirement.. Stark and Rosenzweig (1989) highlighted the threat of income volatility inherent to agricultural economies of developing nations.

B. Implicit Family Contract (Loan Repayment)

The family members develop an implicit contract among those who choose to motivations are generally the sign of a temporary migration, and signal the migrants' intention to return includes taking care of migrant's assets like land or relatives, most of the time children. In this model the amount of remittance sent by the migrant over time depend at least on two factors. First, the length of time it takes to the migrant to get well established in the foreign labor markets. Second and more important factor is the income earning profile of the migrant.

C.EXCHANGE MOTIVE

Remittance is a repayment of loans used to finance the migrant's education or cost incurred in the course of migration. Empirically it is difficult to discriminate between these motives without adequate information regarding socio-demographic and economic characteristics of migrant and origin households.

2.1.3 The Neoclassical model of labor-Leisure choice

Most of the time economists used the *neoclassical model of labor-leisure choice* to analyze the labor supply behavior. This model can help us to predict how changes in economic conditions can influence the individual's work incentives and particularly interesting is that it shows what can happen if the non-labor income increases that is remittances in this study (Borjas, 2008). The model presupposes that an individual gains utility (U) from consumption (C) and leisure (L), summarized by the utility function:

$U = f(C, L)$

The higher level of utility U, the more satisfied the person. Each individual selects the combination of hours of work and leisure that maximizes his or her level of satisfaction (utility). The model makes the assumption that the person's utility increases from both more consumption (the more goods she can buy), and more hours of leisure. Also it assumes that different combinations of consumption goods and hours of leisure might yield the same level of utility. Some workers devote a great deal of time and effort to their jobs whereas others would prefer to

devote most of their time to leisure. Interpersonal differences in the "tastes for work" have an important effect on labor supply and due to this the indifference curve looks different for different workers. But the interpersonal differences are very hard to observe for economists instead we use Variables such as wages and income those are observable and measurable in economic models. So, the predictions made by the model about which types of workers who will tend to work more are testable and refutable (Borjas, 2008).

The combinations of Consumption and Leisure and their tradeoff are explained by indifference curve. For individuals who are working, the opportunity cost of an additional hour of leisure time is the wage rate. Individuals choose not to work if the value of leisure time exceeds the market wage. The indifference curves are downward sloping that means individuals prefer more of both C and L.

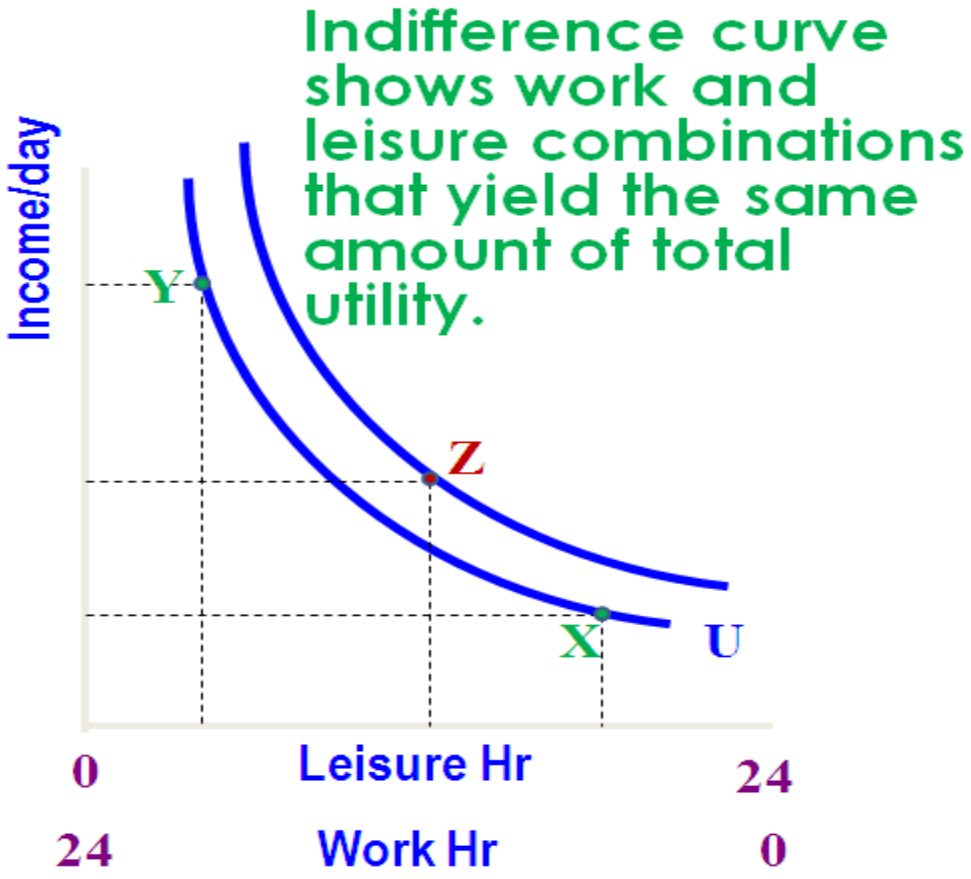

Figure 2.1: A Solution to the Labor-Leisure Decision

Source: The figures in this chapter are from Varian (2002)

There are income and time constraints in the model. Some part of their income is not affected by how many hours they work. This part of her income can be property income, dividends, inheritance and lottery prizes and is called "non-labor" income, denoted by *V*. The number of hours that the person will allocate to the labor market is denoted by *h*, and *w* is the hourly wage rate. These variables can form an equation called a person's *budget constraint*:

$C = wh + V$

The equation shows that value of expenditures on goods (C) must equal the sum of labor earnings (W_h) and non-labor income (V). This model also implies that the person does not save. The worker spends all of her income in the period under analysis. To simplify the model we assume that the wage rate is constant for a particular person so the person receives the same hourly wage regardless of how many hours she works. There are two alternatives for the worker on how to use her time: work or leisure. The total time allocated to each of these activities must equal the total time available in the period with *T* hours per week, so that $T = h + L$. The budget constraint can then be rewritten:

$C = W (T – L) + V$

Or

$C = (WT + V) – WL$- Budget Line

Point *E*, the endowment point, is where the person decides not to work at all and devotes *T* hours to leisure. At this point she can still purchase a value of *V* of consumption goods. Each hour of leisure consumed has a price and the price is given by the wage rate. At the intercept of the budget line the person can buy a value of (wT + V) of goods and this means she gives up all her leisure activities. The budget line shows the worker‟s opportunity set, the set of all consumption baskets that a particular worker can afford to buy (Borjas 2008, Björklund et al 2006). Another assumption in this model is the worker wants a certain combination of goods and leisure that maximizes her utility. Given the limitation of the budget constraint the person will therefore choose a level of goods and leisure that gives the possibly highest utility level *U this is* where the budget line is tangent to the highest possible indifference curve. So, we see how changes in non-

labor income (V) will affect how much the worker chooses to consume hours of leisure since *V* represent remittances.

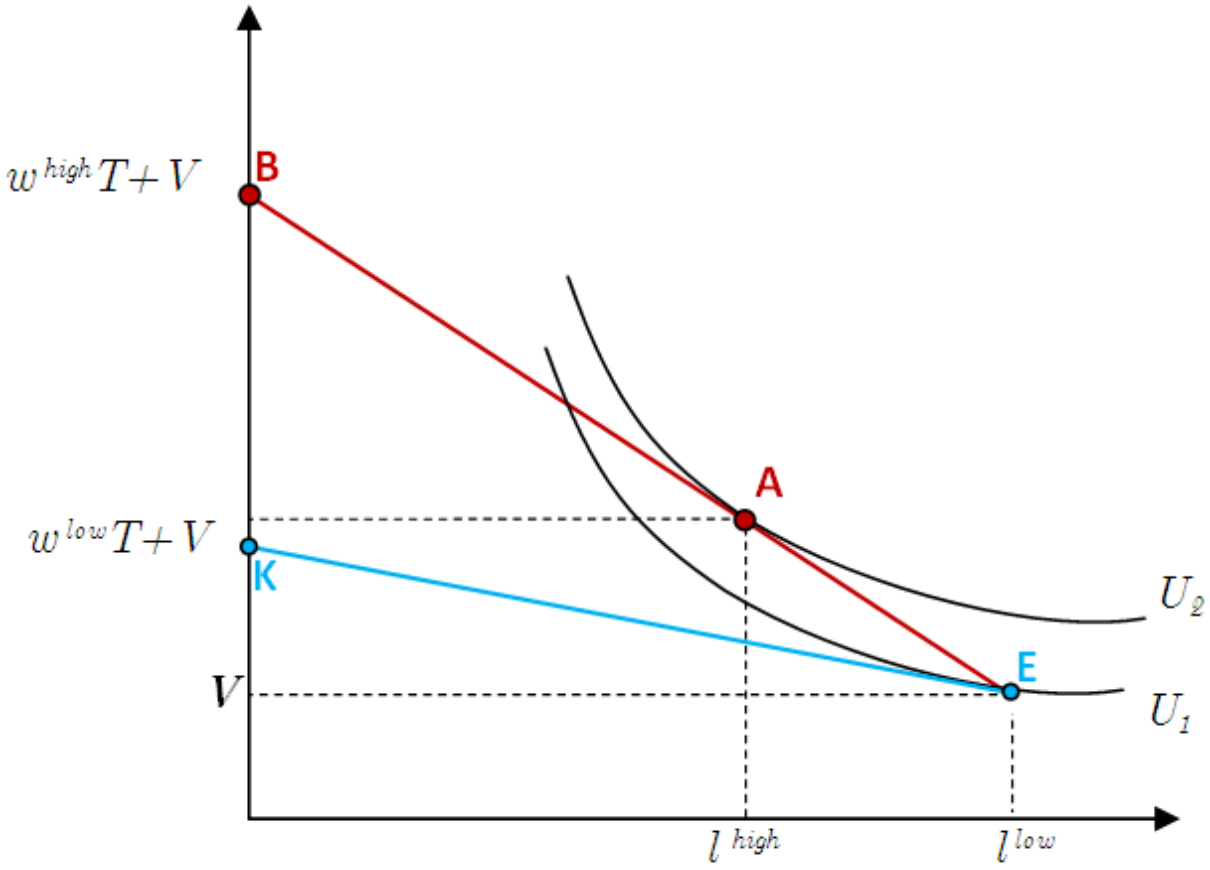

Figure 2.2: Maximization of NCL

The value of expenditures on goods (C) must equal the sum of labor earnings (wh) and non-labor income (V). The choice of how many hours a person will work is when the value of expenditures equals the utility: U = C + L. If the remittances increase, this means that V increases. If the consumption is higher the utility will also be higher. But what will happen to the hours of leisure? There can be two possible effects: the hours of leisure can increase or decrease depending on what the utility function looks like, and this depends on whether leisure is a normal or an inferior good. When leisure is a normal good an increase in non-labor income will lead to an increase of the consumption of the good. But if it is an inferior good a rise in non-labor income would still increase the consumption of goods but decrease the hours of leisure. The

impact of the change in non-labor income (holding wages constant) on the number of hours worked is called the *income effect and* as the wage rises a worker faces a larger opportunity set and the income effect increases her demand for leisure and decreases labor supply called the *substitution effect*.

Applying the model of the labor-leisure choice, we can form an econometric model of what impacts the decision of how many hours the individual should work. This will also give us an idea of whether the rural households in Ethiopia view remittances as a normal or an inferior good. The econometric model will constitute the method of this study.

2.2 Empirical Review of Literature

2.2.1 Remittances and Household Expenditures

According to Adams (1998) literature review there are at least three views on how remittances are spent and the impact of these monies on economic development. The first, and probably most widespread, view is that remittances are fungible and are spent at the margin like income from any other source. This means a dollar of remittance income is treated by the household just like a dollar of wage or farm income, and the contribution of remittances to development will be the same as that from any other source of income. The second view states that receipt of remittances can cause behavioral changes at the household level that may lower their development impact relative to receipt of income from other sources. It is more pessimistic. The last view of remittances is decidedly more positive, arguing that remittances actually increase investments in human and physical capital at the margin, relative to other forms of household income.

Many studies conclude that remittances are primarily used to finance household expenditures, such as consumption and investment (Maitra and Ray, 2003; Adams, 2005; Taylor and Mora, 2006; Castaldo and Reilly, 2007). There are two opposite results gained from the studies undertaken before. The first result is that remittances are consumed instead of invested thus are not put to productive use in migrant sending areas. Households which receive remittances display a higher marginal propensity to consume. Those literatures on remittances and expenditures are either descriptive or analytical based on econometric estimation. Other studies show that the receipt of remittances is allocated for productive investment and their conclusion is that criticisms of migration for not stimulating productive investments may be misplaced,(Maitra and Ray, 2003;Zarate-Hoyos, 2004; Adams, 2005 , Taylor and Mora, 2006).Koc and

Onan (2004) studies the use of remittances in Turkish households using descriptive statistics. The study found that almost 80% of remittances were spent on daily expenses,7% on health care, 4% on expenses on marriage.3% for land or house purchase and 5% for other expenses. This shows that remittances are used for improving the livelihoods strategies of living of left- behind

Castaldo (2007) in his study investigates the extent to which consumption patterns of Albanian households are affected by the receipt of migrant remittances and tests whether the receipt of remittances from a migrant within Albania (internal) has the same effect on consumption behavior as the receipt of remittances from abroad. The study finds that the consumption pattern for households in receipt of internal remittances is not statistically different from those that do not receive such transfers. The study uses the nationally representative Albania Living Standards Measurement Survey (ALSMS,2002).The approach uses Engle curve frame with its popular form that is consistent with household utility-maximization provided by the Working-Leser specification (Working, 1943, Leser, 1963), which relates budget shares linearly to the logarithm of total household expenditure.OLS (ordinary least squares) estimation is undertaken on the budget share equations for four broadly defined categories(Food, Non-food, Durables and Utilities) controlling for a number of variables, including those capturing whether or not the household receives remittances from within Albania or abroad. The study, both the descriptive and econometric analysis, found that external remittances increase the household's budget shares of expenditure on durable goods and utilities, and decrease their budget shares on food but Internal remittances exert no independent impact on spending patterns of Albanian Households due to the small number of households which are in receipt of this type of remittance in the data. On the other hand, households who receive remittances from abroad spend, on average and *ceteris paribus*, a lower share of their expenditure on food and a higher share on consumer durables compared to households who do not receive any type of migrant remittances. The paper provides evidence that remittances tend to increase a household's propensity to consume investment-type goods. But the study doesn't consider the endogenity problem on remittances and censorship problem.

Coscodan (2008) finds that households receiving remittances spend, on average and ceteris paribus, a larger share of their budget on consumption food and utilities, and a smaller share on consumer goods than do households receiving no remittances. He analyzes the effect remittances

play on the different expenditure categories of the budget the households by employing Engel Curve using three stage least squares.

Taylor and Mora (2006) develop two stage least squares that captures the impact of international and internal remittances on rural household expenditure using a Mexican data set. ENIGH (Encuesta Nacional de Ingresoy Gastos de los Hogares) is a nation-wide survey collected on a two-year basis from 1992 until 2004. The dependent variables of household expenditures have been divided in to ten categories: food, Health, Education Durable Goods , Non Durable Goods ,Other ,Business ,Saving and transfers . The system of expenditure equations can be estimated using Lee's (1978) generalization of Amemiya's (1974) two-step estimator to a system of equations. The first stage is estimated using participation in each expenditure category to get the inverse mill's ratio. The dependent variable in each probit is equal to 1 if eih > 0 and zero otherwise. The second step, the Inverse-Mills ratios are included as right-hand-side variables in the corresponding expenditure equations to correct for censoring and estimates the expenditure system using the Almost Ideal Demand System (AIDS).The results concludes, households having remittances spends more of their income on health, durable goods, and patrimony. Internal remittance stimulates more categories related to human development investments, health and education, while external remittances affect positively physical capital investments. Remittances do indeed significantly influence expenditure patterns in rural areas of Mexico. In particular, the propensity to spend on some investment categories (education, health, durable goods, patrimony and savings) appears to be considerably larger for remittance-receiving households, internal or external, than for non-remittance households. The findings do not support that households receiving remittances disproportionately spend their income on "current consumption".

Zarate-Hoyos (2004) show that remittance receiving households have lower average expenditures per household in most spending categories which include, food, health, and education. Household expenditure patterns in their Mexican dataset indicate that remittance receiving households invest and possibly save more than non-remittance receiving households. Remittance receiving households are found to have lower income elasticity for current consumption and for durable consumer goods expenditures. Adams (2005), using data from a survey of 7276 households in rural and urban Guatemala finds that remittance receiving

households in Guatemala spend less on the margin on consumption of food, consumer goods, and durables. Instead they spend more on investment goods like education, health, and housing.

In contrary to the above findings, another study by Adams and Cuecuecha (2008) in their paper 'Remittances, Consumption and Investment in Ghana' found that households receiving remittances in Ghana do not spend more at the margin on food, education and housing than households with similar income levels and characteristics that do not receive remittances. They used the modified version of Engel function of the Working-Leser model for their analysis. The paper used a nationally representative household survey from Ghana to analyze how the receipt of internal remittances (from within Ghana) and international remittances (from African or other countries) affects the marginal spending behavior of households on a broad range of consumption and investment goods, including food, education and housing using Multinomial Logit Model. They found that remittances do not have a statistically significant impact at the margin on the consumption and investment behavior of households in Ghana (means households in Ghana do not treat remittances differently from other sources of income). Airola (2007) studied the household expenditure patterns of households in Mexico. In remittance receiving households total income is spend on durable goods, health care and housing expenses respectively. In contrast to other studies expenses on food category were negatively significant. Also, remittances have a lower effect on spending on education and clothing. Nagarajan (2004) used the longitudinal data spanning from 1993 to 2004 from KwaZulu-Natal province to estimate the budget share equations of the six items (Food, Housing, Health, Education, Consumer Durables, Other) and a dummy variable capturing household remittance receipt by adopting Working-Leser Model using panel fixed effects specification in order to control for unobserved heterogeneity of households as well as time trends. Remittance receiving households spent larger shares on foods, health and education than non remittance receiving households and spent smaller shares on housing and consumer durables.

Mosisa (2012) investigates migrant remittances on expenditure patterns of rural households in Ethiopia using the final round of Ethiopian Rural Household Survey (2009). Two-part model is estimated within Engle's Curve framework and the study found that remittances have positive and significant impact on consumption expenditures. Remittance receiving households spend more on consumption goods than those households with no remittance income. But it does not

consider the endogenity problem of remittances. Bizuayehu (2008) investigated the effect of remittances on household welfare using the longitudnal evidence from Ethiopian urban socio economic survey using fixed effect regression.The study provides strong evidence on welfare enhancing impact of remittances and also found that remittances are primarily used for food and non food consumption.Andersson (2012) studies the effects of international remittances on household welfare using household subjective wellbeing and household assets in rural Ethiopia using propensity score matching. The methodology allows to include the change in household welfare before and after the household started receiving remittances. To measure household welfare the paper used household subjective wellbeing and household assets. The study found that remittances have a significant strong positive effect on household subjective wellbeing. The effect on consumer and productive asset accumulation is more ambiguous.

Adams and Cuecuechea (2010), using data for Guatemala, find that international remittance-receiving households spend more on education, health, and housing, and less on food than do other households. The studies have explored the differences in household expenditures across remittance receiving and non-receiving households. Sharma (2011) examines the impact of international migration on household welfare using household survey in Sri Lanka. He founds that there were statically significant differences between mean levels of per capita total consumption expenditures, per capita food expenditures and per capita non food expenditure between migrant and non migrant households. And expenditures are higher for households that have migrants.

The literature more or less adopted the same methodology and model specification with this study but they do not consider all the obstacles during estimations. To get best, unbiased estimations and results this paper considers all the obstacles and make of extract by reviewing literature.

2.2.2 Remittances and poverty

Remittances directly alleviate the poverty of households to whom they are sent. Furthermore, it is a relatively stable source of income independent of the often dire local economy of recipient families (Solomon, 2012). Different authors examined the roles of remittances on poverty alleviation and welfare improvements.

Uruci and Gedeshi (2003) using survey of long-term legal immigrants found that the majority of the international migrants (69.7 percent) send their money in order to meet the basic needs of the family. This makes remittances the most important sources of income for poor households with high potential to increase the household welfare and to reduce poverty. Yet, it is argued that, remittances have stronger impact on poverty reduction if they are above the certain threshold.

Adams and Page (2005) examines the impact of international migration on poverty using household survey. Controlling for the level of income, income inequality, and geographical region, they found that international remittances have a strong statistically significant impact on reducing the level, depth and severity of poverty. A 10 percent increase in the share of international remittances in a country's GDP leads to a 1.6% decline in poverty incidence. Adams (2004) founds that both international and internal remittances reduce poverty in Guatemala, but have a greater impact on the severity rather than incidence of poverty. The study indicates that squared poverty gap measure in Guatemala declined by 19.8 percent when international remittances were included as a part of the total household income.

Taylor et al (2005) estimated the impact of international remittances on welfare using the large household survey data from rural Mexico. The study founds that poverty headcount and poverty gap indices would decline by 0.77 and 0.53 percents respectively with 10 percent increase in international remittances.

Gustafsson and Makonnen (1993) examined the impact of remittances on poverty and welfare in rural and urban Lesotho. They found that if the remittances were set to zero, the average per-capita household consumption would fall by 32 percent and the poverty head count index would increase by 26 percent. Acosta et al. (2007) from 11 Latin American countries founds that communities with higher percentage of remittance receiving households and households in the lowest income quintiles benefited the most. In general remittance lowers poverty. Lopez (2005) found a positive correlation between poverty reduction and the number of households receiving remittances. Remittances have a statistically significant impact in improving welfare using 2,400 municipalities in Mexico.

Fajnzylber and Lopez (2007) from 11 Latin American countries founds that the average estimated impact of remittances on poverty headcounts is such that a 1 percentage point increase in the remittances to GDP ratio reduces moderate and extreme poverty by ,respectively, 0.37 percent and 0.29 percent. Generally, the literature on poverty confirms the poverty reducing effect of remittances even if the magnitude varies among households and countries.

Rashimi and *Kumar Sahu* (2011) examined the impact of remittances on poverty in 77 developing countries on three measures of poverty, namely Poverty Headcount Ratio at $1.25 a day; Poverty Gap (at $1.25 a day); and Poverty Gap (at $ 2 a days) using three stage least square estimations. Similar analysis is undertaken for Asian developing countries with more than 5% share of remittances in their GDP. The study found that poverty headcount and poverty gap indices would decline by 3.1 and 3-5 percents in developing countries respectively with 10 percent average increase remittances depending on how poverty gap is measured. The study shows that remittances significantly reduce poverty in recipient countries but the results are more reliable for countries with remittances greater than 5% of GDP. The study found that poverty headcount and poverty gap indices would decline by 3.9 and 3-5 percents for countries with remittances greater than 5% of GDP respectively with 10 percent average increase remittances. To conclude remittances is able to reduce poverty levels in the recipient country.

2.2.3 Remittances and Labor supply

Studies undertaken before on the economic effects of remittances have found significant changes in labor force participation, labor hours and allocation of labor supply across sectors, in response to increases in remittances (Amuedo-Dorantes and Pozo 2006; ; Funkhouser 1992; Rodriguez and Tiongson 2001). Overall, these studies find that remittances result in a decrease in the number of labor hours supplied and in the labor force participation of working age men and women. These effects are typically greater for women. The studies argue that the impact of remittances is similar to an increase in non-labor income received by a household. An increase in non-labor income is often associated with a decrease in the opportunity cost of leisure and the relaxation of credit constraints.

Funkhouser (1992) shows the relationship between migration, remittances, labor force and self-employment participation using cross-sectional data from post-conflict Nicaragua. The study

found that an increase in remittances has a positive impact on self-employment due to their will be less restrictive credit constraints and a negative effect on labor force participation due to an increase in non-wage income. A $100 increase in income (from 0) the probability of labor force participation decreases by 2.1 percentage points for males and 5.0 percentage points for females. A recent paper by Acosta (2006) studies the relationship between labor supply and remittances, using data from El Salvador (a nationally representative, cross-sectional household survey in El Salvador). He founds that remittances decreases female labor supply but does not affect men labor supply. Rodriguez and Tiongson (2001) studies the effect of having a migrant amongst household members on the individual probability of labor force participation in urban Philippines. They found that having a migrant member in the household decreases the probability of male labor supply by 9.4 percentage points and women labor supply by 18.1 per cent.

Amuedo-Dorantes and Pozo (2006) examine differences in hours worked in different types of employment by men and women in Mexico. After endogeneity of remittances is corrected remittances are found to be decreases men labor supply to the formal sector and increases its labor force participation to the informal sector. Also women work fewer hours and resign from working in informal sector. Azam and Gubert (2004) found that recipient households reduce their labor supply in response to remittance receipt. Chami et al. (2005) found evidence of adverse incentive problems in a cross section of 113 countries that recipients use remittances as a substitute for labor income and reduce their work effort. In other way remittances enhance investment and human capital due to the reduced formal labor supply could free up time for families to devote to other productive welfare improving activities. Acosta (2006) finds that child and female labor supply decrease with remittances in El Salvador, but that male labor supply is not affected by private transfer receipt. A survey by Cox -Edwards and Rodríguez-Oreggia (2008) shows that no difference in labor participation between remittance receiving and non-receiving households in Mexico. For women in the urban areas remittances increase labor participation, and the possible explanation is that remittance contributes to the establishment of family owned enterprises which could improve the labor market opportunities for women.

Kim (2007) examines the impact of remittances on the labor supply using cross sectional and panel data analysis. The cross sectional result shows that remittances are contribute to high real wages but little or none on the weekly working hours of employees. Panel data results shows

remittances have a strong impact on labor participation. Remittance receiving households have a higher reservation wage and reduce labor supply. Airola (2005) found that labor supply decreases with receipt of remittances using household income and expenditure data from Mexico. According to Rodriguez and Tiongson (2001) found that the migrant and non-migrant labor participation is not separable and that remittance has a negative impact on labor supply but remittances are affecting men's, rather than women's supply of labor. Funkhouser (1992) found that different results from studies in Nicaragua. Remittances improve the entrepreneurial activities for a man that increases labor participation but in contrary reduces labor supply for women. Grigorain and Melkonyan (2011) develop three stage least squares (3SLS) to estimate the implications remittance flow has on behavior of receiving households in Armenia using instrumental variable. The study shows that remittance receiving households worked fewer hours and spent less on the education of their children. In general at microeconomic level the impacts of remittances are gloomy in Armenia. The data for the study came from Integrated Living Standards Measurement Survey (ILSMS).Gibson et al. (2011), for instance, use a quasi natural experiment to estimate the impacts of international migration and remittances on households that receive remittances. The authors find labor supply to be unaffected. Yang (2008) exploits information from favorable exchange rate shocks that increase income in remittance receiving households. While the number of total hours worked seems to remain unaffected, the author provides evidence of increasing hours in self-employment. Further evidence is provided by Cox-Edwards and Rodr´ıguez-Oreggia (2009). Applying propensity score matching, no significant effect of remittance receipt on labor force participation in Mexico is detected. The authors explain their findings with remittances being the income contribution of the migrant abroad thus leaving total household income unchanged.

2.2.4 Remittances and Inequality

The "trickle-down" effect of remittances on inequality might explain contradicting empirical evidence. Barham and Boucher (1998) examine the net effects of migration and remittances on income distribution for a sample of households in Bluefields, Nicaragua. The results confirm that when the observed income distribution is compared with two no migration counterfactuals, where migration and remittances are treated as a substitute for home earnings, income inequality was found to be lower in the no migration counterfactuals.

Stark et al. (1988) found that though remittances reduce income inequality in a Mexican village, the poorest households are not able to afford migration to the United States. Taylor et al. (2005) in his study in rural Mexico found that income inequality decreases when migration becomes more widespread. However, a study by Adams (1989) shows that the remittance earnings of migrants from abroad had a negative impact on rural income distribution. The results confirm that remittances from abroad worsened rural household income distribution in gross terms and in per capita terms because they were earned mainly by upper income villagers.

CHAPTER THREE

Data and Methodology

3.1 Data source

The data for this study is obtained from the Ethiopian Rural Household Survey (ERHS).ERHS is a unique longitudinal household data set covering households in 15 villages in rural Ethiopia across four major regions of the country: Tigray, Amhara, Oromia and Southern Nations Nationalities and People's (SNNPs).The villages are Haresaw, Geblen, Dinki, Debreberhan, Yetemen, Shumsha,Sirbana Godeti, Adele Keke, Koro-Degaga, Turfe, Kechemane, Imidibir, Aze Deboa, Addado and Gara Godo. The survey has a rich array of socio-economic variables on households that were interviewed longitudinally. The data collection has been supervised by the Economics Department, AAU, the Center for the Study of African Economies (CSAE), University of Oxford and the International Food Policy Research Institute (IFPRI).For this study panel data will be used from the 1999, 2004 and 2009 survey. These three rounds are just enough to see the existing relationship between remittances on consumption expenditures and investment expenditures .In 1999, three additional villages - Oda Dawata, Bako Tibe and Somodo were surveyed. But we didn't use it because it creates discrepancy with the rest of the survey. The total number of observation is N= 2629 and there is 845 observation in 1999 ,877 observation in 2004, and 907 observation in 2009. It is strongly balanced data and In addition secondary data which is collected from various publication of National Bank of Ethiopia (NBE), World Bank (WB) reports and Internet sources.

The analysis used both descriptive and econometric techniques . Micro panel data sets eliminate biases resulting from aggregation over micro units. Panel data is superior to cross sectional and time series data since it helps us to control individual heterogeneity, give more informative data, more variability and more efficiency. Also, it increases the degrees of freedom and reduces the colinearity among explanatory variables. Panel data are suitable to model or explain why an individual unit behaves differently and why a given unit behaves differently at different periods (Hsiao, 1986). Panel data results are typically better than estimates from one round of a survey because it is possible to control for unobserved characteristics.

3.2 Theories of the Household

Economic theories of the household try to capture the complex structures of households and their behavior. Information on the demographic structures, decision making process, resource allocation, income earning mechanisms and gender division of labor is a prerequisite for understanding the effects of public or private sectors interventions at the micro level as well as their macro level consequences. Household has a complex task and their behavior includes many dimensions and affected by many factors. The unitary model assumes that decisions within household are made jointly and that the household maximizes a single set of objectives for all its members (Ellis, 1998).A household acts as single units when it's all members have exactly the same preferences and subsequently the same utility functions. This means all household resources are pooled. In the unitary model, social harmony without conflict is the chief characteristics of the household. Within the neoclassical tradition there have been some efforts to solve the problem of individual preferences by forming aggregate preferences or average utility functions which would then indicate the level of wellbeing of the whole household (social welfare function). Households are the unit of analysis in the study. Unitary models are nice because utility functions are easy to work with. Considering the household as the unit of analysis allows modelling the family as a financial intermediary that seeks to diversify labor resources in order to minimize income risks and smooth consumption (Chami et. al., 2005).

3.3 Conceptual Framework

Most models of household expenditures assume that households allocate their budgets across expenditure categories so as to maximize utility from current consumption of goods or services, or in the future, from investment expenditures. Consider a household of S members, each of whose utility U^s depends on the commodity consumption of all household members, such that $x = \{x_{is}\}$,i=1,…*I;s=1,.....S i indexes* commodity and s indexes the individual. Therefore, $U^s = U^s(x;Z;\varepsilon)$ where Z, ε denote the set of household and individual level characteristics.

The household maximizes household welfare:

$$W = W[\{U^s(x; Z\,\varepsilon)\}^S_{s=1}] \qquad (1)$$

Subject to the income constraint:

$$P'X = \Sigma I_s \qquad (2)$$

Where *p* is the vector of prices faced by the households (assumed to be fixed exogenously), *X* is the vector of aggregate demand ($X = \Sigma_s x_{is}$), and I_s household income accruing to individual *s*. The solution is a set of reduce form demand equations:

This section draws from Maitra and Ray, 2003.

$$X_{is} = X_{is}(I_{1,\ldots\ldots,} I_s ; P, Z, \varepsilon_{is}) \quad (3)$$

Aggregated over *S* individuals in the household, the demand functions take the form:

$$X_i = \Sigma X_{is} = X_i(I_{1,\ldots\ldots,} I_s ; P, Z, \varepsilon) = X_i(\Sigma I_s; P, z, \varepsilon) \quad (4)$$

Most consumer models assume that households pool their income ΣI_s , which then ignores income-source effects on expenditure. This assumption is not unreasonable if remittances are fungible like any other source of income. This implies that the marginal change in income from remittances has the same effect on expenditures as a marginal change in any other income source. In this model, remittances are limited to indirect effects operating through total income, therefore an increase in remittances shifts the household budget constraint outwards by the amount of the remittance transfer (Taylor and Mora, 2006). This raises (decreases) the demand for normal (inferior) goods. Recent studies have allowed income sources *Is* to vary: In addition to household income *Y*, remittance income *R have* also been included to the demand functions (Maitra and Ray, 2003; Adams, 2005; Zarate-Hoyos, 2004; Taylor and Mora, 2006; Castaldo and Reilly, 2007). Equation (4) can then be re-written:

$$x_i = x_i (R, P, Y; p, Z, \varepsilon) \quad (5)$$

Indexing households by *h*, the budget share equations be:

$$W_{ih} = f (E_h, R_h, P_h , Z_h) + \mu_{ih} \quad (6)$$

W_{ih} is the budget share of item *i* in household *h*, such that $W_{ih=}X_{ih/Xh,\ Xh} = \Sigma_i X_{ih}$.

E_h is total household expenditures, and used instead of household income as is done in most demand studies. Z_h is the vector of household and community characteristics which influence household expenditures, and μ_{ih} is an error term that is assumed to be approximately normally distributed with mean zero and variance σ^2.

3.3.1 Econometric Specification

The econometric approach models household demand equations as a function of income, prices, socio-demographic variables, and whether the household receives remittances. Demand is proxied by looking at expenditure data, which capture both resource constraints as well as

preferences. The amount a household chooses to spend on food, housing, health, or education may reflect beliefs about the relative value on necessity of each good, not just the ability to purchase these items. This approach (1) is consistent with consumer demand models which assume that income from diverse sources is pooled into a common household budget constraint, and (2) allows for the possibility that migrant remittances may have an independent effect on expenditure patterns (Taylor and Mora, 2006).

In choosing the appropriate functional form for the budget shares equations derived in the previous section, the following criteria are considered: (1) the same slope (i.e. marginal budget share) should not be imposed for all levels of expenditure; (2) a good statistical fit for different types of goods should be provided; and (3) the of additivity should be met in order to be internally consistent, i.e. the marginal propensities for all goods should equal unity (Adams, 2005).

An Engel curve relates the household budget shares allocated to specific categories of expenditures to total household expenditure (Castaldo and Reilly, 2007).Engel curve analysis shows relative changes in expenditure shares for a particular good, not absolute increases or decreases (Leive and Xu, 2007). Engel proposed that as income increases, the budget share devoted to (1) food consumption decreases, (2) fuel, clothing, and lighting consumption remain constant, and (3) luxury good consumption increases (Zarate-Hoyos, 2004).

3.3.2 Model Specification for household expenditures

This analysis will use the Working-Leser functional form to estimate Engel curves (Working, 1943; Leser, 1963). The Working-Leser specification relates budget shares linearly to the logarithm of total expenditure and meets all three criteria mentioned above. The underlying assumption of this model is that household expenditure is a function of household assets (physical and human) and the economic environment in which these assets can be utilized to generate expenditure (May and Woolard, 2007: 17). Separate budget share equations are run for each expenditure category *i*: food, non food, housing, health, education, consumer durables, agricultural input and utilities.

The model will become:

$$W_{ht} = \alpha + \beta_1 \ln(Eht) + \beta_2 Rht + \beta_3 \ln E_{ht*} R_{ht} + \beta_4 Z_{ht} + \varepsilon_{it} \quad (7)$$

Where W_{ht} is the budget share for a category of good (separate regressions are run for eight different categories: food, nonfood, housing, health, education, agricultural input , investment and durables) for household *h* at time *t* (i.e. the ratio of expenditure on a category of good to total household expenditure), R_{ht} is total amount of remittance received. Eht is total annual household expenditure, Z_{ht} is a vector of socio-demographic household and household head characteristics, α and, β*k* = 1,...,4 *k* β are unknown parameters, that captures the idiosyncratic variation in the budget share for household ***h***. we develop the model by adding essential independent variables. The interaction $\ln E_{ht*} R_{ht}$ term is included to allow for remittances to shift the intercept of the Engle curve, the marginal propensity to spend income, and the marginal effects of other variables on expenditures on each category of goods.

There are various econometric challenges in estimating the correct reduced form regression framework. Remittances are not predetermined rather they are endogenous outcomes shaped by some of the same variables that may influence expenditures, including migration itself. Also including remittances in the expenditure equations will not necessarily control for the range of effects that migration may have on expenditures. So, migration is endogenous. Without making any endogenity test most of the literature on remittance and household expenditures describe theoretically that remittance is endogenous there is a need for instruments to avoid biased estimates. One of the problems refers to the potential correlation between household remittances and the error term, in which case the coefficient estimate for remittance income is biased. There are two potential sources for this noted correlation. The first source originates in the presence of unobserved heterogeneity and omitted variable bias. Household remittances may be related to a wide range of characteristics we lack information on, ranging from household wealth (as captured by ownership of a house, piece of land, business, livestock or some other physical asset) to the family's wealth stock which, in turn, can impact the household expenditures. Those correlations may result in either positively or negatively biased estimates of the impact of remittances on household expenditures and labor supply. The second source of potential correlation between household remittances and the error term results from the joint determination of household remittance income and household expenditures. To correct the issue of endogenity

problem attempt to construct instruments that are correlated to the endogenous regressors. Some studies used the presence of migration network broad and domestic as instruments. Taylor and Mora(2006) used the number of family members that lived abroad 12 years prior to the survey ,yet returned home. Acosta (2006) used the number of international migrants who returned two or more years ago back to their home land .We address the simultaneous determination of household remittance income and household expenditures by using information on lagged household remittance income. I constructed dummy variables to account migration network abroad and domestic with presence of relatives, friends and neighbors. The dummy takes the value 1 if the household has either relatives, friends or neighbors domestically and abroad and zero otherwise.[2]

3.3.3 Estimation Techniques

In the data, the expenditure categories which are most likely to have non negligible zero values are health, education, consumer durable and other spending. Analysis of the data reveals that 44% of households report zero expenditure for health spending, 42% of households report zero expenditure for education spending, 7% of households report zero expenditure on investment and durables, 10% of households report zero expenditure on non-food spending, 55% of households report zero expenditure on housing , and 10% of households report zero expenditure on utilities. Given censoring of the dependent variable at zero for a large percentage of the sample households, an important estimation issue is the choice of the appropriate statistical model. The dependent variable is unobservable, but has an observable realization of one if it takes on a positive value and zero otherwise. Therefore, the model is an equation system with dependent variable censored by latent variables. Estimating a censored system of equations is no easy task and poses two major problems. First there are significant numbers of households with zero expenditure on certain goods (Cameron and Trivedi, 2005). This could be the case either because of infrequency of purchase or abstention due to individual or household unobservable

2The questions included in the survey related to remittances: Has the household RECEIVED any other income (such as remittances from friends/relatives, gifts, food aid/other aid, payment for health or education, any other transfers) in the last 12 months? Who sent you the transfer? Where does this person live/ is organization.Before empirical analysis of hurdle model, in this case, we should check the endogeneity of explanatory variables (remittances) which would help to get robust estimates. For this study I used migration network as instruments for And we made the relevance test by regressing other variables that are correlated with the instruments with dependent variable is the instrument itself. The results shows that the instrument is passed the relevance test. see appendix for further.

characteristics that prevents it from participating in a given market (selection model) or corner solution, individuals and household decide not to purchase a particular item because of active budget constraints (Rivera and Gonzalez, 2009). In such cases, estimating a panel linear regression involves additional computational complications (Cameron and Trivedi, 2009). While the literature has used panel fixed or random effect selecting by hausman test, in much of the applied econometrics literature, there is a well-justified reluctance to include both zero and positive values in panel regression because of the biased estimates that result. A standard solution often suggested is the use of a Tobit model. However, apart from the potentially severe problem of heteroskedasticity (Deaton, 1997), an important limitation of the Tobit (as well as of the suggested alternative, namely a partially non-parametric censored Least Absolute Deviation or CLAD estimator) is that it assumes that a single mechanism determines the choice between budget share of expenditures=0 versus budget share of expenditures >0. The alternatives to censored Tobit that allow the initial decision of budget share of expenditures =0 versus budget share of expenditures >0 to be separate from the decision of how much S is given that budget share of expenditures >0, are called 'hurdle models (Wooldridge, 2002: 536).

In reality, however, the mechanism that determines zero or nonzero expenditures may not be the same as the mechanism that determines the amount of positive expenditure. Consequently, it is more flexible to allow for the possibility that the zero and positive values are generated by different mechanisms. These are appropriate when s = 0 is a genuine zero; that means the agent has chosen to consume none of it. In addition, hurdle models are appropriate when the participation and consumption decisions are made simultaneously. Numerous applications have shown that an alternative model, the two-part model or the hurdle model, can provide a better fit by relaxing the Tobit model assumptions.

In addition to estimating the conventional Engel curve equation, I propose to use hurdle model estimation in order to allow the decision of whether to incur any expenditure to be modeled separately from the decision of how much to spend on each expenditure categories, conditional on spending anything. The first part of the two-part model is a binary outcome equation that models the probability of Positive expenditures, Pr ($e > 0$) using any of the binary outcome models. The second part on the other hand uses linear regression to model ($\ln e | e > 0$). Therefore the two parts are assumed to be independent and are usually address two independent questions.

Let e denotes expenditures and define a binary indicator,d , of positive expenditures such that d= 1 if e> 0 and d= 0 if e= 0. When e = 0, we observe only Pr (d = 0). For those with e> 0, let f(y / d= 1) be the conditional density of e. The two-part model for is then given by:

$$f(e|x) = \Pr(d=0|x) \quad \text{if } e=0 \qquad (8)$$

$$\Pr(d=1|x)\, f(y|d=1,x) \quad \text{if } e>0 \qquad (9)$$

The first part is usually estimated by complementary log log regression (panel binary model) to show the probability of to purchase and not to purchase. As we mentioned above the variables have different impact on participation decision and continuous part.

Table 3.1: Dependent variables used in estimating (working- leser model panel data model)

Dependent variables name	Description and Explanations
Food	Purchased food and food produced home, food eaten outside home and other related(food expenditure in our context is total food consumption from total output produced at home plus food purchased from market)
Housing	Housing expenses, rent, home improvement and construction
Non-Food	Clothing and personal care, Entertainment and hobbies, housecleaning and other products and services
Education	Educational expenses, such as school fees
Health	Modern medical treatment and medicines, traditional medicine and healers and other health related expenses
Agricultural Input	Agricultural inputs: fertilizers, improved seeds, pesticides and insecticides, rents for oxen, labor costs and other related
Utilities	Electricity, gas and water Telephone (landline, mobile, public phone) Fuels for home use (firewood, coal, kerosene, diesel)
Investments and Durables	Savings and credit scheme, Equb payment, contributions to Iddir, labor cost (salary), repair and maintenance, building materials, kitchen equipment (cooking pots and others), furniture, and related

The result from this model identifies factors that determine the probability of positive expenditures on a given commodity. And the second part is estimated using Negative Binomial Regression (random effect). The same regressors can appear in both parts of the model.

Table 3.2: Explanatory variables used in estimating working leser model (panel data model)

Variable Name	Description for explanatory variables
Ln E_{ht}*Rt	Interaction term
age hhd	Age of household head
Remit	Amount of remittances
Under age5	Number of people under age five
Over age 15	Number of people aged above fifteen
hhsize	Household size
Female dummy	One if the head of the household is female, 0 otherwise
DIL	One if the head of the household had no education, 0 otherwise
DPE	One if the head of the household had primary education, 0 otherwise
DSE	One if the head of the household with secondary education, 0 otherwise
Land Size	Land holding size
Marital status	One if the head of the household is married, 0 otherwise
unemployed	One if the head of the household is unemployed, 0 otherwise
Migration Networking	The dummy takes the value 1if the household has either relatives, friends or neighbors domestically and abroad and zero otherwise.

3.3.4 Expected signs and description of the variables

Expenditures –is a good indicator of a household well being. Expenditure data are more accurate measure of welfare than income. Households in developing country like Ethiopia under report their income so that income suffers from measurement error (Adams, 2006).The dependent variables for this analysis are the budget shares for eight expenditure categories. The expenditures represent the annual expenditures reported by households (expenditures in the last 12 months). The spending on food was collected by means of a 14-day diary, and includes daily purchased products, non-purchased products (own-produced and received as a gift), food eaten outside the home and items purchased in the last 12 months. The non-food expenses include a

large array of products and services, ranging from household cleaning and personal care, transport and internet costs, postal and bank services, entertainment, holiday and hobbies, clothing, home improvements, payment for professional part-time courses, insurance, other taxes (vehicle, TV, etc.) and costs for ceremonies. Durable goods include items such as domestic appliances, TVs, computers and vehicles (including trucks and tractors). It is estimated using the monetary value measuring the benefit that the household received from using the relevant goods. The utilities category includes annual expenses that the household incurred for the consumption of electricity, gas, telephone services (e.g., landline, mobile, public phone), water and fuels (e.g., firewood, coal, kerosene, diesel). Migrant remittances broadly defined as cash or in-kind transfers from migrants to relatives and friends in their country of origin or remittances are defined as money received by rural households in the past 12 months prior to the survey in the form of cash or in-kind from someone who did not live in the household. Housing, Health, Education, investment and savings and agricultural inputs are investment expenditures and food, non-food and utilities are consumption expenditures.

Non-food expenditures education, health and saving investment and durables expenditures were collected by means of four months diary and scaled up to obtain annual approximation. Household characteristics-are expected to affect the spending level of the households. Female heads are expected to have a positive sign on non-food expenditures due to the tendencies of women to spend on clothing, Age of the household head is expected to influence health expenditures and savings (to be secured they save more and for their children as bequest) positively and education expenditures negatively. Education of the household head is expected to have a positive influence on investment expenditures (education, savings, housing expenses). The influence of remittance on housing will be positive. We expect positive and significant effect on non-food expenditures. Remittances tend to cause households to have more allocation to basic household utilities such as fuel, electricity, water, transportation and communication. So it will have positive coefficient.

3.3.5 Model Specification for labor supply

Using the model of the labor-leisure choice we can form an econometric model of what impacts the decision of how many hours the individual should work. This will also give us an idea of whether the rural households view remittances as a normal or an inferior good. The equation of

the neoclassical labor supply model will be applied in a modified form with more explanatory variables that indicate the type of characteristics that presumably affects the outcome in the labor market. The following equation will be used in the regression.

$$Ls = \alpha + \beta 1 R_h + \beta 2 X_h + \varepsilon_h \qquad (10)$$

Where Ls is labor supply of households in the source country, *R*h is the amount of received remittances from migrants and Xh is a vector of the household's observable characteristics. The most common measure of labor supply is the labor force participation rate, which is usually measured in numbers of hours worked. Since the ERHS data has collected in number of day's spent on off farm working. I will use number of days instead for hours worked. The Tobit model, which can address the problem of the partially discrete and particularly continuous nature(i.e. censored) of dependent variable, would be a better choice. Tobit model with instrumental variables for remittances will give unbiased and consistent estimates with taking into account the presences of a number of zeros in the dependent variable (i.e.censored at zero).

Table 3.3 : Variables used to estimate labor supply model

variables	Description
Migration network	The dummy takes the value 1if the household has either relatives, friends or neighbors domestically and abroad and zero otherwise.
Under age5	Number of people under age five
Over age 15	Number of people age above fifteen
Land size	Land holding size
hhsize	Household size
Female dummy	One if the head of the household is female, 0 otherwise
DIL	One if the head of the household had no education, 0 otherwise
DPE	One if the head of the household had primary education, 0 otherwise
DSE	One if the head of the household with secondary education, 0 otherwise
age hhd	Age of household head
married	One if the head of the household is married, 0 otherwise

3.3.6 Expected signs and explanation for Labor supply Model

Barajas et al (2009) argue that remittances are expected to have a negative influence on labor participation due to the fact that recipient households may substitute unearned income (remittances) from labor income. Remittances may also be plagued by severe moral hazard problems because of the asymmetric information of these flows, which leads to the recipient consuming more leisure than labor hours (ibid p 6-7). The effect of remittances on labor supply can however be positive if the households have the possibility of using the remittances for entrepreneurial or commercial activities (Jadotte, 2009). Education has a positive impact on labor supply. More educated person has more opportunities to be employed. Remittance expected to have a negative impact on labor supply but remittances are affecting men's rather than women's supply of labor. The number of children plays an important role in determining the labor supply. The variable married will have different sign for men, being married means supplying more labor according to several empirical analyses. For women, on the other hand, being married means working fewer hours to allocate their time to housework.

3.4 Econometric model of household's expenditure with selecton control

Another problem of this estimation approach was identified by Taylor and Mora (2006).According to which migration is a selective process and households that participate in migration and receive remittances may differ fundamentally from those that do not. If the three groups of households those receiving no remittances, internal remittances and international remittances differ systematically in their unobservable characteristics (e.g. skills, motivation, ability), regression results based on the observed characteristics of those households will be biased. We address this concern by using Heckman two step estimation procedures to test for selection bias in the household receipt of remittances. Therefore, the main purpose of the selection equation is to investigate whether migration is systematic or not.

Empirical studies show that migration is a selective process. According to which migration is a selective process and households that participate in migration and receive remittances may differ fundamentally from those that do not. If the two groups of households those receiving no remittances and receiving remittances differ systematically in their unobservable characteristics (e.g. skills, motivation, ability), regression results based on the observed characteristics of those households will be biased (Taylor and Mora, 2006).We address this concern by using Heckman two step estimation procedures to test for selection bias in the household receipt of remittances.

Therefore, the main purpose of the selection equation is to investigate whether migration is systematic or not.

The Heckman two step selection models are based on two equations: (i) a choice equation, which predicts the receipt of remittances; and (ii), an income (expenditure) equation which predicts household income conditional up on the receipt of remittances.

The first-stage choice function:

$R_r^* = \gamma_r + \beta_r Z_r + \varepsilon_r$.....(11)

R_r^* is remittance, R is observable when $R = R_r^*$,if $R_r^* > 0$ means the individual receive remittances and R is not observable if $R_r^* \leq 0$ means the individual does not receive remittances. Z_r is a vector of explanatory variables in group r, β_r is coefficient of group r, ε_r independent of all of the components of z, for all i, i = 1,. . ., R, and that $\varepsilon_r \sim N(0,1)$. The first stage choice equation is estimated across all observations and represents the household choice decision to send migrant and receive remittances. Household selects the group that gives a higher income than any other i.e.

$R_{ri}^* > \text{Max}\,(R_{ji}^*)\ ; j \neq r$ (12)

Explanatory variables (Z_r) for remittances = f [Household Characteristics (Age of household head, Household size, Number of household members over age 15, Number of household members under age 5),Human Capital (Number of household members with primary, junior secondary, secondary or university education), Migration Networks, Location dummy, Female dummy].

The second-stage expenditure function:

$Y_r = \gamma + \alpha_r X_r + \theta\lambda_i + \boldsymbol{\mu} r$ (13)

Y_r is household expenditure and both observable and continuous. X_r is a vector of explanatory variables in group r, αr is a coefficient on group r and $\boldsymbol{\mu} r$ independent of all of the components of X, for all i, i = 1,. . ., R, and that $\boldsymbol{\mu} r \sim N(0,1)$.the expenditure function estimated for households selected as belonging to group r.

Explanatory variables (X) for Household income (Household expenditure) = g [Household Characteristics (Household size, Number of household members over age 15, Number of household members under age 5) Human capital (Number of household members with primary, junior secondary, secondary or university education), Migration Networks].

The variables in the first-stage choice and the second expenditure equation selected using the standard literature on migration and remittances and the variables will affect the probability of migration and remittances. The expected sign explanations are used for both the choice and expenditure function. The expected sign for Number of household members over age 15 and age of household will affect the probability of migration and remittances positively. Number of household members under age 5 is expected to have a negative sign. The expected sign for human capital variables are positive. To make the model identifiable at least one independent variable in the first-stage choice function is must not included in the expenditure function. The variables are truly exogenous to the receipt of remittances but do not affect household expenditure. Age of household head is exogenous to household expenditure and it identifies the model. Also it affects the probability of migration and remittance positively in that household in the older age will have children in the middle age that enable them to produce migrant. In our country many older age households have low educational achievements that lead to earn lower income. More educated people have the opportunity of securing employment and earning better income in destination areas is also increases (Bizuayehu, 2008).Migration networks encourage migration and the variables(proxied by regional dummy) region that is close to Addis Abeba has a positive effect on migration and remittances . The expected sign is positive. Sex of the household is equal to one if the household head is male and two if the household head is female.

3.4.1 Estimation of Sample selection models for panel data

The development of methods for extending sample selection models to panel data settings parallels the literature on cross-section methods. It begins with Hausman and Wise (1979) who devised a maximum likelihood estimator for a two-period model with attrition – the ‘‘selection equation’’ was a formal model for attrition from the sample. A formal ‘‘effects’’ treatment for sample selection was first suggested in complete form by Verbeek (1990), who formulated a random effects model for the probit equation and a fixed effects approach for the main regression. Here we will include lambda to expenditure function (from random probit of selection equation) and the equation estimated by panel fixed effect. The term lambda (λ) is the inverse mill’s ratio defined as

$\lambda_i = \phi(\alpha_r + \beta z_r)/1-\phi(\alpha_r + \beta z_{r)}$

The fixed effect regression includes the term lambda (λ)

CHAPTER FOUR

Results and Discussion

4.1 Descriptive Analysis

4.1.1 Demographic Characteristics of Sample Households

Households are the unit of analysis in the study. Therefore, the demographic characteristic of sample household heads is analyzed. On average out of the total households in the survey, 20% of the households are female headed while 80% are male headed. The age of the heads of household was 47 years in 1999, 49 in 2004, 52 in 2009 and the average age of the heads was 49 years. The average household size was 5 for the panel period.

Table 4.1: Demographic Characteristics of Households

Variables		1999	2004	2009	Average
Households heads average age in years		47	49	52	49
Sex of household head	Male	649	708	741	699
	Female	196	169	166	177
Average household size		7	4	4	5

Source: Author's calculation from ERHS

Table 4.2: Educational status of household heads (1999-2009)

	1999	2004	2009	Average
Educational status	Percent of total	Percent of total	Percent of total	
IL(illiterate)	11	59	52	38
PE(primary)	58	23	27	36
SE(secondary)	5	3	4	5
HE(higher educ)	26	15	17	21
Total	100	100	100	100

Source: Author's calculation from ERHS

With regards to educational status of household heads almost one third (36%) of the household heads has primary education, 38% of the households been illiterate, and 5% had secondary education throughout the period. The rest 21% had higher education just like joining universities.

4.1.2 Descriptive statistics on remittances and household expenditures

Table 4.3: summary of the dependent variable and the regressors

	Whole sample	Receive no Remittances	Receive Remittances	Whole Sample	
Variable |	Mean	Mean	Mean	Min	Max
Nonfood expr	648.1933	648.0289	651.5145	0	15117
	(1067.98)	(1050.113)	(1385.733)	0	1920
Utility expr	97.5523	97.5774	97.04516		
	(146.3545)	(147.9909)	(108.572)	0	12900
Health expr	170.0281	165.8179	255.0806		
	(617.4587)	(600.3638)	(894.7184)		
Educex ex	61.11364	62.1591	39.99355	0	12000
	(378.9044)	(387.6095)	(91.79171)		
Invt expr	675.5053	651.0087	1168.203	0	40695
	(1894.974)	(1713.501)	(4078.694)	0	67000
Housing expr	242.5422	236.5876	362.8331		
	(1802.606)	(1831.488)	(1060.068)		
Agriinput exp	4079.179	4129.732	6084.4	0	44790
	(5932.343)	(5922.109)	(6907.974)		
Food expr	4370.281	4354.173	4695.689	0	2491373
	(7262.793)	(7291.661)	(6671.692)		
hhsize |	5.623811	5.586427	6.379032	1	31
	(3.010316)	(2.976984)	(3.548944)	1	11
underage5 |	1.2248	1.215569	1.41129		
	(1.782733)	(1.788943)	(1.647921)	0	11
overage15 |	3.327501	3.284631	4.193548	0	31
	(3.537418)	(3.467562)	(4.667266)		
married |	.6686953	.6718563	.6048387	0	1
	(.4707719)	(0.4696312)	(0.4908686)	0	1
femaledummy |	.3742868	.3728543	.4032258		
	(.4840303)	(0.4836604)	(0.4925354)	0	1
unemployed |	.1042221	.1025948	.1370968		
	(.3056066)	(0.3034895)	(.3453448)		
agehhd |	49.98136	49.899	51.64516	15	120
	(14.69766)	(14.70484)	(14.51055)		
DIL |	.3727653	.3768463	.2903226		
	(.4836324)	(.4846926)	(.4557526)	0	1
DPE |	.3583111	.3552894	.4193548	0	1
	(.4795954)	(.4786965)	(.4954553)		
DSE |	.0406999	.0407186	.0403226	0	1
	(.1976316)	(.1976769)	(.1975127)	0	1
DHE |	.1993153	.2015968	.1532258		

	(.3995616)	(.4012727)	(.3616663)	0	8495	
remit |	40.54777	5.536802	747.8257			
	(360.7518)	(139.4928)	(1362.055)			
landsize |	1.169009	1.190555	.7337496	0	36.2061	
	(1.622296)	(1.648157)	(.8549787)			
Observation	2629	2505	124	2629	2629	

Notes: Tabulated from ERHS panel data. Standard deviations are in parentheses. N= 2629

Table 4.3 presents summary statistics for the variables according to remittance status. This table shows that 2605 households (95%) received no remittances and 124 households (5%) received remittances from domestic and abroad. On average when compared to non-remittance, household receiving remittances have more primary education and less illiterate but they have less members on higher education. This comply with the existent human capital theory which claims that educated people are more likely to migrate since they enjoy greater employment opportunities from abroad. Also, the number of unemployed people was more in remittance received households when compared to non-remittance households. Remittance receiving households have more children and household size compared to non-remittance households. It is observable and logical that households to have more family when there is a transfer. From the whole sample on average, 66 of individuals are married during ; 38% are female headed households; 10% have no jobs(unemployed) ; All variables have the expected range .the maximum amount of remittances are 8495 and the minimum is zero. The minimum age of household head was 15 and the maximum 120.The maximum land holding is 36 hectare s and the minimum is 0 hectares. Another notable difference between the two groups is the land holding size. The result indicates that receiving households have higher land holding size this shows remittances used to expand their land size and they rely on agriculture as their main livelihood activity. The mean age of household head is 49.The highest number of households is 31 and the lowest household size is 1.The highest number of households under age 5 was 11, the lowest is zero and the highest number of households overage 5 was 31 and the lowest is zero. All dependent variables (expenditures) are minimum value of zero and the maximum expenditures spent for food were 2491373, the maximum expenditures spent for non-food were 15117, the maximum expenditures for utilities in the time of survey was1920, the maximum expenditures spent for education were 12,000, the maximum expenditures spent for health were 12900,the maximum expenditures

spent for investment and durables were 40695, the maximum expenditures spent for housing and agricultural input were 67000 and 44790 respectively, and all expenditures are in terms of Birr.

Table 4.4: Statistics for remittances

	1999	2004	2009	Total
Mean	57.4	9.7	54.5	40.5

Source: Author's calculation from ERHS

The mean value of transfer of remit did not have predictable pattern. It had declined in 2004 from 57.4 to 9.7 in 1999 and increased to 54.5 in 2009.The highest level of mean value wasn54.5 in 2009 and the lowest being 9.7 in 2004.

Table 4.5: Percent of total households receiving remittances from different sources

Source of remittances	Percent of Total
Non-resident household member	21.8
Relative	27
Friends/Neighbors	0.8
From Equib	4.8
From Iddir	0.8
From Gov't/Ministry/Kebele	4.8
From Ngo	4
Others	36
Total	100

Source: Author's calculation from ERHS

With regard to remittance senders' non-resident household member, relatives of household member and others (that is not specified) accounts for the major source of remittances followed by Equib, Iddir and government transfers respectively. On the other hand, the proportion of households who received remittances was 49.2% in 1999, 1.6% in 2004, and 49.2% in 2009.

Table 4.6: Average budget shares on expenditures for non-remittance and remittance receiving households for the panel period.

Expenditure Category	Whole Sample Mean	Receive Remittances Mean	Receive No Remittances Mean
Budget Shares for Food	0.69	0.58	0.73
Budget Shares for Non-food	0.03	0.035	0.033
Budget Shares for Health	0.008	0.014	0.008
Budget Shares for Utilities	0.07	0.022	0.006
Budget Shares for agricultural input	0.17	0.26	0.182
Budget Shares for Education	0.002	0.0026	0.002
Budget Shares for Inv't &Durables	0.02	0.067	0.029
Budget Shares for Housing	0.01	0.0194	0.01
SUM	1	1	1

Source: Author's calculation from ERHS

Table 4.6 presents' average budget shares of the eight expenditures categories for the whole sample and differentiated between the two groups of households. Both groups spent the largest share of their budget on Agricultural inputs and consumption items like food and non-food. Remittance receiving households spend a smaller share of their budget on food compared to non-receiving households (0.58 against 0.73), larger on non-food items (0.035 against 0.033) against 0.02), agricultural input (0.26 against 0.182), investment and durables (0.067 against 0.029) , housing (0.01 against 0.0024) and utilities (0.022 against 0.006) slightly larger on education (0.0194 against0.01) and health (0.014 against 0.008). As level of expenditures rise, a greater budget share is devoted to health this could indicate a preference for health as a normal good. RRH devote a larger budget share towards health expenditure. RRH devote a greater budget share to education than NRH. Food expenditures and are the largest expenditures among the eight categories for whole sample, RRH and for NRH. This implies remittance is an important source of income used to smooth consumption. In fact, Gupta et al. (2007) states that remittances reduce poverty, smooth consumption, affect labor supply, provide working capital, and have multiplier effects through increased household spending. Expenditures on agricultural input were reported to be a second important purpose of remittances in the whole sample. The largest budget share on agricultural input commensurate with the fact that rural households in Ethiopia have larger land holding size and agriculture is the main livelihood activity for the households. .

Expenditure data were aggregated into three consumption categories and three investment categories. The consumption categories include food , consumer goods(non food) and utilities expenditures; investment categories include housing, health, investment and durable goods, agricultural input and education. In general we observe that remittance receiving households 63.7% of their budgets spend on consumption expenditures and the rest 36.3% on investment expenditures .NRH spends 76.9% of their budgets spend on consumption expenditures and 23.1% spend on investment expenditures. From this we conclude that remittances are primarily used for consumption expenditures and more or less RRH was better than NRH on investment goods.

Table 4.7: Average Expenditure levels for the panel period, by remittance receiving status

Average Expenditure levels (Per-capita, Birr)	Receive Remittances	Receive No Remittances
Expenditure Category		
Food	8439.9	12240.26
Non-food	148.9	142.9
Health	49.8	37.5
Utilities	22.7	22.94
Agricultural Input	1986.9	1229.8
Education	8.84	11.21
Investment & Durables	250.4	151.4
Housing	74.2	48.2
Total Expenditures	10981.64	13884.21

Source: Author's calculation from ERHS

Table 4.7 reveals the same interesting facts with table 6. Across the board however, RRH spend significantly less Birr per capita total expenditures than their NRH counterparts. This preliminary finding is the first indication that RRH are much poorer (households on average spend the minimum required for daily basic needs) than NRH, and that therefore poorer households are engaging in migration as an income diversifying strategy. RRHs spend less on food and education. But they have larger per capita in other expenditure levels. Those who migrate will send remittances so that their families can afford the basic consumption needs. There is evidence of higher expenditure on consumption goods by the remittance receiving households.

4.1.3 Descriptive statistics on Remittances and Labor Supply

Table 4.8: Summary statistics (Means)

years	Observation No	Means number of days spent on off farm work.
1999	845	19
2004	877	21
2009	907	18
Panel data	2629	19

Source: Author's calculation from ERHS

The average days that households engaged in off farm activity changes with amount of remittances they got. In 1999 the average days that households spent on off farm were 19 but this number increases to 21days in 2004.This due to the amount of remittances in that year is decline but the number of days spent in off farm activities declines to 18 in 2009.This is an expected observation and from this we conclude that amount of remittances and labor supply have a negative relationship. The aggregate panel data also reveals the same facts that the average number of days spent on off farm activity is more on non remittance households than remittance receiving households (20 against 16).The maximum number of days in off farm activity is 366 and the minimum is zero. On average out of the total households in the survey, 17% of the households are engaged in off farm activities while 83% are not. From remittance receiving households 11% of them engaged in off farm and 18% of non remittance households engaged. So, NRH spent more days in off farm activities than RRH.

Table 4.9 shows that from the total observation 471 households only engaged in off farm activity. The minimum day spent on working extends from 1 day up to one year and the rest 2158 households does not involved. The average days spent on farm activity for remittance receiving households is smaller than non remittance receiving households (16 against 20).

Table 4.9: Labor Participation for Head of Households in terms of sex and remittance receiving status

	Nodays off farm	Households receive remittances	Households with no remittances	Households w/c engaged in off farm activity
Male	2119	96	2023	394
Mean(average labor supply in terms of days)	20.98	18.29	21.11	112
Min	0	0	0	1
Max	366	366	365	366
Female	510	28	482	77
Mean(average labor supply in terms of days)	15.24	8.28	15.64	100
Min	0	0	0	15
Max	300	162	300	300
Total Obs	2629	124	2505	471

Source: Author's calculation from ERHS

Table 4.9 presents from the total households that receive remittances 77% of them are male household head they engaged in off farm activities and the rest 22% are female household heads. The average days spent on off farm work is higher for male heads (18.29 against 8.28).This implies female heads have the probability that is higher than male to decrease their labor supply when there is remittance income. The maximum days spent on this activity is 162 days that is twice less than male heads. From 471 household heads that are engaged in off farm activity 394 are male heads and 77 are female heads. The average days spent on work for male heads is seven times greater than their counterpart female heads. The maximum days spent are 300 and 366 for female and male heads respectively. Household heads that have no remittance income the average days spent on off farm activity is higher for male (21.11 against 15.64) than female heads. The maximum number of days spent on off farm for male heads are 366 and 300 for female heads.

Table 4.10: Type of Off farm Activities

Type of Work	Percent of Total
Farm	77
Weaving/Spinning	1.2
Handicraft, Incl, Pottery	3.1
Collecting, selling Firewood	4.2
Milling	0.6
Traditional healer	1.4
Transport(pack animal)	0.4
Trade in grain/general trade (Incl. banana, pepper, honey, etc.)	7.6
Trade in livestock/livestock prods.	2.1
Other	2.4
Total	100%

Source: Author's calculation from ERHS

Table 4.10 shows that 77% of household heads engaged in off farm work and hired on other farms at the going wage rate. Next to farm work households engaged in trade activities as their second best (7.6%) and also collecting and selling firewood is the third most livelihood off farm activities they opt in order to sustain their life's. As explained in table 10 most of the times males heads are engaged in off farm activities this leads to a larger proportion of labor supply is going to farm work. This shows that farming is the dominant activities in rural households in Ethiopia.

4.2 Econometric analysis

In this section, the results of the econometric models are presented. As explained in the methodology part of the paper three models were estimated. The first model is the sample selection model with choice equation and expenditure function. And the second estimation were done for eight expenditure categories and the third estimation work with labor supply. STATA version 12 was used for data cleaning and estimating all the models. The results are presented accordingly.

4.2.1 Estimated Results of Econometric Model with Selection Control

After correcting the data for possible outliers by substituting the median, the selectivity model is estimated using the Heckman two step estimation procedures.

As reported in Table 4.2.1, results from the selectivity equation shows that λ(inverse mills ratio) is found to be positive and yet insignificant. This implies that there is no selectivity bias with regards to migration and remittance. In other words, migrants and recipients of remittances are randomly selected from a pool of population in the context of rural Ethiopia. This result is contrary to the proposition that migrants are from a selected group with respect to income, skill, and education. However, according to Adams (2006) one of the possible reasons is that from the choice function families with the most educated members do not have higher tendency towards receiving remittances. This can be seen from Table that the two human capital variables-secondary and higher education-are insignificant. Another possible reason could be related to the data used in this study as it incorporates both legal and illegal migrants and the respective transfer of remittances. This implies that especially the illegal migrants come from economically poor and less educated families, which is considerable in poor countries like Ethiopia. Some of the results in the choice function are unexpected. For instance, all migration network variables turn out to be negative. The dummy for sex of the head is found positive That is the probability of receiving remittance for female headed households is higher than male headed households. Age of household head is positive and significant at 5% level as expected in the choice equation. This means older household heads do produce more migrants and receive more remittances. While numbers of household under age five and above age 15 is positive and significant at 1% level. Household size is found to be negative and significant. The magnitude of the coefficients in the choice equation can not be directly explained as it only shows the direction and cumulative probability.

Table 4.11: Estimates of the choice equation and the marginal effects of the choice equation –Heckman two step estimates.

	Choice Equation		Marginal Effects	
Variables	Coefficients	Z values	coefficients	Z values
Household composition variables				
Number of household members under age 5	.3855218	4.42***	.3855218	4.42
Number of household members over age 15	.2004782	3.13***	.2004782	3.13
Age of the household head	.0064629	0.87	.0064629	0.87
Household size	-.1515446	2.07**	-.1515446	-2.07
Sex of household head	.6202715	2.12**	.62202715	2.12
Migration network				
Tigray dummy	-.97874	-2.12**	-.97874	-2.12
Oromiya dummy	-.9242561	-2.87**	-.9242561	-2.87
Amhara dummy	-1.641937	-3.25***	-1.641937	-3.25
Human capital variables				
Dummy for primary educated members	.5499342	2.47**	.5499342	2.47
Dummy for secondary educated members	.2988773	0.63	.2988773	0.63
Dummy for higher educated members	.2351879	0.81	.2351879	0.81
Constant	-5.215375	-8.03***	-5.215375	-8.03
rho	.8299122		.8299122	
sigma	2.208917		2.208917	
Chi2(30)				
Number of observations	2629			

Note:* significant at 10% level ** significant at 5% level * significant at 1% level**

Table 4.12: Estimates of the expenditure function

Dependent variable: Logarithm of per capita annual household expenditure

	Selection corrected		Without selection correction	
Variables	Coefficients	Z values	coefficients	Z values
Household composition variables				
Number of household members under age 5	-.1689651	-6.90	-.1693418	-6.98
Number of household members over age 15	-.1896322	-8.92	-.1899284	-9.00
Household size	-.034983	-1.30	-.0345607	-1.30
Sex of household head	--	-	-	-
Migration network				
Tigray dummy	1.767754	1.97**	- 1.764315	1.97
Oromiya dummy	-1.057949	-0.97**	-1.062149	-0.97
Amhara dummy	1.860934	2.39**	1.858843	2.39
Human capital variables				
Dummy for primary educated members	-.7172573	-8.52**	. -.7183831	-8.59
Dummy for secondary educated members	-1.017553	-4.86	-1.017947	-4.86
Dummy for higher educated members	-.4495594	-4.58	-.4506766	-4.61
Constant	10.39934	23.08***	-	-
Lambda(λ)	-.0023613	-0.11	.-	-
Number of observations	2629		2629	

Note:* significant at 10% level ** significant at 5% level * significant at 1% level**

The result shows that the number of households increases by one the per capita consumption expenditure of households decreases by 10% and 44%, respectively and significant at 1% level. Household size is negative implying an increase in household size by 1 unit leads to a decrease in per capita consumption by 3% .This confirms the welfare reducing impact of large household size which might be related to the tradition of considering children as an asset. Household member under age 5 is negative and as expected but household member over age 15 is unexpected and it becomes negative. The variable age of household head in the expenditure equation is excluded and it is identifiable.

4.2.2 Estimates of Budget Share of Expenditures First Part

Table 4.13: Random Effect Complementary Log Log Regression Results

Variables	Expenditure Categories							
	BFood	BNon -Food	BInv't and Durables	BHealth	BEducation	Butility	BHousing	BAgricultural Input
hhsize	-.1659** (.0408236)	.0601 (.0297797)	.0960 (.0561436)	.0584 (.0224524)	.3809 (.0274729)	-.1248 (.0684976)	.0623 (.0210638)	-.0829 (.0301858)
Under age 5	-.2527 (.0497606)	-.0153 (.0335132)	-.0499 (.0581683)	-.0039 (.0259912)	-.1739 (.0285383)	.2359 (.0762203)	-.0376 (.0254821)	1.055** (.0771954)
Over age 15	.6164 (.0692159)	.0123** (.0298624)	.0891 (.0621061)	.0159*** (.021365)	-.2937 (.0258297)	.3853** (.0786277)	-.0903 (.021287)	.1133 (.0288645)
agehhd	-.0139 (.003951)	-.0043** (.0026484)	-.0050 (.0049121)	-.0011 (.0023092)	-.0029 (.0024886)	-.0033 (.0072713)	-.0019 (.0021546)	.0102 (.0028256)
landsize	.0688 (.0291545)	.0698 (.0326814)	.1179 (.0685095)	.0081 (.0189579)	.0121 (.0208368)	.1705 (.0981145)	.0436 (.0177514)	.0905 (.0285186)
married	.2905 (.1314643)	.2032 (.0881692)	-.0671 (.1634095)	.0021 (.0748839)	.0464** (.0800045)	-.0485 (.2332927)	.0907 (.0728133)	.1354** (.0913205)
unemployed	.5277 (.2161173)	.4984 (.1880895)	1.158** (.5101098)	.1838 (.1037093)	.2465 (.1102184)	.8949 (.5509679)	-.0072 (.1097061)	-.1909 (.1206859)
Interaction term	.2596 (.1691398)	.0905 (.0818676)	.0178 (.1006433)	.0153 (.0585137)	.0611 (.0727221)	.0809 (.0208368)	-.0268 (.0579874)	.3119 (.0821375)
Migration network	2.734 (1.619828)	.7091 (.8009759)	.0563*** (1.011865)	.0485 (.6019282)	-.6078 (.749735)	-.3975** (.0818676)	.6084 (.6009501)	2.801 (.8401673)
femaledummy	.1273 (.1482873)	.2145** (.1052241)	-.1655 (.1864109)	-.0341** (.0908062)	-.1223 (.1009639)	-.4501 (.2922961)	-.1161 (.0872951)	-.1394** (.1118035)
DPE	.1601*** (.1430345)	.4787 (.1008304)	.7523 (.2139212)	.2086 (.0775734)	.0868 (.0846233)	.4165** (.2389532)	.1936 (.0765629)	.2442 (.1008109)

DSE	-.0545 (.2862697)	.6249*** (.2676667)	5.347** (408.4189)	.3462 (.1639926)	.1842 (.1859814)	3.099 (.823759)	.2482 (.1578589)	.6106 (.2060293)
DHE	-.5642*** (.160446)	.4353** (.1191251)	.3433** (.2094353)	-.0904 (.0888609)	.2418 (.0953413)	-.1956** (.6019282)	.0503 (.087904)	.3792 (.1107341)
lntotalexp	1.484 (.1194819)	.1926** (.0311976)	.2459 (.0531738)	.0773 (.0248331)	.1584 (.0293375)	.2243 (.0208368)	.0888 (.0257111)	.0195 (.0285832)
sigma_u |	.4529 (.1344684)	.4536486 (.1012162)	1.061327 (.219064)	.520749 (.0613278)	.6080271 (.0656651)	.1006433 (.160101)	.225762 (.1056055)	.5936523 (.0848402)
rho |	.1109 (.0585356)	.1111977 (.0441023)	.4064499 (.0995902)	.1415258 (.0286169)	.183506 (.0323627)	2.733644 ((.7090511)	.0300539 (.0272718)	.1764447 (.0415337)
chi2(14)	188.59	89.01	35.56	95.68	295.57	56.7	102.21	227.89
Log likelihood	-15070.88	-575.22667	-350.67074	1707.8202	-1496.8943	1278.9	-1766.4994	-1255.3271
Observations	2629	2629	2629	2629	2629	2629	2629	2629

Note:* significant at 10% level ** significant at 5% level * significant at 1% level**

The result from the Table 4.13 shows whether the probability of positive expenditure changes with the household characteristics, model variables and receipt of remittances. It shows that education decreases the probability of positive spending on budget share of food and utility. Similarly, household size increases the probability of positive spending on all expenditure categories except durable items. It is also important to note that land size increase the likelihood of positive share of expenditures on all eight expenditure categories. On the other hand when the head is female (female dummy)from any source increases only the probability of positive expenditures on budget share food and non food expenditures .Turning attention to our variable of interest, remittances increase the probability of positive spending on non-food, food, health ,housing ,agricultural input, and durable items .Having a member underage 5 in the household has a greater positive expenditures for utility and agricultural input also having a member over age 15 leads to the probability of negative expenditures on education. Unemployed household heads has the probability of negative expenditures only for housing and agricultural input. When the age of the household head become higher they have a probability of positive expenditures only for agricultural input. This is due to the fact they save the money for smoothing their consumption in the future. Married peoples have a probability of decreases expenditures on utility and investment and durables. Married people more of less they have large household size so they don't invest.

4.2.3 Estimates of Budget Share of Expenditures Second part

Table 4.14: Marginal Effect of Negative Binomial Random Effect Regression Results

Varables	Expenditure categories							
	Bfood	Bnonfood**	Binv't&durables	Bhealth	Beducation	Butility	Bhousing	BAgricultural input
hhsize	-.0209269 (.0298258)	.1043368 (.149592)	.0984702*** (.0122018)	.0513637 *** (.0162568)	.1316139*** (.0146812)	.0490119*** (.0099001)	-.0156618 (.0285451)	.0881067*** (.0271576)
Underage 5	-.0601285** (.0267979)	.0493018*** (.1421499)	-.0199607 (.0133542)	.0709493*** (.0177225)	-.0233938 (.0146873)	-.0334421*** (.0097832)	.1347555 (.027199)	.6816653*** (.030392)
Overage15	.0294886 (.0250885)	-.1391978 (.1281225)	-.1163411*** (.0116705)	-.0774869*** (.0154185)	-.1517879*** (.0130192)	-.068889*** (.0087661)	-.0106932 (.024717)	-.1579591*** (.02529)
agehhd	-.0004832** (.0040472)	.0041047** (.0204777)	.0022705 (.0013377)	.0064515*** (.0017489)	.0044407*** (.0017773)	-.0002149 (.001146)	.007734** (.0033944)	.0019809 (.0027387)
landsize	.0012666*** (.0213782)	.0218983 (.1030114)	.0215823*** (.0436161)	.0278093*** (.0085947)	.0087997 (.0101138)	.0094621** (.0071007)	-.0005439 (.0130243)	.0017101*** (.0150878)
Marital status	-.0019325 (.0929903)	-.0393438 ** (.5037275)	.0648363** (.0433118)	-.0644351 (.0544926)	-.1516774** (.0525927)	.0169867 (.0324558**)	-.107463 (.0926728)	-.1207868 (.083447) **
unemployed	.0396274* (.1060581)	.0207345* (.5610053)	-.1207135*** (.0608934)	-.0915461 (.0758632)	-.127913 (.0767009)	-.0371307 (.0427486)	.1377847** (.1173903)	-.6188 (.0929496)
Migration network	0.3314345*** (.8153847)	0.183725** (3.447691)	-.06116** (.0087083)	0.014209** (.4871749)	.0579629 (.4616132)	.0380506** (.2674377)	-1.2919 (.6951665)	.1031417 *** (.8130437)
Femaledummy	.0343624** (.1870844)	.1812969** (1.206379)	-.0896912** (.0553272)	-.1243224 ** (.0718711)	-.0194187 (.0704111)	-.***0116617 (.0482949)	.0545066 (.1407768)	.0019809 (.1245467)
interactionterm	.0275563 (.0766212) **	.1972718* (.3532362)	.0224599 (.0364393)	-.08779 (.0473269) **	.0006989 (.0436161)	.0411242 (.0258244) **	.1278637 (.0665396)	.0182106 *** (.0778618)
DPE	.0145485 *** (.0837119)	.1678058 * (.4819276)	.0698644*** (.0443622)	.0072287* (.0568319)	.1264406** (.0555104)	.0161971*** (.0327822)	.0640877** (.0897001)	-.1980202*** (.0915754)
DSE	-.0174052 (.2187889)	.5380801** (1.007947)	.2602055** (.0941164)	.0786304*** (.1171663)	.1421269** (.1114819)	-.0658725 (.07602)	-.02289 (.1865261)	.0597122* (.176494)
DHE	.0162493** (.0956551)	.0456234 (.5756856)	.1069297** (.0501664)	.0802231 (.0670791)	.1009228** (.0593811)	-.0442863** (.0380416)	.0268794** (.1021723)	.0830096 (.1038686)
lntotalexp	.1038 ** (.0316715)	-.875348*** (.0148504)	.572675*** (.0152125)	.838165*** (.0201648)	.429108*** (.0193883)	.58958 *** (.0107346)	.71034*** (.0293254)	.0856488*** (.028604)
constant	17.8996 (767.9507)	24.2669 (312.8204)	19.03517 (.1822427)	10.7370 (.2476455)	4.9806 (.2411696)	22.755 (138.9693)	39.107 (.1173903)	-1.539381
loglikelihhod		-10426.456	-18318.752	-9768.73	-8170.3074	-13091.862	-9020.1919	-4137.16
Wald chi2(14) Prob > chi2	24.46 0.0402	421.14 0.0000	323.4	357.16	392.75	278.3	101.50	3491.92
Observation	2629	2393	2523	1553	1594	2461	924	1148

Note:* significant at 10% level ** significant at 5% level * significant at 1% level**

Table 4.15 reports the full regression specification for the negative binomial estimates of the eight budget share equations on different consumption and investment (investment type) goods, for those observations with positive expenditure levels. The results presented include the full set of covariates that were run for each of the eight budget share equations. As household expenditure levels increase, the budget share devoted to food, nonfood, and agricultural input increases. Specifically, the estimated coefficient on remittance receipt (migration network) suggests the budget share allocation to food increases by 0.33.Finally, as level of expenditures rise, the budget share devoted to consumer durables and other discretionary items also decreases. Under the interaction specification, the effect of remittance receipt on food budget share is now significantly positive. The parameter estimate for the interaction between remittance receipt and log of expenditures is positive, implying that the impact of remittance receipt on food budget share increases for households with larger levels of expenditures. Under the interaction specification, the effect of remittance receipt on health budget share is now significantly negative – RRH spend a smaller budget share on health expenditure. But except budget share of health all expenditure categories have a positive interaction term. Having educated household head increases expenditure for others but it lowers the budget share of utility. Household size has a negative effect on budget share of food and housing. Female heads as expected have a larger effect on nonfood and food expenditures. On average the number of children under5 have a negative sign for education, health, utility and food budget share. Beside the effect of remittances having land size increases the entire budget share except housing. A remittance unfortunately distorts the behavior of the receivers and induces them to abstain from productive engagement. The estimated value of (-0.06) implies that the budget share for investment and durables decreases by 0.06 if remittance increases by 1 unit and significant at 5% level. This implies that rural households tend spend remittances on consumption items such as food and non-food items than on investment (or investment type) goods and lose the potential to alleviate poverty in the long run and most of the households used for smoothing their consumption. Generally, the econometric result reveals the same interesting facts like descriptive results. Remittances increases the budget shares for non food by 0.18, education by 0.05, health by 0.014 , utility by 0.038 , agricultural input by 0.10.In contrast to descriptive analysis remittance decreases the budget share for housing and investment and durables.[3]

[3] See estimated negative binomial second part in appendix

4.2.4. Estmated Results of labor supply

Table 4.15: Tobit Regression Results for Labor Supply

Variables	Coefficients	Marginal effects
hhsize	.479196 (.8756993)	.3017479 (.55144)
Underage5	.4895412 (1.008306)	.3082623 (.63494)
Overage15	-.4678026 (.8295075)	-.2945736 (.52236)
Marital status	5.746309 (2.905057)	3.583106 ** (1.79408)
unemployed	-4.077551 (4.110226)	-2.526037 ** (2.50436)
agehhd	-.2298348 ** (.0903598)	-.1447261 (.05694)
DPE	1.301335 (3.028756)	.8209486 (1.91425)
DSE	4.893262 (6.642327)	3.149687 (4.36769)
DHE	-6.033603 (3.466757)	-3.729992 (2.10342)
Landsize	-1.55013 ** (.7552467)	-.9761114 ** (.47578)
femaledummy	-1.947631 (3.584312)	-1.219106 (2.23016)
migrationnetwork	-11.36465 *** (3.654861)	-6.83975 *** (2.09872)
cons	30.29229 (5.995794)	-
/sigma_u	22.26307	-
/sigma_e	55.88514	-
rho	.1369639	-

Note:*significant at 10% level **significant at 5% level ***significant at 1% level

Table 4.14 gives estimates for the impact of remittances on household labour allocation. The coefficient of remittances in the equation for total household labour supply on off farm work is significant at 1 percent level with a negative sign, supporting the contention that remittance income is a Substitute of non-labour income (e.g. pensions, allowances etc.). It implies that the level of remittances is more likely to decrease total working days of remittance receiving households. The estimated coefficients of land size measured in hectares unexpectedly lowers labor supply of the household head, perhaps due to the fact they rent out the land. More

household size is more likely to lead more days of work. The results of number of children under five years expected it have a positive impact and above 65 years is more likely to reduce hours of work in different activities(the household head age become older and weaker). Female-headed households have relatively less working days than households headed by their male counterparts which is consistent with the theory and evidence that most migrants are males so their spouse remain home to take care of the household. Theoretically the level of education also increases the number days of work that higher educated people are more likely to increase the hours of work than relatively lower educated people. But the result shows household head which had primary and secondary education have spent more days on work than household head which have higher education. To summarize the discussion of these results the study confirms that remittances decreases the number of days spent on off farm work in Tobit model with instrumental variables for remittances will give unbiased and consistent estimates with taking into account the presences of a number of zeros in the dependent variable (i.e. censored at zero). On average, an additional amount of remittance income decreases the labor supply by 7 days (for an average individual) and it is significant. This also supports some of the earlier empirical findings that leisure is a normal good. Another interesting result is being married on average spent 3 days more than others on off farm work. But household head that had higher educational status had spent 3 less days than other educational achievement. Being unemployed corresponding with remittance income leads to households to decrease their labor supply.

CHAPTER FIVE

CONCLUSIONS AND POLICY IMPLICATIONS

This study has used Ethiopian Rural Household Survey to examine how remittances affect the spending level of households and their labor supply on off farm work. The study examines the impact of remittances on household expenditures, checks whether selectivity bias exists with regards to migration and remittances. There is no selectivity bias among remittance receiving and non remittance receiving households as we confirmed with heckman two step models. The data set used for the study was 1999, 2004 and 2009.To address the objectives of this paper descriptive and econometric methodologies are adopted.

We estimate budget share equations for eight broadly defined categories controlling for a number of variables including those capturing whether or not the household receives remittances. Those are budget share for food, non-food, education, agricultural input, health, investment and durables, utility and housing expenditures. Due to the problem of censorship we use hurdle models in two steps. The first part was estimated by complementary log log regression to show the probability of to purchase and not to purchase. And the second part was estimated using Negative Binomial Regression (random effect).

The result from the descriptive analysis of the study reveals that remittances are used mainly for food, agricultural input and non-food expenditures. In the study period, remittance receiving households spent 58% of their budget on food expenditures, 26% on agricultural input, and 3.5% on non-food expenditures. . In general we observe that remittance receiving households spend 63.7% of their budgets spend on consumption expenditures and the rest 36.3% on investment expenditures.

In contrast to Adams (2005) and Taylor and Mora (2006), the study found that households which receive remittances display a higher budget share for food items relative to those which do not receive any source of remittance, although this only increases on average 0.33 in our case. This result might be explained by the fact that households which receive remittances do not classify food as a necessary good anymore and when they become richer they tend to switch from poor quality to better quality food types. Remittances increases the budget shares for non food by 0.18, education by 0.05, health by 0.014 , utility by 0.038 , agricultural input by 0.10.In contrast to

descriptive analysis remittance decreases the budget share for housing and investment and durables. The bottom line, therefore, is that rural households in Ethiopia tend to use remittances to maintain their basic necessities instead of spending it on investment goods and generating income on sustainable basis.

The results from parametric analysis have also confirmed that remittance income significantly increases food and non-food items on average by 0.51 for one unit increase in remittance income. Consequently, one can fairly conclude that remittances are conspicuously consumed and only meant to maintain consumption needs of rural households.

When we come to labor supply the study attempts to explain the impact of remittance income on the days of spent on off farm work in remittance receiving households using Tobit model with instrumental variables for remittances .The empirical analysis of the impact of remittances on the allocation of labor in different sectors implies that remittance income increases the consumption of leisure. The average days spent on off farm work is higher for male heads (18.29 against 8.28).This implies female heads have the probability that is higher than male to decrease their labor supply when there is remittance income. Empirical result shows that coefficient of remittances in the equation for total household labour supply is significant at 1 percent level with a negative sign; supporting the contention that remittance income is a Substitute of non-labour income (e.g. pensions, allowances etc.). It implies that the level of remittances is more likely to decrease total working days of remittance receiving households.

Policy Implications

Migrant remittances may exert an impact on the local economy, through, for example, enhanced investment in small businesses. Thus, the Ethiopian government should look more critically at household response to remittances and facilitate both the transfer of remittances and their channeling to productive uses, by creating the conditions for a stable investment environment in the country and to encourage remittances, it is important not to decouple migration policies and development policies at the international level. Migration policies should be discussed as
a part of development policies in multilateral forums. The government intervenes by designing and improving policies which increase the flow of internal and international remittances and develop ways to maximize the benefits of remittances and educate the people to employ them

into productive uses. To do so, good government investment policy instruments and good investment policy environment is needed of both origin and destination countries to facilitate easy and speedy flow of remittances. Special schemes can be devised for this purpose along with financial instruments targeted at overseas migrant workers.

Also devising incentives for the use of remittances can motivate recipients to invest their remittance income which has a trickledown effect to the poor. The most prominent type of incentive is special bank accounts that give emigrants a premium interest rate on their deposits. In some cases, Interest from such fully or partly exempted from taxation.

Government can promote financial literacy and remittance based investments such as remittance bonds. And provide vocational training and disseminate information pertaining to rural investment opportunities to enhance rural remittance receiving households to use remittance income effectively for creating sustainable livelihoods. Developing modern infrastructure to generate favorable climate and putting strategies in place to attract remittances to productive sectors with high potential to increase huge investments should considered. Commercial Bank of Ethiopia one of the most mentioned office that diversifies their branch in rural areas. The private sector banks take lesson from CBE.

The analysis in this study shows that female household heads residing in remittance receiving households work less and consume more leisure. If this effect originates from a decrease in remittance recipients motivation to work, educational and skills development programs that increase the likelihood and benefits of future migration can be a partial remedy.

A lower time allocation to market production and an increase in leisure consumption may result from work quantity constraints. If this is the case then the problem is more deeply rooted in comparison to a moral hazard effect. Demand side data on the behavior of firms in the local labor market is required to make precise policy recommendations. Entrepreneurial activities can be encouraged so that remittance recipients can by-pass work quantity constraints.

If remittance recipients are provided with an environment conducive to entrepreneurialism and profitable business ideas, they may invest in productive activities as opposed to making

consumptive investments (such as weddings and houses). Consequently, time devoted to market production would increase and leisure consumption would fall.

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Appendices

Appendix 1: **Mean Difference Test Results for budget share of food**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.7258596	.0075727	.3790129	.7110103 .740709
1	124	.5801376	.0377495	.4203603	.5054149 .6548604
Combined		.7189865	.0074546	.3822274	.7043689 .733604
diff		.145722	.0350559		

diff = mean(0) - mean(1) t = 4.1568
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Appendix 2: Mean Difference Test Results for budget share of non-food (by remittance receiving)

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0320357	.0013028	.0652051	.029481 .0345904
1	124	.0347155	.0051965	.0578662	.0244293 .0450018
Combined	2629	.0012652		.0648701	.7043689 .733604
diff		-.0026798	.0059689		-.014384 .0090243

diff = mean(0) - mean(1) t = -0.4490
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.3267 Pr(|T| > |t|) = 0.6535 Pr(T > t) = 0.6733

Appendix 3: **Mean Difference Test Results for budget share of utility (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0067849	.0004613	.0230863	.0058804 .0076894
1	124	.0215497	.0073231	.0815468	.007054 .0360453
Combined	2629	.0074813	.0005615	.0287901	.0063803 .0085823
diff		-.0147647	.0026334		-.0199286 -.0096009

diff = mean(0) - mean(1) t = -5.6066
Ho: diff = 0 degrees of freedom =
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Appendix 4: **Mean Difference Test Results for budget share of investment and durables (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0287773	.0013047	.0652994	.0262189 .0313357
1	124	.0674752	.011311	.1259543	.0450857 .0898647
Combined	2629	.0306026	.0013614	.0698045	.027933 .0332721
diff		-.0386979	.0063786		-.0512054 -.0261903

diff = mean(0) - mean(1) t = -6.0668
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

.

Appendix 5: **Mean Difference Test Results for budget share of agricultural input (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.1815771	.0064931	.3249818	.1688446 .1943096
1	124	.2606664	.032703	.3641648	.1959329 .3253999
Combined	2629	.1853075	.0063832	.3272889	.1727909 .197824
diff		-.0790893	.0300762		-.1380648 -.0201137

diff = mean(0) - mean(1) t = -2.6296
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0043 Pr(|T| > |t|) = 0.0086 Pr(T > t) = 0.9957

.

Appendix 6: **Mean Difference Test Results for budget share of education (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0023422	.0002444	.0122313	.0018629 .0028214
1	124	.0026081	.0006069	.0067585	.0014067 .0038094
Combined	2629	.0023547	.0002346	.0120286	.0018947 .0028147
diff		-.0002659	.0011068		-.0024362 .0019044

diff = mean(0) - mean(1) t = -0.2402
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.4051 Pr(|T| > |t|) = 0.8102 Pr(T > t) = 0.5949

.

Appendix 7: **Mean Difference Test Results for budget share of health (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0082978	.0007006	.0350649	.006924 .0096716
1	124	.0136156	.0044572	.0496336	.0047928 .0224384
Combined	2629	.0085486	.0007	.0358902	.0071761 .0099212
diff		-.0053178	.0033008		-.0117903 .0011547

diff = mean(0) - mean(1) t = -1.6110
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0536 Pr(|T| > |t|) = 0.1073 Pr(T > t) = 0.9464

.

Appendix 8: **Mean Difference Test Results for budget share of housing (by remittance receiving)**

Group	observation	Mean	Std.error	Std dev	95% confidence interval
0	2505	.0099341	.0008642	.0432555	.0082394 .0116288
1	124	.019232	.0069228	.0770891	.0055287 .0329353
				.	
Combined	2629	.0103727	.0008862	.0454399	.0086349 .0121104
diff		-.0092979	.0041773		-.0174889 -.0011068

diff = mean(0) - mean(1) t = -2.2258
Ho: diff = 0 degrees of freedom = 2627
Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0131 Pr(|T| > |t|) = 0.0261 Pr(T > t) = 0.9869

Appendix 9: Average Labor Supply in terms their Participation (in number of days they participated) in Off farm Activities

Variable	Obs	Mean	Std.Dev.	Min	Max
Number Household that are engaged in off farm work/	471	110.9289	102.4714	1	366
Number Household that are not engaged in off farm work/	1258	0	0	0	0
Number Household that have received remittances	124	16.03	64.80326	0	366
Number Household that have received no remittances	2505	20.06367	60.52929	0	365

Source: Author's calculation from ERHS

Appendix 10: Negative Binomial Random Effect Regression Results(part 2)

Varables	Expenditure categories							
	Bfood	Bnonfood**	Binv't&durables	Bhealth	Beducation	Butility	Bhousing	BAgricultural input
hhsize	-.0146 ** (.0242852)	.1288402 (.0151534)	.1388123 *** (.0122018)	.049743 *** (.1803309)	.3640649 ** (.0182205)	.0686094 (.0134554)	-.0892478 (.0202946)	.0313275 * (.0194814)
Underage 5	-.0579056 ** (.0308385)	.0179457 (.0182285)	-.0565548 (.0168486)	.0973914 * (.2116096)	-.185678 (.0207772)	-.0440984 ** (.0136838)	.1355617* (.0241536)	.1807026*** (.02366)
Overage15	.0219425 (.0239213)	-.1709151 (.0147541)	-.1463695 *** (.014154)	-.0538211 *** (.172386)	-.3612565 *** (.017195)	* -.0845419 (.012042)	-.0517013 (.0201248)	*** -.3710373 (.019308)
agehhd	-.0012439** (.0023383)	.0086191 ** (.0204777)	.0034705** (.001606)	.014185 ** (.015677)	.0048825 *** (.0020369)	-.0498712 (.0570657)	.0179013 ** (.0021975)	.0145904 (.0018011)
landsize	.04816 *** (.0202223)	.0946345 (.0126097)	.1058472 ** (.0126652)	.0737097 ** (.0796655)	.0315817 (.014599)	.0070269** (.0110484)	-.0809863 (.0156626)	.0494342 *** (.0140519)
Marital status	-.0047863 (.0775751)	-.1731427 ** (.048458)	.0127779 ** (.0502232)	-.3666405 (.5231076)	-.1497292 (.0638875)	.0650626 (.0435913 **)	-.3900595* (.069972)	-.482524 (.0614732) **
unemployed	.0699741 * (.108024)	-.0496909* (.0703572)	-.020976 *** (.0672617)	-.5879211 (.8313192)	-.0626945 (.0941016)	-.0371307 (.0427486)	.4830628 ** (.105364)	-1.240679 (.0860619)
Migration network	.2443367 *** (.858249)	.1123199 ** (.4636615)	-.6823385 ** (.4120418)	.005046912 ** (2.909248)	.09607334 (.6152168)	.0000472 ** (.000052)	-1.009085 (.6408321)	0.27135 *** (.6444047)
Femaledummy	.011869 ** (.0923236)	** .0161747 (.0572027)	-.1070017 ** (.0644898)	-.3445224 ** (.6644654)	-.0307783 (.0786773)	- .0969202 *** (.0642913)	.6089085 (.0851321)	.074203 (.0718072)
interactionterm	.0185338 (.0809679) **	.0136556 * (.0452451)	.0831532 (.0400837)	-.0052423 (.3269369) **	.0843478 (.058705)	.0801904 (.0314835) **	.087498 (.0618968)	.1831418 *** (.0620162)
DPE	.108505 *** (.0831259)	.146012 * (.051976)	.2102995 ** (.0518746)	* .0440685 (.0568319)	0.757067 ** (.0682635)	.1190706 *** (.0437774)	.1524721 ** (.0732571)	-.0820963 *** (.0689872)
DSE	-.0443547 (.177683)	.5380801** (.1081164)	.4858538 ** (.1124862)	.0643068*** (1.340974)	.5139211** (.1331122)	.0157504* (.1015814)	-1.025209* (.1490776)	.3138295 * (.1322389)
DHE	.0095363 ** (.0925698)	.0584936 (.5756856)	.1840842 ** (.0580449)	.2657961 (.6646938)	.204801 ** (.073087)	-.0874367 ** (.0496618)	-.0175928 ** (.0825638)	.5770443 (0749894)
lntotalexp	.0888145 ** (.0311456)	.2369597 *** (.0182263)	.1464368 *** (.0165157)	.7964097 *** (.1804312)	.1935463 * (.0243651)	.0546317 ** (.0132747)	.1704996 *** (.0250709)	.114044 *** (.0234469)
constant	10.32 (0.32107)	128.350 (213.6)	14.11941 (30.2642)	25.79437 230.21)	12.25199 (.2942882)	136.72292 (.169662)	20.8 (0.2354)	7.012772 (.2713211)
loglikelihhod	-7865	-10426	-16125	-8267.01	-8090.78	-12043	-8700.91	-4137.16
Wald chi2(14)	177.33	421.14	356.9	357.16	392.75	190.52	654.2	3491.92
Observation	2629	2393	2523	1553	1594	2461	924	1148

Note:* significant at 10% level ** significant at 5% level * significant at 1% level**

Instruments: hhsize underage5 overage15 married femaledummy unemployed agehhd DPE DSE landsize interacterm lntotalexp DHE migrationnetworks

Appendix 11

Tests of endogeneity for budget share of food

Ho: variables are exogenous

Durbin (score) chi2(1) = 9.41989 (p = 0.0021)

Wu-Hausman F(1,2613) = 9.39622 (p = 0.0022)

-Reject the null hypothesis –it is endogenous

-no need for over identification test because exact identification

Appendix 12

Tests of endogeneity for budget share of agricultural input

Ho: variables are exogenous

Durbin (score) chi2(1) = 2.98583 (p = 0.0840)

Wu-Hausman F(1,2613) = 2.97103 (p = 0.0849)

-Reject the null hypothesis –it is endogenous

-no need for over identification test because exact identification

Appendix 13

Tests of endogeneity for budget share of education

Ho: variables are exogenous

Durbin (score) chi2(1) = 1.04865 (p = 0.0461)

Wu-Hausman F(1,2613) = 1.04231 (p = 0.0468)

-Reject the null hypothesis –it is endogenous

Appendix 14

Tests of endogeneity for budget share of non -food

Ho: variables are exogenous

Durbin (score) chi2(1) = 9.6716 (p = 0.0026)

Wu-Hausman F(1,2613) = 9.6011 (p = 0.0034)

-Reject the null hypothesis –it is endogenous

Appendix 15

Tests of endogeneity for budget share of investment and durables

Ho: variables are exogenous

Durbin (score) chi2(1) = 6.34491 (p = 0.0257)

Wu-Hausman F(1,2613) = 6.30782 (p = 0.0271)

-Reject the null hypothesis –it is endogenous

Appendix 16

Tests of endogeneity for non-food expenditures

Ho: variables are exogenous

Durbin (score) chi2(1) = 9.524 (p = 0.0041)

Wu-Hausman F(1,2613) = 9.436 (p = 0.0044)

-Reject the null hypothesis –it is endogenous

Appendix 17

Tests of endogeneity

Ho: variables are exogenous

Durbin (score) chi2(1) = 7.39297 (p = 0.0065)

Wu-Hausman F(1,2613) = 7.3687 (p = 0.0067)

-Reject the null hypothesis –it is endogenous

Appendix 18

Tests of endogeneity for budget share of housing

Ho: variables are exogenous

Durbin (score) chi2(1) = 7.10542 (p = 0.0931)

Wu-Hausman F(1,2613) = 7.109915 (p = 0.0945**)**

-Reject the null hypothesis –it is endogenous

DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the thesis have been duly acknowledged.

Declared by:

Name: Genet Ejeta

Signature: _____

Date: _____

Confirmed by Advisor:

Name: Dr. Adane Tuffa

Signature: _____

Date: _____