AN ANALYSIS OF THE DETERMINANTS OF REMITTANCES AND EFFECT OF REMITTANCE ON EXPENDITURE BEHAVIOUR AND CHILD WELFARE IN THE HOUSEHOLDS OF NEPAL

Thesis submitted in fulfilment of the requirements for the

Degree of Doctor of Philosophy

International Development and Applied Economics

School of Agriculture, Policy and Development

by

Damodar Pant

JANUARY, 2017

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Declaration of Authorship

I confirm that this is my own work and the uses of all materials from any other sources are fully and appropriately acknowledged. No part of this thesis has been submitted to any other university for study purposes.

Damodar Pant

Date: --------

Abstract

As the volume of the remittance inflow has increased remarkably in developing countries, it has attracted the interest of international organisations, academics, and policy makers. In this context, this study analyses the determinants of the receipt of remittances and its impact of on household expenditure and child welfare in Nepal using Nepal living standard survey (NLSS-III) data. It takes the receipt of remittances by households as the cause and their proportional expenditure on different bundles of goods, services (food, housing, consumer goods and durables, education, health and others) and child welfare as an outcome. This study divides the Nepalese households into two groups: one that does not receive any remittances is the control group, and the other receiving remittances from within the country or abroad is the treated group. To estimate the impact of remittances, the treatment effect model calculates potential outcome means (POMs) in the population. The difference between the two means is the average effect of the remittance.

The study finds that the variables rural/urban region, ecological zone, family size, gender and education of head, the number of children, poverty of households, and migration network have a significant effect on the receipt of remittances. Although the probability of the receiving remittance is higher in rural households, they have received significantly less amount of remittances than the urban households.

This study finds that households' expenditure behaviour on food, consumer goods, health, and other bundles has not changed by the receipt of remittances in Nepal. However, there is an increase in the budget share of education and a decrease in the housing expenditure. It is highly likely that malnutrition in Nepalese children increases with the increase in their age. The research findings reveal that the receipt of remittances is helpful in reducing child malnutrition. The receipt of remittances does not increase the educational expenditure of school going children, and there is no difference in educational expenses between boys and girls. Finally, the study does not find any evidence to support that receipt of remittances increases conspicuous consumption of households as proposed by the findings of Chami et al. (2003). Instead, the research findings support the view that Nepalese households invest more in the education with the receipt of remittances. This higher investment may have been caused by the altruism towards the family members or by a knowledge gain.

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Dedication

I dedicate this work to my wife, Sanu Pandey and daughter, Sristi Pant who always encouraged and inspired me to turn my dream into reality. My little girl, Sristi, I thank you very much for your patience and endurance during my stay and study in Reading. I love both of you very much.

ACRONYMS

AI = Amnesty International

ARDL = Auto Regressive Distributed Lag

ATE = Average Treatment Effect

ATET = Average Treatment Effect on Treated

AGSs = the Arab Gulf States

CBS = Central Bureau of Statistics

CI = Conditional independence

CIAA = Commission for the Investigation of Abuse of Authority

CPN = Communist Party of Nepal

CVFS = Chitwan Valley Family Study

DOFE=Department of Foreign Employment

EU = European Union

FDI = Foreign Direct Investment

FED = Foreign Employment Department

FEPB = Foreign Employment Promotion Board

FET = Foreign Employment Tribunal

GDP = Gross Domestic Product

GMM = Generalised method of moment

GON = Government of Nepal

HAZ = Height for age z-scores

HDR = Human Development Report

HH = Household head

ICIMOD = International Centre for Integrated Mountain Development

IIA = Independence of irrelevant alternative

IID = Independently and identically distributed

ILO = International Labour Organisation

IMF = International Monetary Fund

IOM = International Organization for Migration

IPWRA = Inverse probability weight regression adjustment

IV = Instrumental variables

LSMS = Living Standard Measurement Survey

MBS = Marginal budget share

MNL = Multinomial logit

MOF = Ministry of Finance, Nepal

MOHP = Ministry of Health and Population, Nepal

MOLE = Ministry of Labour and Employment, Nepal

MRC = Migrant Resource Centre

MW = Mega Watt

NAFEA = Nepal Association of Foreign Employment Agencies

NCCR= National Centre of Competence in Research

NDHS = Nepal Demographic and Health Survey

NELM = New Economics of Labour Migration

NGO = Non-Government Organisation

NIDI = Netherlands Interdisciplinary Demographic Institute

NLSS = Nepal Living Standard Survey

NRs = Nepalese Rupee (National currency of Nepal)

NRB = Nepal Rastra Bank (Central Bank of Nepal)

ODA = Official Development Assistance

OECD = Organisation for Economic Co-operation and Development

OLS = Ordinary Least Square

PSM = Propensity Score Matching

PSU = Primary Sampling Unit

SAARC = South Asian Association for Regional Co-operation

SD = Standardised Deviation

UAE = United Arab Emirates

UN = United Nations

UNDP = United Nations Development Programme

USA = United States of America

VDC = Village Development Committee

WAZ = Weight for age z-scores

WB = World Bank

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

Remittances are the funds that are transferred to households by workers who are working away from their usual place of residence. The volume of migrants' remittances is increasing year to year. The World Bank (2016a) estimated worldwide remittances as US$ 601 billion in 2015, out of which the flow to developing countries was 73.4% (US$ 441 billion). In 2015, the top four recipients of international remittances - India, China, the Philippines and Mexico – accounted for nearly one-third of the total remittance inflow worldwide. Smaller developing countries like Tajikistan, Kyrgyz Republic, Nepal, Moldova, and Tonga have a larger share of international remittance in terms of their gross domestic product (GDP). Nepal with 29 percent of its GDP as remittance lies in the third position in the world and the first position among South Asian countries (WB, 2016a).

Developing countries face a low level of employment and income along with high levels of poverty and inequality in the distribution of revenue. Many households in these countries are income-constrained and remittances directly go to those households. In the household level, it is an additional income that creates economic security, minimises the incidence of poverty, creates economic security, enhances social status of the families and eases their livelihood. For the government, remittance has become an important source of revenue and a tool for the poverty reduction. Hence, remittances received by households may have an effect both at micro and macro levels. Some studies suggest that a significant portion of remittance is spent for conspicuous consumptions, household durables, and the rest is invested in trade and business (Edwards and Ureta, 2003; Acosta, 2006). Similarly, other studies show that there exists a positive relationship between remittance and economic growth in the recipient countries and others claim that remittances reduce the poverty level of a country. Hence, it is common to ask the question: how has the receipt of remittances shaped the development, poverty and expenditure behaviour in remittance receiving countries.

The most easily identifiable impacts of remittances are in income and consumption, education and health although significant effects are seen in people's livelihood, social processes, and economic development. The remittance money is added up to other household income. It does

not impose any burden on the taxpayers and directly goes to the households, and is readily available for expenditure. Hence, the consumption behaviour of households may be greatly affected by the receipt of remittances. There is no general agreement among researchers on how households spend remittances. Micro level studies are critical to analyse the change in the expenditure behaviour. Moreover, the remittances obtained can help rural families to absorb unexpected shocks by improving their capabilities and assets. Specifically, it is interesting to analyse if households with remittances a) tend to allocate more share of their household budget on education, health, and housing thereby increasing the development impact of remittances.

In this context, the questions of interest are:

- How do remittance-receiving and remittance non-receiving households make their expenditure?
- How are the remittances spent on different bundles of goods, such as food, housing, health, education, and other durables and non-durables?
- Are the remittances being spent to increase the human capital?
- Does the change in expenditure behaviour help economic development?

This study proposes to examine and analyse these challenging issues and questions using Nepal as an empirical case study country.

The rest of the chapter is structured as follows. A review of the main themes is presented in section 1.2 on rural poverty, migration and remittances in South Asia, section 1.3 on the Nepalese economy, section 1.4 on migration and remittances in Nepalese context and section 1.5 on the remittance economy of Nepal. Section 1.6 highlights household expenditure, while section 1.7 provides a justification of the study, followed by section 1.8 - the objectives of the study. Section 1.9 outlines the data sources, while section 1.10 deals with research methodology. Section 1.11 discusses the limitations and scope of the study, and the final section 1.12 describes the organisation of the thesis.

1.2 Rural Poverty, Migration and Remittances in South Asia

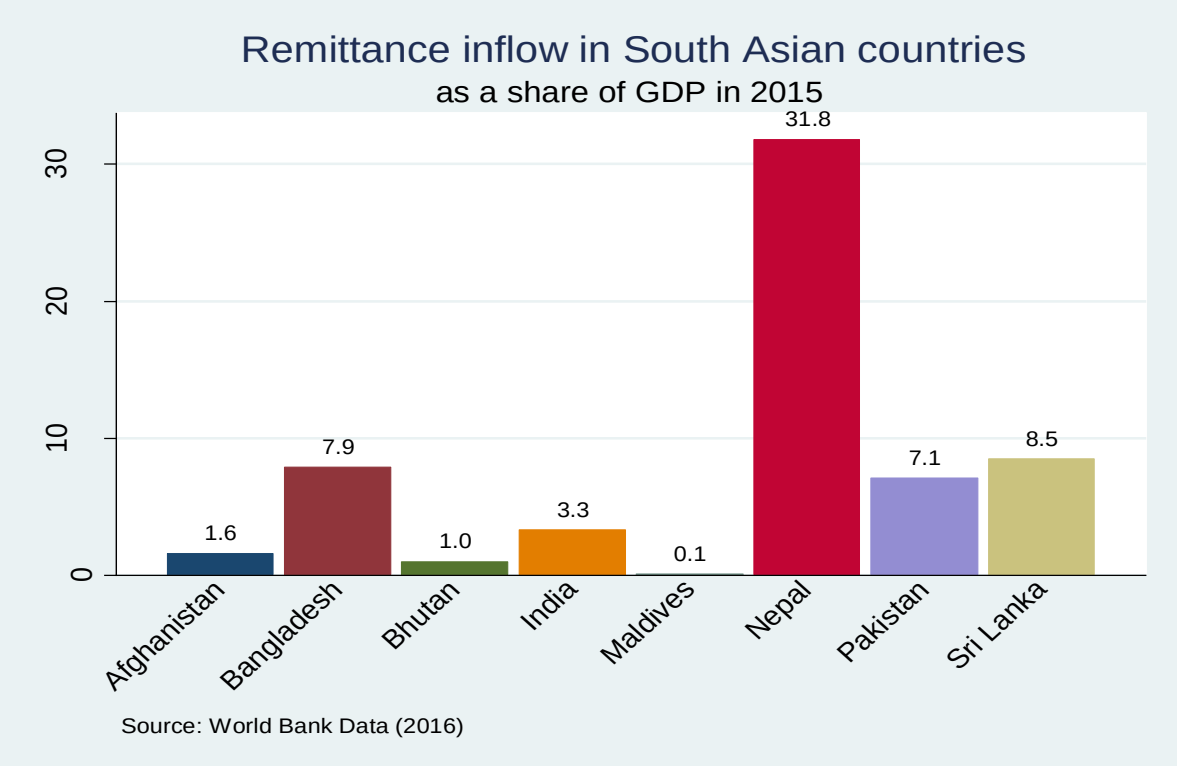
The South Asian region consisting of eight countries, namely Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka, is the home of nearly 1.7 billion people. It has the world’s largest concentration of poor people - more than 500 million

inhabitants live below than international poverty line ($1.25 a day). Although between 1981 and 2008 the percentage of poor people fell in South Asia from 61% to 36%, they still make up more than 44% of the developing world's poor (WB, 2013b). Poverty is the most common factor across all countries in this region. Poverty in South Asia is a massive problem and is mainly a rural phenomenon because more than three-quarter of poor people live in rural area. Because of this reason, South Asia lies at the centre of global emigration. According to Kothari (2002), the chronic intergenerational poverty is one of the leading causes of high emigration from South Asia. These rural people take migration as a fundamental instrument for the diversification of household income to help them out of poverty. Similarly, Ali et al. (2014) found that economic misery has increased human capital outflow from Pakistan. A growing number of rural families are adopting remittance as the supplement of their income and are using migration as an alternative to farming and off-farm activities.

The sharp increase in oil price in the 1973s, a surge in economic activities in the Gulf region and corresponding downturn of the developed economies had a significant impact on international migration. Meanwhile, the economic growth of the Gulf countries triggered labour immigration from South Asian countries. The development of the oil industry became the driving force behind the first organised import of foreign workers to the oil-producing countries of the Arab Gulf States (AGSs) (Errichiello, 2012). ILO (2016) estimated that nearly 32 million migrants were working in the Gulf countries in 2015. Out of them approximately three quarters are from the south Asian countries. Hence, workers' remittance from the AGSs is major sources of income to the rural people of South Asian region.

Among regions, South Asia is the second largest remittance recipient region coming behind the East Asia and Pacific. In 2015, the eight countries of this region altogether got 117.6 billion US Dollar as the inflow of international remittances. Within South Asia, remittance is particularly important in Nepal, Bangladesh, and Sri Lanka. For example, in 2015 remittance has 31.8% share of GDP in Nepal, 7.9% in Bangladesh, and 8.5% in Sri Lanka. Among the South Asian countries, in 2015 India received highest remittance inflow of US$ 68.9 billion. Other countries with substantial inflows are Pakistan with US$ 19.3 billion, Bangladesh with US$ 15.4 billion and Sri Lanka with US$ 7.0 billion (WB, 2016a). The report of the World Bank (2016b) points that South Asian countries such as Bangladesh, Nepal, Pakistan and Sri Lanka have larger annual remittances than their national foreign exchange reserves. The figure below shows the percentage share of remittance in GDP in South Asian countries.

Figure 1.1 Remittance in South Asian countries (% of GDP)



Cooray (2012) has pointed that remittance as a share of GDP has exceeded international developmental aid and foreign direct investment to GDP into all South Asian nations except the Maldives. He has also argued that migrant remittances have played significant positive role in the economic growth of these countries. Remittance is easy and reliable source of foreign currency; hence, it helps South Asian countries to finance their deficits supporting their balance of payments. Also, remittances play a pivotal role in the consumption and investment budget of the migrant households.

1.3 Overview of the Nepalese Economy

Nepal is a South Asian country situated between India and China with an estimated gross domestic product (GDP) of around US$19.29 billion in 2013 (WB, 2015). The census in 2011 shows that Nepal; a small landlocked country with a population of 26.6 million; has an exponential increase rate of 1.4 % per annum. It shows that 4.5 million (17%) live in urban areas while 22 million (83%) in rural areas (CBS, 2015). Most of them are working in the agricultural sector where marginal productivity is very low or even negative. Agriculture

remains principal economic activity and the main source of livelihood in the rural areas of Nepal. However, it contributed only 35.7 % of GDP in 2011 (MOF, 2012). Lack of irrigation facilities, use of traditional and outdated farming practices, lack of chemical fertiliser and improved seeds, lack of commercialisation, challenging topographical structure and poor road links are the main causes for the low productivity. Hence, the poor who mainly depend on agriculture always remain below the poverty line. Underemployment and poverty, especially in the rural areas, are the major reasons to opt to work abroad. Unemployment is rising, and the opportunities available to poorer households to maintain livelihoods appear to be further deteriorating.

Moreover, the Nepalese economy has not been able to expand sufficiently to absorb the increasing youth force over the last decade. Neither agriculture nor the manufacturing sector can generate the income and employment opportunities needed to meet the growing population. That is why; poverty is very common in rural Nepal. The revealed data shows that the headcount index of the people living below the poverty line has decreased significantly in past 15 years. The NLSS-III (2010/11) study shows that the proportion of poor in 2010/11 was 25.16% significantly lower than 31% in 2003/04 and 42% in 1995/96. Many studies claim that the remittance obtained from the international migrants is largely responsible for the reduction of the absolute poverty in Nepal (Lokshin et al., 2007; Acharya and Leon-Gonzalez, 2013). Despite significant progress having been made, 1 in 4 Nepalese are still living in extreme poverty.

Traditionally; tourism, hydroelectricity, and forest resources were the main endurable resources because of their vast potential. The tourism industry has been considered as one of the major industries as it provides employment to 750,000 people. In the year 2012 altogether 598,258 foreign tourists visited Nepal. This sector earned total revenues of nearly $360 million - approximately 3% of the country's GDP (GON, 2013). Hydropower, the most common method of electricity generation in Nepal with an estimated 83,000 MW of domestic water resources, is one of the largest hydropower resources in the world. Out of this, only 40,000 MW is considered as technically and economically viable. However, until now Nepal has developed only 650 MW of hydropower (Sovacool et al., 2011). Access to power is one the most serious infrastructure bottlenecks to growth. Only about 40% of Nepal's population has access to electricity, and there is up to 12-hour load-shedding during the dry season. Nearly 40% of the total area of Nepal is covered by forests. Rural people mostly depend on the forest products to fulfil their day to day needs. Forest products such as: timber, firewood,

grass, and natural vegetation has been playing important role in people's daily life. Moreover, conservation of forest plays significant role in controlling erosion and natural resources conservation in Nepal.

In recent years, remittance has exceeded the volume of foreign aid and investment (FDI), hence, is of great importance both at individual and national level. It is considered as a stable source of foreign currency as it is less volatile than FDI and official financial flows. In the household level, it creates economic security, enhances social status of the families while it reduces poverty, strengthens the balance of payments, contributes to GDP at national level (Malla, 2009). The following table shows that the remittance not only a major source of foreign currency but also as an effective tool to reduce absolute poverty in Nepal over the past two decades.

Table 1:1 Descriptive statistics of poverty, migration, and remittance in Nepal

Description	1996/97	2010/11
Migration from Nepal	119,258 (1996)	773,945 (2011)
Percent of all households receiving remittances	23.4	55.8
Average amount of remittance per recipient household (NRs)	15,160	80,436
Per capita remittance received for all Nepal (NRs)	625	9,245
Poverty in Nepal (Head count index)	41.8%	25.2%

Source: Central Bureau of Statistics, Nepal

1.4 Migration and remittance in Nepal

Nepal has very long history of foreign employment dating back almost 200 years. After the Anglo-Nepal war of 1814-15 the British high commission was established in Kathmandu and Nepalese based army called 'the Gurkhas' were recruited as a part of the Anglo-British army (Gurung, 2008). These soldiers used to send their earning in their home country for the families. Hence, remittances in Nepal were first introduced with 'the Gurkhas'.

In recent history, the outbreak of armed conflict between Maoist insurgency and government of Nepal in 1996 was one of the driving forces for a continuous and sharp rise in the number

of migrated people from Nepal. Nearly 250,000 were displaced from their place of origin as a result of the ten-year armed conflict (Ghimire et al., 2010). In a study of forced emigration in the central Nepal during the period of Maoist movement, Bohra-Mishra and Massey (2011) have concluded that violation has a non-linear effect on migration with an increase in odds of movement compared to relatively high degree of violation. By the end of the 1990s, the emigration wave from Nepal was primarily motivated by political factors and of the insecurity feeling. In a study, Williams and Pradhan (2008) using Chitwan Valley Family Study (CVFS) found that the internal conflict of period 1996-2006 had an influence on an individual's decision to emigrate from Nepal. Gradually, many Nepalese migrated to other countries in search of economic opportunities.

The Nepalese government is trying to promote labour exports to major labour destinations as it failed to promote job opportunities within the country. Nepal has a large and open porous border with India for the movement of the people; hence, India is still the main destination for many Nepalese. The geographical proximity, historical and cultural links are the other main reasons for it. The Peace and Friendship treaty of 1950 between India and Nepal has formalized free movement of people (Pant, 2008). In a study conducted by NRB (2007) it is estimated that Nepal obtains $253 million as remittance every year from India. Although India is still one of the main destinations for job seeker Nepalese, the other leading countries are Malaysia, Qatar, Saudi Arabia, UAE, Kuwait, Bahrain and South Korea (DOFE, 2013). Now, approximately 74% Nepalese who go for a job in the international market are unskilled (GON, 2014). Hence, unskilled labour is the main export of Nepal in the international market. Currently, Nepal has opened 108 countries as a destination for foreign employment, however, 90% of all Nepalese migrants work in the Gulf countries and Malaysia (NIDS, 2011). The remittance obtained is widely responsible for the change in consumption and production pattern at household level over the past 15 years.

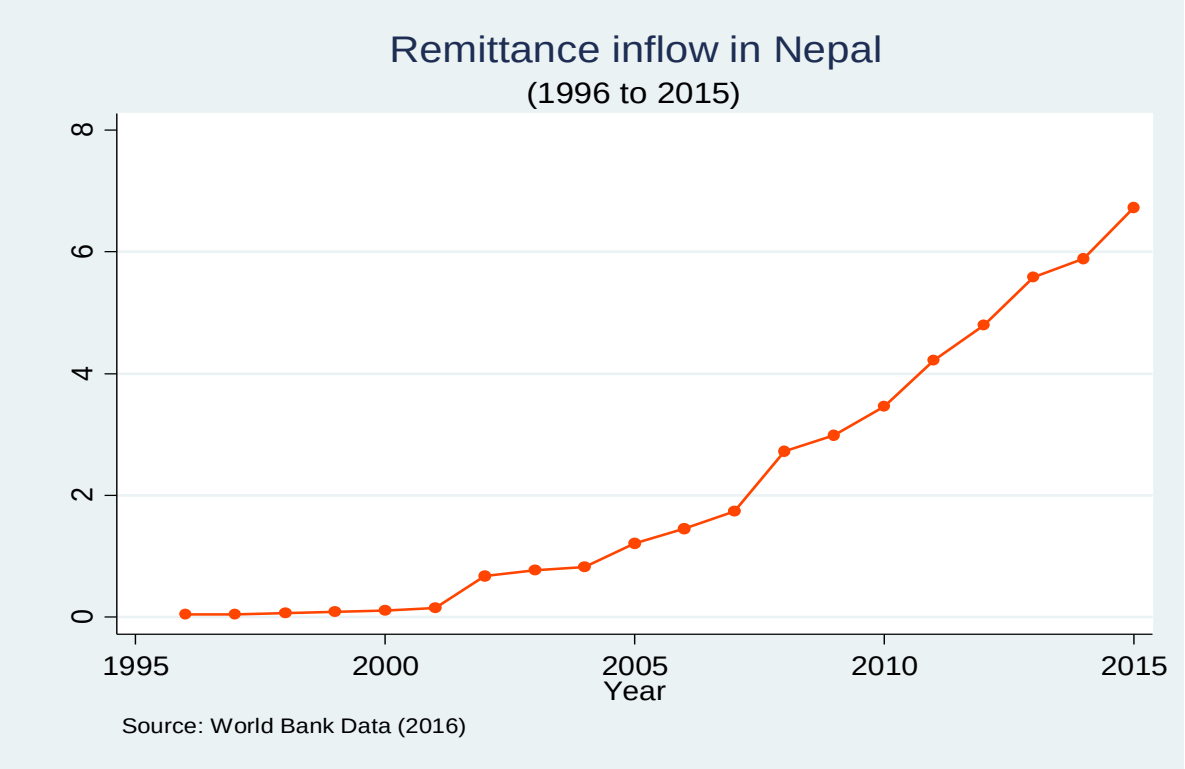
1.5 Remittance Economy in Nepal

The demand for labour from overseas countries significantly increased in past 20 years in the construction, gas, infrastructure, and oil industries. Also, the wages and salaries in the destination countries are several times higher than in the domestic market of Nepal. Hence, it has resulted in a high migration rate of Nepalese to these countries. A survey conducted by the Ministry of health and Population (MOHP) found that two-thirds of the migrants emigrate at the age of 24 or younger; most of them are male and migrate abroad to work (MOHP,

2011). Nearly, 0.5 million Nepalese travelled to work abroad in 2014/15 (MOLE, 2016). Most of them were from the rural Nepal, and 95.7% were male. The increasing size of the foreign labour force has produced large remittance inflows in Nepal. The World Bank (2016) estimated that the share of remittance on GDP in 2015 was 32.2 %. These labourers are the main source of the international remittance in Nepal. This increasing demand for labour in the international market has led to an unprecedented increase in financial flows to labour exporting countries like Nepal. The Nepal Living Standard Survey (NLSS-III 2010/11) shows that 55.8% Nepalese households now receive at least one member's earnings from employment abroad. There is a sharp rise in per-capita remittance from NRs 625 in 1995/96 to NRs 9,245 in 2010/11 (CBS, 2011a). The share of internal remittance is nearly one-fifth of the total remittance.

Figure 1.2 shown below presents the remittance inflow in Nepal from 1996 to 2015. The inflow of remittance has continued to rise sharply after 2001. The increase in the inflow of remittance money has gradually transformed Nepal from an agricultural economy to a remittance economy. This increase in the inflow of remittances after 2002 can be explained by the adverse economic conditions in Nepal caused by an internal conflict between the government of Nepal and the Maoist groups. The figure shows that international remittance has increased from 44.1 million US$ in 1996 to 6.7 billion in 2015 increasing 152 times over the past 20 years. The remittance significantly grew by an average of 39 % between fiscal year 2007 and 2009 (WB, 2016b).

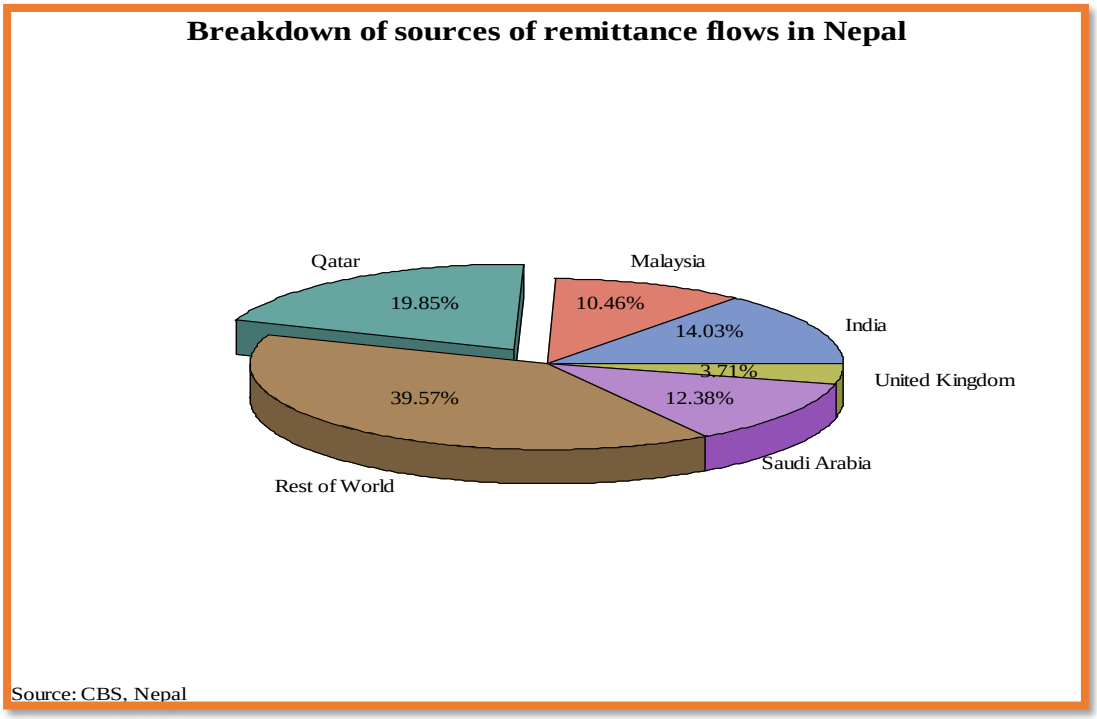
Figure 1.2 Inflow of Remittances in Nepal from 1996 to 2015



The growing number of migrants is largely responsible for the increase in remittance flows in recent years. In the year 2012, FDI in Nepal was estimated $92 million while ODA was $767.2 million and the inflow of remittance was estimated $4.8 billion (WB, 2013a). This figure shows the importance of the workers' remittance in the national economy of Nepal (WB, 2016). In a survey conducted by UNCTAD (2012) on least developed countries found that remittance was a significant source of external financing along with official development assistance (ODA) and foreign direct investment (FDI).

The data shows that the contribution of remittance in Nepal's GDP is nearly 32 % coming next to the agriculture in 2015. For remittance recipient households, the share of remittance on household income in Nepal is almost 31%. Hence, the dependency of the national economy on foreign remittance is gradually increasing. The share of international remittance received from Qatar, Saudi Arabia, India, and Malaysia are relatively higher because of the larger temporary migrant populations in Qatar, Saudi Arabia, and Malaysia and the free border with India and higher seasonal migration. Figure 1.3 presents this breakdown of the inflows of international remittances to Nepal in 2010/11.

Figure 1.3 Breakdown of sources of international remittance flows in Nepal, 2010/11



The central bank of Nepal has estimated that the volume of international remittance is approximately NRs 560.6 billion. On average, each Nepalese working outside India has sent NRs 14,000 per month in 2013/14. A significant number of households in Nepal are now receiving international remittances to finance their expenditures in food, housing, health and in children's education. Thus, remittances have developed into a significant source of income for Nepal in past 15 years. The ever-increasing size of remittances related to the GDP in Nepal implies that the economic effect of remittance is of critical importance at national and household level. Along with remittances, the migrants bring new information, ideas, and technologies which might have a significant impact in their family life.

1.6 Household expenditure

Household expenditure is one of the most significant driving forces of an economy. Several factors such as income, cost and availability of goods and services, taste and preferences of households, household size, and financial condition of families affect the spending behaviour of households. An upward trend in expenditure behaviour leads to the growth of an economy while a downturn trend leads to the recession. Household expenditure is financed by the income of its members. Revenue from any source is necessary for household members; hence, remittance being additional revenue of families can have a crucial role in the spending

behaviour of the recipient households. Household investment in human capital and expenditure on the tangible assets move side by side and cannot be separated into a cause and an effect. Although household expenditure rises along with the increase of the income, its effect differs on different bundles of goods. A study by Adams Jr and Cuecuecha (2013) concluded that households with remittances spend more on investment goods: education, health and housing; hence remittance has a positive impact on economic development.

1.7 Justification of the study

Remittance is volatile in nature as it is a collection of numerous small transfer incomes from the people working outside their usual place of residence. Households spend remittance income on the purchase of different consumer goods and services or may save it for future investment. A change in the absolute income of families or a change in relative income of households changes their expenditure behaviour. Also, a change in expenditure pattern of remittance receiving households may affect the economic development of migrant-sending countries. There is a growing need for examining the interrelationship among different determinants: inflow of remittance, expenditure on various bundles of goods, and economic development. Relatively, little research has described or analysed the impact of remittance on the spending behaviour of households. Moreover, past results and analysis are to be examined with recent data and newly developed knowledge and facts.

Most empirical studies on remittances in the Nepalese context have analysed the impact of remittance on poverty (KC, 2003; Lokshin et al., 2010; Wagle, 2012). A study by Seddon et al. (2002) concentrates on foreign labour migration from Nepal, the volume of remittances and its effect on regional and social inequality. Wagle (2012) examined the socioeconomic implications of foreign remittance to Nepal. While other studies (Bhattarai, 2005; Malla, 2009) have analysed the trend of foreign employment and inflows of remittances in Nepal. A study by Bohra-Mishra (2014) examined the motivation to remit in migrant-sending households from Chitwan district of Nepal. Moreover, a study by Maharjan et al. (2013) focused the impact of migration on farm production in rural farm families in Syangja and Baitadi districts of Nepal. Similarly, studies by Acharya and Leon-Gonzalez (2014) examined the effect of migration and remittance on the educational attainment of Nepalese children. A study by Vogel and Korink (2012) concentrated on the allocation of household remittances on the education of children in Nepal. Although the recent research of Nepal (2013) focused on

remittance and livelihood strategy with the expenditure behaviour of Nepalese households, it is based on a small sample of families in the eastern districts Jhapa and Sunsari of Nepal.

There are several shortcomings in these existing studies. First, they do not sufficiently discuss the determinants of remittances in Nepalese context. Also, they do not provide a broad view of the impact of remittances on expenditure behaviour on different bundles of goods (such as food, housing, health, education). Further, they provide little knowledge about the spending behaviour of Nepalese households because of the small coverage of their study. Finally, these studies do not discuss the contribution of remittances on economic development. KC (2003) points out that migration and remittance is a huge phenomenon and has a larger impact both in the household and national economy; it is one of the least researched areas of Nepal.

Nepal represents an excellent case study for examining the issues of remittance on expenditure and investment in human capital. In 2014, Nepal was ranked as the world's third highest (by % of GDP) remittance receiving country with estimated official inflows of about US$5,770 million (WB, 2016a). The proportion of remittance receiving households has increased significantly in the past fifteen years. However, little is known about the effect of the receipt of these large inflows of remittances on expenditure behaviour of Nepalese households. Furthermore, little efforts have been made to critically analyse the effect of remittance flow on child welfare regarding their education and health of remittance-receiving households.

Moreover, a new, detailed nationally-representative household survey in Nepal (NLSS-III) makes it possible to empirically analyse the relationship between remittances and households' expenditure behaviour in Nepalese context. It is timely to explore the link between the receipt of the remittance on the accumulation of human capital of the children in Nepal. is increasing, although a gender gap exists in the education of children. This study also tries to evaluate the impact of the receipt of remittances on the economic development of Nepal through a change in the spending pattern of Nepalese households.

In this context, this study attempts to inquire the theoretical aspects of the interrelation between remittance and expenditure behaviour from the Nepalese perspective. The econometric analysis of this study is based on Nepal Living Standard Survey – 2010/11. This study aims to address some of these issues discussed above in depth and the findings from the

study will be substantial in this field, and these findings will play a major role in policy making, analysis, and research.

1.8 Aim of the study

The primary aim of this study is to analyse the determinants of the receipt of remittance and its impact on expenditure behaviour on different bundles of goods such as food, housing, consumer good and durables, education, health, and others (utilities and infrequent items) and child welfare (health and education) of Nepalese households.

1.9 Data Sources

The authenticity, reliability and credibility of a research depends primarily on quality of available data. Migration is a household decision and the amount of remittance; a capital flow of small transaction of the individuals using various methods of channels; is heterogeneous in nature, very complex to measure and contains several limitations. Data collection and analysis is another difficult aspect of the study of remittances. Hence, this study uses national Nepal Living Standard Survey - third round (NLSS-III) dataset to examine how the remittances are being spent to improve human capital of the recipient families. NLSS-III data set was collected through February 2010 to February 2011 by the Central Bureau of Statistics (CBS), Nepal. NLSS-III dataset is a nationwide comprehensive household survey that covers the whole of Nepal and will be able to provide useful information needed in this study. The survey strictly follows the Living Standards Measurement Survey (LSMS) methodology developed and promoted by the World Bank (WB). NLSS-III enumerated 7020 households, of which 5988 households are from cross-section data and 1032 are from panel data.

Although NLSS-III is not designed as a migration/remittance survey, it provides detailed information on household expenditures on different bundles of goods. The data items in the survey belong to many broad topics such as demography, housing, and access to facilities, migration, consumer expenditure, education, health, migration, remittances and transfers, social assistances, adequacy of consumption and government services/facilities and anthropometry. It provides a comprehensive picture of how expenditures are managed by households to improve their livelihood and to increase the stock of human capital. According to Adams (2011), household surveys provide the best means for evaluating the impact of international remittances on developing countries because they collect data on the wider number of variables.

1.10 Research Methodology

Although migration and remittance studies have been carried out for a long time using both qualitative and quantitative methods, this study uses a quantitative method. Previous studies such as Amuedo-Dorantes and Pozo (2010), Antman (2012) and De and Ratha (2012) also have used quantitative methods to investigate the effect of migration and remittances on the families left behind in developing countries. The econometric methods used in these studies aim to minimise common methodological problems such as simultaneity, reverse causality, selection bias and omitted variables. Such underlying problems make it difficult to establish cause and effect relationships, and the results obtained by ordinary least square methods (OLS) are biased. Hence, the findings obtained from the general form of regression framework may lead to the wrong conclusions (Bettin et al., 2012). In this perspective, it is important to understand the key determinants of remittances, household expenditure function and their interrelationship before the analysis of data. According to Adams (2011), randomised experiments, natural experiments, the use of panel data, construction of a counterfactual situation, use of two-stage Heckman model in OLS method, and use of instrumental variables (IV) are some of the best methods to address these methodological issues.

This study uses a two-stage treatment effect model to make a comparison of expenses between remittance receiving and non-receiving households. The treatment effect model is composed of two equations: one for the outcome variable and other for the treatment variable. Treatment is a binary variable with value 1 for the treated group (that receive remittances) and 0 for the controlled group (that do not receive remittances). The outcome variables of this study are the share of the budget on different bundles of goods and child welfare (education and health). A linear model having a uniform fixed slope for all levels of expenditure may not be a good and may not represent real world behaviour. Hence, this study uses a binomial probit model for the treatment model in the first stage and household expenditure share equations as a function of the other variables (for example the logarithm of total expenditure, household variables, community variables) in the second stage.

1.11 Limitations and Scope of the Study

There are various limitations in this study. The better result on the impact of remittance would be obtained if we had panel data. The outcome of this study will be based on

observational data; hence the results should be interpreted cautiously. Until now there has been no comprehensive survey conducted on the economic analysis of remittances in Nepal. Hence, this study is based on Nepal Living Standard Survey (NLSS-III) held on 2010/11. Further, the dataset was not designed for migration and remittance survey and there is restricted information on the characteristic of migrants. Illegal migrants and the remittance sent by them is a cause of data problems because family members do not report it. Moreover, NLSS-III contains a cross-sectional data set that poses several methodological issues such as selection bias or recall bias.

Although, various econometrics tools such as binomial probit model with treatment effect model: that one based on Heckman two-stage selection model and instrumental variables (IV) methods have been used to address the methodological problems, the results will need careful interpretation. Moreover, Nepal was under Maoist insurgency in the past decade, and they controlled many but not all districts. The accurate data of the district-wise impact is hardly available; however, to address this problem, an instrumental variable is added to the model. Finally, this study does not estimate the effect of the receipt of remittances on the aggregate consumption of households instead it estimates the change in the budget share on different bundles of goods (food, housing, consumer goods and durables, education, health and others) due to the receipt of remittances during one year.

While doing the research on the remittance effect, it must include the social and economic characteristics of households. It is critical to add the working conditions of migrants, the income they earn and their past migratory experiences. However, due to the lack of such information this study does not include such variables in this study; the results may have limited applicability.

1.12 Organisation of thesis

Altogether, this study has nine chapters and an outline for these nine chapters is as follows:

Chapter 1 has provided an introduction that contains the background of the study.

Chapter 2 incorporates the objectives of the study, the research hypothesis and the research questions. It also enumerates the conceptual framework of the remittance, expenditure behaviour and their relationship.

Chapter 3 provides the theoretical underpinning for an understanding of remittance, and its impact on expenditure behaviour of households on different bundles of goods. It carries out

in-depth review of the existing literature on the developmental impact caused by the change on the expenditure behaviour of households. Further, it reviews the research articles related to migration and remittance, remittance and its determinants, remittance and the expenditure behaviour of the people, and change in human capital (in term of education and health) of the children in developing countries including Nepal.

Chapter 4 incorporates an overview of the research approaches and methods used in the study. It reviews the methods used to analyse the change in expenditure pattern and child welfare by migration and remittance. It further discusses the limitations and assumptions of the study regarding data and model. It presents the sources of bias that might arise in the study of migration and remittance and the remedial measures. Finally, it provides the details of the models used in this study.

Chapter 5 begins with a short description of the study area (Nepal). It presents the definition of key terms and concepts used in this study. It also provides the description of the dataset and construction of variables of the empirical model.

Chapter 6 presents the descriptive statistics such as means, frequency, standard deviation, and bar diagrams of the outcome variables and the treatment variable (remittance) used in this study. It also provides cross-tabulation of the interrelationship of outcome variables and treatment variables. It also summarises the difference in some key variables between remittance receiving and non-receiving households.

Chapter 7 highlights the empirical analysis of the determinants of remittances in Nepalese context. It also analyses the impact of remittance on the expenditure behaviour of Nepalese households on different bundles of goods. Finally, it shows the causal relationship between remittance and child welfare in Nepalese households.

Chapter 8 discusses the results obtained in chapter six and seven. It discusses the determinants of remittances in Nepalese context and its impact on expenditure behaviour of (Nepalese) households. It also seeks reasonable explanation behind the empirical findings.

Chapter 9 is the final chapter of the study that highlights the key findings, along with discussion and some important areas for further researches. It discusses the general implications and suggestions that would be helpful in a long run.

CHAPTER 2

RESEARCH OBJECTIVES AND HYPOTHESES

2.1 Introduction

Based on the aims detailed in chapter one, this chapter illuminates the research objectives. It also discusses the research questions that are set to fulfil these objectives. Furthermore, it outlines the research hypotheses that are tested against the research questions of the study. These hypotheses are based on past studies and theoretical considerations. Finally, it discusses the theoretical and conceptual frameworks of the study.

2.2 Objectives of the study

Based on the aim of the study discussed in Section 1.8 of Chapter 1, the objectives of this study are:

1. To analyse the determinants of the receipt of remittances in Nepalese context.
2. To analyse the expenditure behaviour of the remittance receiving and non-receiving households on different bundles of goods such as food, housing, consumer goods and durables, education, health and others.
3. To determine the pattern of association between remittances and investment in children's schooling.
4. To examine the causal relationship between household remittance and health status of the children below the age.
5. To examine the impact of remittance on the economic development in Nepal via change in expenditure behaviour of Nepalese households.

2.3 Research Questions

The following research questions will be set to find the answers of the objectives of Section 2.2.

1. What are the determinants of the receipt of the remittances in Nepalese households?

2. How do the expenditure behaviour of remittance receiving and non-receiving households differ in these bundle of goods: food, housing, consumer goods and durables, education, health and others?
3. How does remittance affect the child welfare (education and health) of children left behind in Nepal?
4. Does the change (if any) in expenditure behaviour of Nepalese households caused by the receipt of remittances promote sustainable economic development?

2.4 The Hypothesis

Many researchers have made a comparison of expenditure between households with and without remittances (Chami et al., 2008; Rivera and González, 2009; Adams and Cuecuecha, 2010b). Some other researchers (Göbel, 2013; Nepal, 2013; Jena, 2015) have studied the impact of migrants' remittances on households' spending behaviour. In this context, the research hypotheses of this study are based on the past studies, a theoretical basis, the objectives of the study, and the research questions. These hypotheses are discussed in the following sections:

2.4.1 Impact of remittance on household expenditure

In this study, all households are divided into two groups: remittance receiving and non-receiving. The per capita total expenditure is divided into six different component bundles: food, housing, consumer goods and durables, education, health, and others. Then, it makes a comparison of per capita budget share between remittance receiving and non-receiving groups on each bundle of goods.

2.4.1.1 Impact of remittance on food

A study by Göbel (2013) used Living Standards Survey round five in Ecuador (2005/06) and estimated the impact of migrants' remittances on households' spending pattern in Ecuador. The study found strong evidence that smaller proportion of remittance money is spent on food. A report from Central Bureau of Statistics (2011a) mentioned that Nepalese households mostly spent their remittances on food consumption rather than investment. The empirical study of Adams et al. (2008) concluded that the households receiving remittances did not spend more at the margin on food and other items than those households that do not receive remittances. It further pointed that remittance income was fungible. Hence, households with

or without remittances had similar expenditure behaviour on food items. To test the impact of remittance on food expenses in the Nepalese perspective, the following hypothesis is set:

Hypothesis1A: The receipt of remittances does not bring a change in the share of the budget spent on food expenditure.

That means the proportional spending on food does not change with the receipt of remittances in Nepalese households.

2.4.1.2 Impact of remittance on housing

The households can invest the acquired remittance on the purchase of different assets such as land, housing, businesses, and financial assets. Adams Jr and Cuecuecha (2013) analysed the impact of remittance on investment and poverty in Ghana using the Ghana Living Standard Survey (GLSS 5) 2005/06. Their findings showed that households receiving remittances had higher marginal expenditure on housing, education and health. Similarly, Obeng-Odoom (2010) conducted a study on Ghanaian migrants in Sydney. The study showed that they invested in housing back home. In this context, it is appropriate to test the effect of remittances on housing in Nepal using the following hypothesis:

Hypothesis1B: The receipt of remittances does not change households' spending on housing.

2.4.1.3 Impact of remittance on consumer goods and durables

In his study, Sapkota (2013) has claimed that the high inflow of remittances was critical for households and the national economy in Nepal. However, it has contributed to the Dutch disease effect with the loss of competitiveness in the tradable sector. According to Dahal (2014), the inflows of remittances in Nepal had a negative association with the exports. In these circumstances, it is remarkable to test whether the remittance receiving households have different spending behaviour in consumer and durable goods than others that are not receiving remittances. To test the impact of remittance on consumer goods and durables the following hypothesis is made:

Hypothesis1C: The receipt of remittances does make a significant difference in the budget share spent on consumer goods and durables in remittance receiving households in Nepal.

2.4.1.4 Impact of remittance on education

The empirical study by Edwards and Ureta (2003) suggested that remittances had a larger impact on school retention rates of children than the income from other sources on El

Salvador. In Nepal, households mostly depend on their resources for the investment on the educational expenditure of its members. Hence, one of the main motives of the receipt of remittance may be an educational expenditure. Similarly, the results of the study by Amuedo-Dorantes and Pozo (2010) showed that remittances raised the school attendance of the children in the Dominican Republic while migration of a household member reduced the positive effect of remittances. To test the effect of remittances on households' educational expenditure the following hypothesis is set:

Hypothesis1D: the receipt of remittances raises the budget share spent on education of Nepalese households.

2.4.1.5 Impact of remittance on health

The study by Valero-Gil (2009), on the relationship between remittances and households' health expenditure of Mexico, concluded that the proportion of households' spending on health increased with the growth in remittances. Hence, health expenditure is a target of remittances. Chauvet et al. (2008) analysed the impact of remittances on infant and child mortality rates in developing countries. Using cross-country data, the results suggested that remittances significantly improved child health outcomes. Although medical brain drain had negative impacts on health outcomes, remittance had positive effective for children of the richest households.

In a developing country like Nepal there is a lack of health insurance, hence health hazards of family members can be one of the principal motives for sending remittances to the household. To examine the impact of remittance on health outcome of the children left behind in Nepalese context the following hypothesis is formulated:

Hypothesis1E: The receipt of remittances increases the households' budget share spent on health care.

2.4.1.6 Impact of remittance on other goods

On the study of the effect of migration and remittances on Western Sri Lanka, Sharma (2013) found that the incidence of remittances was significantly positive on the main areas such as food consumption, health expenditures, and expenditure on basic non-food goods. In this context, to test the impact of remittances on non-basic other goods in Nepalese households this study makes the following hypothesis:

Hypothesis1F: The receipt of remittances does not have a significant effect on the behaviour of households' expenditure on other goods.

2.4.2 Impact of remittance in child welfare

The increase in household expenditures on education and health is of particular importance for the economic development of a country. The research by Salas (2014) indicated that international remittances had positive effects on the schooling of children in Peru as remittances receiving families were more likely to send their children to private schools. In her study on remittance and livelihood strategy in the eastern Nepal, Nepal (2013) found that remittances did not have a significant role in the development of human capital. Her study concluded that remittance did not increase educational expenditure, although, it had a positive role in health spending. The results of the study of Acharya and Leon-Gonzalez (2014) suggested that remittances in Nepal helped poor households to enrol their children in school and prevented dropouts. For other households, remittances contributed to increasing their investment in quality education. In these circumstances, this study takes the schooling and nutritional condition of children as a proxy for child welfare, and analyses the impact of remittances on these outcomes.

2.4.2.1 Impact of remittance on child education

Milligan and Bohara (2007) examined the effects of remittance income on child labour and education in Nepal. Using a large and nationally representative NLSS-II (2003/04) data for the analysis, they concluded that remittance income had a positive contribution to child welfare although it was less effective than another source of revenues. Similarly, Bansak and Chezum (2009) stated that young girls were benefited relatively less from remittances in Nepal. Based on these past studies, this study assumes that remittance income brings significant contribution to the social welfare of the children in Nepal. To test the difference in the investment in child welfare on Nepalese households caused by the receipt of remittances, the following hypothesis is made:

Hypothesis2A: The hypothesis tells that households with remittances spend more amount on the educational expenditure of children.

Hypothesis2B: The hypothesis tells that the receipt of remittances improves the quality of human capital by sending children to private schools.

2.4.3 Impact of remittance on child health

Remittance may be more effective in improving the child health in poor countries because it allows better nutrition and health care protection to children. Mansuri (2006b), in her study on rural Pakistan, found that the financial flows obtained from migration had a positive impact on child growth outcomes. Hence, it is relatively interesting to test whether remittance flows have helped Nepalese households to improving the health outcomes under the age of five years. This study uses weight for age z-scores (WAZ) as the child growth measure to test the impact of remittances on child health. Further, this study tests whether the children below the age of 59 months have Weight-for-age z-scores (WAZ) similar between remittance receiving and non-receiving households. The receipt of remittance does not change the health of the children left behind i.e. they are independent of each other. For this the following hypothesis is made:

Hypothesis2C: the hypothesis is set to analyse that the receipt of remittances improves the WAZ score of the children (less than six months) left behind.

2.5 Theoretical Framework

This study examines the allocation of average budget share of Nepalese households dividing them into two groups. The control group are those households that do not receive any remittances. The treated group receives remittances from within Nepal or from outside Nepal. A cause-and-effect relationship is tested taking the receipt of remittances as the cause and the expenditure behaviour or child welfare of the households as the effect. This research also tries to quantify the effect of remittances on a broad range of goods such as food, housing, consumer goods and durables, education, health and other items. Finally, it also tries to estimate the effect of remittances on child welfare using education and the health of children as the outcome variable.

The crucial factors for the economic growth of developing countries are labour and its productivity, capital investment, technological improvement, trade, foreign aid and investment, investment in human capital, new skills, and research and development. Fayissa and Nsiah (2010) explored the aggregate impact of remittances on the economic development of 36 African countries using a panel data from 1980 to 2004. The result was that remittances have a positive impact on the economic growth of African countries as it helped to overcome liquidity constraints and accelerated financial investment in these countries.

2.5.1 Theories of remittances

The main theories on the motives for sending out remittances belong into three broad categories: pure altruism, semi- altruism and self-interest. The combination of semi-altruistic motives and pure self-interest motives is also referred as the contractual agreement theory. The pure altruism motive suggests that migrants send back remittances to improve the welfare of household members because they care for family members left behind at home (Vanwey, 2004). This hypothesis assumes that more deprived households have a higher probability of receiving remittances. The study of Schiopu and Siegfried (2006) on the determinants of worker's remittance from European countries concluded altruism as the main motive. The self-interest motive suggests that migrants send remittances at home because the members left behind look after the assets of the migrants. Purchase of fixed assets (such as land, and home) at home may be one of such motives. Semi-altruism is in between these two extreme views and the potential gain of this motive is risk-spreading. This hypothesis assumes that contractual arrangements between sender and receiver such as loan repayments and investment in the education of children play a crucial role on the motives.

The study by Vanwey (2004) in rural Thailand found that the remitting behaviour of the migrants from poorer households was more altruistic, while that of the migrants from richer households were more contractual. The empirical study by Bohra-Mishra (2014) on the households of Chitwan district of Nepal suggested that main drivers of migrant's remitting behaviour were semi-altruistic and self-interested motives rather than purely altruistic. In a study by Fokkema et al. (2013) on second generation migrants who sent money to their home country were motivated by altruism or self-interest motives, although these motives were not exclusive. The findings of these past studies make it clear that motives of sending remittances are a complex phenomenon, it guided by many factors.

2.5.2 Expenditure behaviour of households

The theory of consumer behaviour formulates that the spending behaviour of households is affected by many factors such as the income, cost and availability of goods and services, the taste and preferences of households, household size, and the financial condition of the households. In general, both average and marginal propensity of consumption by the households change with a change in their income level. Remittance money directly goes to the households and is readily available for expenditure. Hence, the consumption behaviour of households may be affected by the receipt of remittances. Youth and active members take

part in migration. They easily accept new knowledge and skills once they are exposed to it in their new destination. They share these newly obtained ideas and skills with their family members back home. The loss of potential working force at home along with the increase in income and knowledge may lead to a change in the expenditure behaviour of households.

Migrant characteristics such as age, marital status, pay scale, and working hours affect the decision to remit. Also, a remitter always wants to ensure that the remittance money has been spent for the benefit of the household members such as nutritional, educational and health care of family members and investment to generate income for future (Bohra-Mishra, 2014). The remitter sets the priorities of how much and where the money is to be spent, although it is the receiver who manages it. Hence, the remitter and receiver jointly control the remittance money, although the level of control differs from one person to another.

These underlying facts show that households with remittances are very likely to have different expenditure behaviour than those that do not receive any remittances. This study tries to show whether households that receive remittances exhibit different expenditure patterns from those that do not have.

2.5.3 Expenditure behaviour and economic development

The economic development of a country depends on both productive investment on one side and household/consumer spending on the other. Household expenditure is strongly correlated with the economic growth of a country, although, not all types of spending lead to economic development. Several researchers have investigated the households' expenditure behaviour and its relation to economic development, however; there is much debate among economists about the types of productive investment and consumer spending.

Schultz and Becker have put the view that an investment in human capital (such as education, health, and training) is more productive for a country in the long run. Schultz (1961) emphasised that sound health, education, and training are various forms of capital and expenditure on education, health, internal migration, on-the-job training to improve skills and knowledge of individuals leading to economic growth by increasing the productivity of the labour force. Similarly, Becker (1962) presented the concept of human capital into five main categories: health, on-the-job training, schooling, adult education, and migration. He claimed that formal education (in years) along with school quality, training, and attitudes towards work increase the productivity of individuals. The famous economist Mincer (1984) viewed

human capital as a factor of production. He pointed that the growth of human capital is both a condition and a consequence of economic growth.

On the other side, some economists such as De Long and Summers (1990) have emphasised that investment in tangible assets such as machinery and equipment strongly correlates with economic growth. They put the view that an economy must continuously invest in new capital goods, structure, and plant and machinery to increase the productive capacity. Hence, there is no debate about the importance of investment in the economy although economists debate about the types of investments that are more important.

The developmental impact of remittances through a change in expenditure behaviour of households has been studied by some researchers (Adams and Cuecuecha, 2010b; Meka'a, 2015). The study by Adams and Cuecuecha (2010) on the effect of remittances on spending behaviour in Guatemala found that households with international remittances spent relatively less on food and more on housing and education. Finally, the study concluded that receipt of remittances had a positive impact on economic development as it increased the household investment in housing, education and health. Similarly, the study of Meka'a (2015) in Cameroon also found that households receiving international remittances spent relatively less on one of the consumption goods – food – and invested more on two investment goods – education and housing. Hence, the study concluded that remittances were vital for economic development of Cameroon.

2.5.4 Theories on expenditure behaviour

Many scholars have provided the theoretical framework for analysing the remittance impact on expenditure behaviour of households, although, there is no general agreement in the theory. Similarly, others have attempted the impact of remittance on schooling and nutritional status of children. In theory, there are three views on the economic impact of remittances on expenditure behaviour of households and economic development.

The first and general view is that remittance income is fungible; hence the marginal effect of remittance income is similar to the effect of other income. This view assumes that remittance income does not bring any behavioural change in the expenditure pattern of the households in an economy. The empirical study of Adams Jr et al. (2008b) using Ghana Living Standards Survey (GLSS 5) (2005/06) showed that households in Ghana treat remittances just like any other source of income.

The second view is that remittance income gives rise to behaviour change at the household level. It is mostly spent on unproductive and status-oriented conspicuous consumption that finally leads to laziness and moral hazard (Chami et al., 2008). In their study on the Dominican Republic, Amuedo-Dorantes and Pozo (2010) find that migration of a household member eliminates the positive effect of remittances and has an adverse impact on the school attendance of children.

The third and more elaborated view has arisen from Friedman's permanent income hypothesis. According to this hypothesis, consumption expenditure depends on the permanent income rather than the current disposable income (Friedman, 1957b). Remittance income is transitory in nature, hence marginal expenditure is higher in investment goods than on consumption (Adams and Cuecuecha, 2010b; De and Ratha, 2012). Similarly, in her study Mansuri (2006a) has concluded that remittance obtained from temporary economic migration has significant positive effect on human capital accumulation in Pakistan. The study has found that the gains are higher in girls because migrant households allocate greater resource on child schooling.

Hence, it is interesting to analyse if the households with remittances tend to allocate a greater amount of their household budget on education, health, and housing thereby increasing the development impact of remittances, or if they tend to spend more budget on conspicuous goods. More expenditure on investment goods such as education and health yields a bigger impact on the livelihood of rural households and a positive influence on economic development while spending remittances on mere consumption, is unproductive and does not bring sustained economic growth.

2.6 Conceptual framework

This study takes the proportion of per capita expenditure on different bundles of goods and child welfare as the outcome variables and the receipt of remittances as the treatment variable. All households are divided into two groups: with remittances and without remittances. The per capita expenditure share of households is divided into six different bundles: food, housing, consumer goods and durables, education, health, and others.

Figure 2.1 shows the independent variables, treatment variable and outcome variables of the study. The set of the independent variables is divided into groups: physical capital, household characteristics, regional variables, and others. At the first stage, this study tries to identify the variables that have a significant effect on the probability of the receipt of the remittances by the households. Past studies have pointed that the receipt of remittances (the treatment) is influenced by the household variables (such as gender of head, ethnicity of household head, age of head, household size, number of children at home), and physical capital (such as land owned, outstanding loan, and possession of durables). The regional variables (such as rural/urban and ecological region), poverty, migration network, and degree of conflict during the 1996-2006 period also may have an effect on the probability of the receipt of the remittances in Nepalese households.

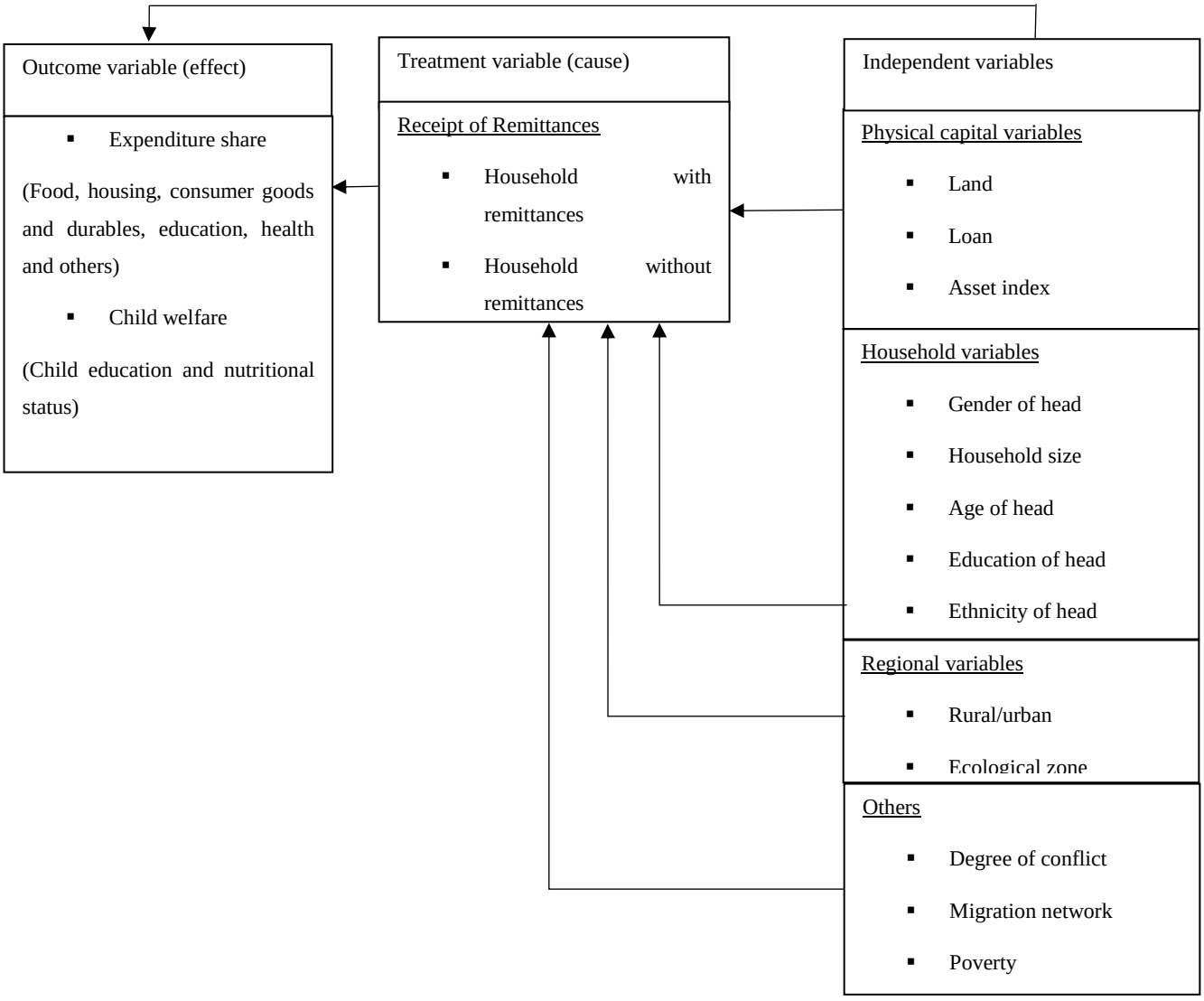
The set of independent variables also effect the outcome variables (budget share on different bundles of goods and child welfare). Next, it tries to evaluate the impact of the receipt of remittances on the budget share of different basket of goods. The ultimate impact of remittances in the origin country depends on many factors such as the size of migrated population, distribution of income in the households in the source country and the end use of remittance flows. Hence, this study calculates the average effect of remittance on expenditure behaviour of households on different bundles of goods taking consideration of other household variables such as gender of head, ethnicity of household head (HH), age of HH, number of children at home, physical capital variables such as land holding, outstanding loan, and asset index, and human capital such as education of HH.

Third, it calculates the average impact of remittances on child welfare (education and health of children) controlling all the other independent variables.

Finally, based on the above results this study examines the developmental impact of remittances on Nepalese economy.

Figure 2.1 shown below is designed to provide the diagrammatic presentation of the determinants of receipt of the remittances and the remittance effect on household expenditure behaviour and child welfare. After controlling for the effect of all the other independent variables, we can eventually estimate the effect of remittances on the outcome variables (expenditure shares on different bundles and child welfare).

Figure 2.1 Conceptual framework for the determinants of the receipt of remittances and impact of remittance on expenditure and child welfare



Mathematically, the concept of the empirical model can be shown as:

The probability of receiving remittance = *f*(household variables, physical capital, human capital, community level variables, regional dummies) … (i)

Proportion household expenditure on food, housing, consumer and durable goods, health, education and others = *f*(household variables, physical capital, human capital, community level variables, others) … (ii)

Similarly, the mathematical model for the analysis of child welfare is:

Outcome variable (child education or child health) = *f*(child characteristic variables, household variables, community level variables, others) … (iii)

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

The review of literature mainly focuses on issues related to remittances and their use at the household level in Nepal and other countries. From the view point of economic development, the critical questions related to the migration, remittances and expenditure are: who migrate and why? What are the determinants of remittances? How do the receiving households spend the remittance money? How does the spending behaviour of households lead to economic development? This study focuses on the later questions: the determinants of the remittances and the use of remittance money by the households in the origin country.

This chapter is divided into as follows. Section 3.2 reviews studies on migration, remittances and expenditure, while Section 3.3 overviews past research articles on the determinants of the remittance. Section 3.4 focuses on recent papers that have examined the impact of remittances on the expenditure behaviour of households on different bundles of goods. Section 3.5 reviews past papers on the effect of remittances on child welfare regarding education and health of children. Section 3.6 summarises literature review, while section 3.7 shows tabulation of some past studies in the Nepalese context. Finally, Section 3.8 discusses the gaps in the previous literature.

3.2 Studies on migration, remittances, and expenditure

The new economics of labour migration (NELM) takes the household as a unit that decides for the well-being of the family to maximise their combined income at minimum risk. Hence, households make migration related decisions jointly (Stark, 1991). Members of the household finance the initial cost of migration of some of its member/s in anticipation of future returns. Hence, remittances lie at the centre of the NELM theory. Both pessimistic and optimistic views have emerged in the past on studies of the economic effect of migration and remittance on a country. Some studies have shown mixed results. The pessimists argue that migration leads to a loss of the potential workforce of the country at their most productive stage and causes a brain drain. The remittances obtained do not offset that loss. The recipient households do not spend the remittance income on the productive investment. Instead, they spend it on conspicuous consumption that creates inflationary pressure on the economy and is

often seen as detrimental. Further, they claim that remittance is only temporary income and is unstable in the long run (Russel, 1992; Chami et al., 2008). Singh (1997) also makes the argument that migration is the loss of workforce at their most productive period. Similarly, Regmi and Tisdell (2002) have claimed that rural to urban migration in Nepal has a little contribution to rural capital formation, hence, it does not contribute significantly to the development of rural areas. The studies of Khan et al. (2009) and Lokshin et al. (2010) have suggested that remittance is a reward for the families left behind that helps households to reduce the level and severity of poverty by providing income security.

However, most of the empirical studies have put optimistic views. They have concluded that there is positive contribution of the remittance in the households' living condition (Khan 2009). Some recent researchers argue that labour migration generates financial capital and contributes to the expenditure budget of the households. For the poor rural, remittance is the immediate, direct and significant outcome of migration. Using a large sample and better econometric tools, Khan et al. (2009) pointed out that remittance increases the welfare of the migrants' families and improves their livelihoods. In a study of the effect of emigration on Sri Lanka, Sharma (2013) found that the impact is significantly positive on the expenditure of key areas such as food, health, and basic non-food goods. The study of Niimi and Ozden (2006) found migration rate as the main driver for the remittance and, hence, take migration as a necessary condition for the receipt of remittance.

Parida and Madheswaran (2011) studied the behaviour of internal migrants in India. They used joint a utility maximisation model to examine the determinants of migration and remittances. The data of the study came from the National Sample Survey data 2007-08. The results obtained suggested that individual characteristics of the migrants such as age, marital status and education, and household characteristics like the size of the family, ethnicity and ownership of land have a higher influence on both the decision to migrate and sending remittance. Similarly, Lianos and Pseiridis (2013) examined the size and motivation of remittances taking data from the returned migrants in six countries. They found that remittances are higher when the migrant him/herself or the spouse made the decision to migrate. Also, remittances were higher when they were spent on the education of household members and lower when they were used for food and clothing or medical purposes.

These studies clearly show a "migration and remittance effect'' exists in many developing countries, but varies in magnitude. Remittance acts as a linkage between the migrant and

families left behind that depends on the cultural norms, family affection and commitment toward the unit.

3.3 Studies on the determinants of the receipt of remittances

Several researchers such as Naufal (2007), Carling (2008), and Nepal (2013) studied the determinants of remittances in developing countries. Aydas et al.(2005), on the remittance inflows to Turkey, concluded that the black market premium, income differential, growth and inflation rate at home country were the main determinants of the remittances. Adams (2009) argued that the skill composition of migrants and the volume of migrants were the main determinants of the remittances. He concluded that the countries that exported a significant share of highly skilled migrants received less per capita remittance than those that exported a large proportion of low-skilled migrants. Nepal (2013) studied the determinants of remittance in two Eastern districts Jhapa and Sunsari in Nepal. Her study concluded that the variables age of head, the gender of the head, the number of young and adult members at home, housing structure, ethnicity (Hill Janajati) had a significant impact on the receipt of remittances. All these studies examined the socio-economic factors that affect the propensity of a migrant to remit.

Similarly, a study by Naufal (2007) concluded that gender, labour force status, and destination of the migrant along with labour force status and education level of the household head were the main determinants of household remittance in Nicaragua. The study pointed out that economic shocks at the destination and the relationship of the migrant to the household head also affected the remitting behaviour. Carling (2008) also reported that the remittances flowed in one direction and determined by the relationship between the remitter and the recipient. Mannan and Farhana (2014) studied the determinants of remittance in rural Bangladesh. The findings concluded that age of migrant, marital status, income level, the age of head, and employment status of the sender, along with the regularity of home visits were the main determinants of the remittance. Similarly, Piracha and Saraogi (2012) explored the factors that were responsible for the receipt of remittances in Moldova. Their empirical findings suggested that a combination of different household and migrant characteristics, and community-level variables were the vital elements in determining the migrant's remittance behaviour. They argued that altruism towards family and future investment motives were two possible reasons behind remittance inflows to Moldova.

In general, migrants send remittances because they care for those left behind at home: spouses, children, parents, and members of the household and greater society. The variables such as income of household members, household loans, number of migrants from a household, income and education level of migrants, the length of stay, intent to return, and household shocks, affect the amount of remittance sent to the household in the origin country. Hence, in the literature, these past studies have concluded that the main macro-level determinants are the number of migrants, their composition of skill, and the economic condition of the home and destination. Similarly, the micro-level determinants of remittances are altruism toward the family, insurance, length of stay, loan repayment, and working condition at the destination.

All these above results show that the receipt of remittances is not guided by mutually exclusives events as the theory proposes rather it is a complex phenomenon and is guided by many inter-related events.

3.4 Studies on the impact of Remittance

There is no general agreement in the literature regarding the impact of remittance on an economy. There is no doubt that remittances influence the broad range of outcome variables in the developing world such as expenditure behaviour, savings and investment, poverty, labour supply, agricultural production, income inequality, health, education and economic growth. Malla (2009) claimed that remittance from the people migrated from Nepal was an important source of development finance that strengthens the balance of payments of the country, contributes to GDP and more significantly is a tool for the reduction of mass poverty. Pant (2011) claimed that the remittance inflows were large and stable in nature. The Nepalese households got direct benefits from it as it provided insurance against the economic shocks; however, remittances did not automatically contribute to national development.

However, the study of Acosta et al. (2008) showed that increasing levels of remittances in developing economies could have a major influence on the type of spending. Within GDP, the share of tradeable (agriculture and industry) sectors decreased while the proportion of non-tradeable (service) sectors increased. Hence, he concluded that the rising levels of remittances in emerging countries led to Dutch-Disease. Similarly, the empirical study of Adams Jr et al. (2008b) using Ghana Living Standards Survey (GLSS 5) (2005/06) showed that households in Ghana treat remittances just like any other source of income. Although

remittance has wider effect than recipient households, into the community and whole economy, the following sub-sections overview its impact in some of the key variables.

3.4.1 Impact of remittance on poverty

Many research studies (Adams Jr et al., 2008a; Chukwuone et al., 2008; Uzagalieva and Menezes, 2009; Banga and Sahu, 2010; Dey, 2015) have attempted to quantify the impact of remittances on poverty and inequality in migrant-sending countries. Maimbo et al. (2005) studied labour remittances in four South Asian countries - Bangladesh, India, Pakistan and Sri Lanka. Their findings concluded that every 10% increase in remittance lowered the level of poverty by 0.9 %. Lokshin et al. (2007) examined the impact of remittance in Nepal on poverty using two rounds of household survey data NLSS-I (1994/95) and NLSS-II (2003/04). They showed that both national and international migration played a major role in poverty reduction. Finally, their study concluded that remittance received from work-related migration was largely responsible for the 20% reduction of the poverty in Nepal between 1995 and 2004.

Similarly, Adams et al. (2008a) compared the level, depth, and severity of poverty between remittance receiving and non-receiving households in Ghana using a 2005/6 household survey. The study showed that remittance significantly reduced the level and depth of poverty. Moreover, Adams and Cuecuecha (2010a), in their study on the economic impact of remittances on poverty and household consumption and investment in Indonesia, found that international remittances had significantly large effect on reducing poverty.

In a recent study, Acharya and Leon-Gonzalez (2014) examined the impact of remittance on poverty and inequality in Nepal. Using nationally representative NLSS-II and III survey data, they used region-wise simulation to estimate the difference of impact. The study showed that remittance had a significant impact on the reduction of all types of poverty in Nepal. The result also pointed out that the impact was greater in regions where there is a higher level of emigration. Although, remittance from other countries except from India increases inequality.

Meanwhile, the study of Dey (2015) analysed the effect of transfer income in the form of remittance on the poverty of households in India using propensity matching score method. The study concluded that both international and internal remittances had a significant effect on lowering the depth and severity of poverty in rural households, although international remittances had a stronger effect.

Although most of the past researchers agree that remittances have had significant positive effect in reducing poverty in developing countries; it is still unclear that whether the effect was direct or indirect. Some of them argue that an indirect impact existed via a multiplier effect due to increased consumption and investment.

3.4.2 Impact of remittance on agriculture

Agriculture is still the main source of livelihood in many developing countries. The marginal productivity of labour remains very low in the agricultural sector. Hence most rural farmers live in poverty. The study of Maharjan (2013) on agricultural production in the Western hills of Nepal concluded that the migration of a family member had resulted in a reduction in family labour input in farms. Although remittance eased the liquidity and capital constraint of households, it had no effect on the material inputs (improved seeds and fertiliser) needed for farming. Similarly, Tuladhar et al. (2014) also highlighted a mixed conclusion on the effect of migration and remittance on agriculture in Nepal. The result concluded that migration adversely affected agricultural yield and remittance inflows were not contributing to improving output. Most of remittance money was spent on foreign consumer goods increasing imports; hence, there were adverse impacts on the rest of the economy.

However, the conclusion of the study of Huy and Nonneman (2016) was somewhat different. They studied the relationship between migration, remittance and agricultural output in Vietnam using a Cobb-Douglas production function. The study concluded that the obtained remittances were able to compensate the loss of agricultural output caused by the reduction of labour due to migration. Hence, the inflow of household remittances increased an investment in agriculture increasing agricultural output. Remittances reduce income uncertainty, and contribute to reducing poverty in the rural area. Finally, the migration of male members reduced the supply of male labour on farm, hence increases female participation on farming, while obtained remittances could be used to lessen the problem of food insecurity.

3.4.3 Impact on savings and investment

The findings of the available studies on the impact of remittances on saving and investment in different countries are of mixed types. Haas (2007) examined the interrelationship between remittance income and social development in a broader concept. He finally concluded that there existed a complex relationship between remittance and sustainable development of a country. Sustainable development comes through the indirect multiplier effect of consumption and investment. However, the study of Chami et al. (2008) claimed that only a

small proportion of the obtained remittances were used on saving and investment, while a significant amount was spent on unproductive and status-oriented conspicuous consumption. A report of Central Bureau of Statistics also concluded that only a small fraction of remittance was saved and dedicated to capital formation in Nepal (CBS, 2011a). Faridi and Arif (2012) studied the effect of globalisation on the private and public savings in Pakistan using data from 1972 to 2010. The study concluded that remittance did have a significant positive effect on the private savings in Pakistan.

According to Nepal (2013), an increase in the likelihood of receiving remittances increased the probability of investment in land in Nepalese households. Raza (2015) investigated the impact of foreign direct investment (FDI) and workers' remittances on private savings using a co-integration approach on ARDL model. The study used 39 years' annual time series data of Pakistan from 1973 to 2011. The study concluded that there was the significant positive impact of FDI and workers' remittances on private savings in Pakistani families both in long run and short run.

The study of Lim and Simmons (2015) has concluded that remittance inflows into the Caribbean countries are mostly spent on consumption rather than investment. Hence, the receipts of remittances do not lead to the capital accumulation for growth-enhancing projects. The study has also pointed there is need for alternative policies to promote productivity and long run economic growth in these countries.

All these above studies show contradictory findings on the effect of remittances on savings and investment of household in developing countries, there is greater need to examine this area.

3.4.4 Impact of Remittances on Economic Development

There exists a very complicated linkage between remittance and economic growth. Past studies have shown mixed results. Regmi and Tisdell (2002) concluded that the remittance obtained from the rural to urban migration in Nepal had a little contribution to the rural capital formation and hence, did not contribute significantly to the development of rural areas. Similarly, Barajas et al. (2009) claimed that there existed a robust negative correlation between remittance and GDP growth of a country. Hence, remittance did not serve as a source of capital for economic development.

Unlike the study of Barajas et al., the empirical analysis by Ruiz-Arranz and Giuliano (2005) covering a large sample of developing countries showed that remittances could promote growth. Similarly, the empirical study of Adams Jr et al. (2008b) using Ghana Living Standards Survey (GLSS 5) (2005/06) showed that households in Ghana treat remittances just like any other source of income. Karagöz (2009) investigated the impact of remittance on the growth of Turkish economy using data for the period of 1970-2005. Time-series regression analysis in that study showed that remittance had had a statistically significant but negative impact on the growth of Turkish economy. Remittances like the other incomes can have a major multiplier effect when it is spent on consumption. Even if it is not invested, it indirectly stimulates output and employment.

Moreover, Osili (2007) studied the implication of remittance flows for Nigerian immigrants in Chicago on their families in Nigeria. The study concluded that the impact in the national income distribution depends on various factors such as end use of remittance flows by the families, the size of the migrated population and position of households.

In its report on the Least Developed Countries, UNCTAD (2012) has mentioned that there exists a complex and multifaceted relationship between remittances and economic growth in a country because remittances affect the economy of the recipient country in many overlapping channels. Remittance increases physical and human capital accumulation of the recipient country thus tends to increase economic development. At the same time, it reduces the supply of labour in the market that hurts production. Hence the overall development impact is ambiguous.

Similarly, Dahal (2014) analysed the effect of remittance on the economic development of Nepal. He pointed that although remittance enhanced entrepreneurship, it depressed manufacturing. It had a negative association with international exports, although, it had a positive association with financial and human capital accumulation. Hence, the study concluded that there was a combined effect of remittance on economic development. Hussain and Anjum (2014) examined the effect of workers' remittance on the GDP growth of Pakistan taking data from 1973 to 2011 using a generalised method of moment (GMM). The study showed that the association between remittance and growth of GDP is significant and positive in Pakistan.

Jawaid and Raza (2014) investigated the long run effect of remittances on the economic growth of five South Asian countries: Bangladesh, India, Nepal, Sri Lanka, and Pakistan. The

study used cross-country data for the period 1970 to 2005 in the model and concluded that inflow of remittances in these countries is less volatile than foreign direct investment (FDI) and there was a significant positive effect of remittances on the economic growth except in Pakistan, where the study found a negative effect. Similarly, the study by Hassan et al. (2016) on the long-run economic growth of Bangladesh found a U-shaped pattern. The study concluded that the effect is negative until the remittances-to-GDP ratio is 8% and positive once the remittances-to-GDP ratio is above 14 %.

Mwangi and Mwenda (2015) studied the effect of international remittances on economic growth in Kenya using World Bank data from 1993 to 2013. They concluded that international remittance was one of the significant factors for the economic growth. Similarly, Chowdhury (2016) studied the developmental impact of remittances on 33 top remittance-receiving countries from 1979 to 2011 using a dynamic penal estimation method and concluded that remittances are effective in promoting the economic growth of recipient countries.

Most of the studies agree that migrants' remittances have some indisputable welfare effects in the origin country, although some of the researchers such as Chami et al., and Barajas et al. do not agree.

3.4.5 Impact on the expenditure behaviour of households

The consumption theories of economics maintain that remittance money increases household budget and increased budget changes their spending behaviour. These theories presuppose that remittance gas a causal effect on expenditure behaviour of households. More expenditure on investment goods such as education and health yields a bigger impact on the livelihood of rural households while spending remittances on mere consumption is unproductive.

The study of Adams Jr (2005) empirically analysed the effect of receipt of remittances (both national and international) on the marginal spending behaviour of households in Guatemala. The study used data from a comprehensive national household survey conducted in 2000 and found that households receiving remittances spent less at the margin on the consumption of food, consumer goods and durables. Further, it also concluded that marginal expenditure of remittance receiving households on housing and education was more than that of the households without remittances.

The findings of Chami et al. (2008) contradicted the results of Adams. They concluded that remittances helped households to improve their welfare by lifting families out of poverty. The

study used cross-country data between the years 1970 and 2005 on the analysis and pointed that remittance was more stable over time, although, it did not bring sustained economic growth. Being fungible in nature remittance flow might develop conspicuous consumption, more dependency, and laziness in the recipients.

Similarly, the research of Parinduri and Thangavelu (2008) on the effects of remittances on consumption and saving behaviour on Indonesian families also concluded a result similar to Chami et al. The study used data from Indonesian family life survey – 2 and 3 of the years 1997/98 and 2000. The study concluded that remittance had changed the consumption behaviour, although, households had not had significant improvement in their living standard. The result also pointed out those remittance-receiving households did not enjoy better education and health. Instead, they invested more in housing and jewellery.

Unlike the previous studies, De and Ratha (2012) analysed of the economic impact of international remittances on the families of Sri Lanka and concluded that remittance was not as fungible as other sources of transfer income because the senders closely monitored it. Remittance income helped recipient families to move up the income ladder and children's human capital formation, but it did not help asset accumulation. It also showed that remittance income was not spent on conspicuous consumption by the recipient households. On the study on Sri Lanka, Sharma (2013) found a significant positive impact of remittance on the main areas such as food consumption, health expenditure, and expenses on basic non-food goods. The study concluded that it was the poorer households which gained more from international migration and remittances. The study of Mahapatro et al. (2015) also put an optimistic view that there existed a positive effect of remittances on household development. Using nationally representative data they investigated the effect of both national and international remittances on expenditure behaviour of households in three Indian states (Uttar Pradesh, Kerala, and Karnataka). Their findings pointed out that households with remittances spent less of remittance money on food and more on health and education. Based on that result they claimed that remittances enhanced the well-being of households.

Further, Airola (2007) investigated the use of remittance income in Mexico. The data came from a household income and expenditure survey of Mexico from 1984 to 2000. The study concluded that remittance-receiving households spent less of their household budget on food and more on durable goods, healthcare, and housing. Remittance income improved the welfare of households, especially of those that had income below average.

However, the study by Guzman et al. (2008) on household expenditure pattern on Ghana concluded a mixed result. They pointed out that female-headed households allocated a larger percentage of expenditure on food and education, and a smaller percentage on consumer and durable goods, housing and other items. As the remittance income of the households was fungible, it was very difficult to determine its effect on expenditure.

Likewise, Adams and Cuecuecha (2013) analysed the effect of remittance on the marginal expenditure behaviour of households in Ghana. The study used the Ghana Living Standard Survey 5 (2005/06) to examine the effect of remittance on a broad range of consumption and investment goods. It concluded that the receipt of remittances reduced household poverty and households receiving remittances spent less at the margin on food but more on education, housing and health. In his study on international migration, remittance and well-being of the households in western provinces in Sri Lanka, Sapkota (2013) concluded that the impact of migration and remittance was significant on food, health and other non-food items.

Similarly, a study by Castaldo and Reilly (2015) concluded that the consumption pattern on Albanian households that received internal remittances was not statistically different from those that did not receive such money. Those receiving international remittances spent a lower share of their expenditure on food and a higher share on consumer durables in comparison to the households that did not receive any remittances. Hence, remittances, if spent on housing, education, and health, had a positive effect on employment and development.

3.5 Remittance and Human Capital

3.5.1 Introduction

According to Smith (1776), human capital is the acquired and useful ability of the members of a society that increases through training, education and experience. Schultz (1961) an American economist, is widely renowned for his pioneer study on human capital. He proposed a human capital theory in 1961. He concluded that the miraculous economic recovery of Japan and German after the Second World War was possible due to a healthy and highly educated population. Becker (1962), one of the foremost exponents of the study of human capital, concludes that education, training and sound health increases the productivity and income of workers. An investment in it increases ability and productivity and hence raises earnings of the individual and society in general.

UNDP (1990) expressed the view that the real wealth of a nation is its people. Hence, development must focus on the people to improve their health, knowledge and skills. Any expenditure on education, training, medical cares are investments in human capital. Lack of access to any one of them poses a significant barrier to the development of a person. A change in demographic structure, a sudden and unexpected natural/ human created shock could be responsible for a shift in the stock of human capital composition.

Similarly, Hanushek (2013) points that human capital is a driving force of economic growth in developing countries. He further argues that there is undue attention on school attainment in such countries without improving the quality of schooling and will find it difficult to improve their economic performance in the long run. Sound health, better education, quality training, and the skills acquired by the people play a crucial role in easing their day-to-day life and play a pivotal role in the development of the country itself. Better provision of education and health facilities raise the level of human capital level of a person, family, community and country.

Koska et al. (2013) analysed the impact of migration and remittance on the human capital formation of Egyptian children using different OLS models and instrumental variable techniques. They concluded that there is a significant association between remittances and the human capital formation in children. A higher probability of receiving remittances increases the likelihood of a child being enrolled in a school and less likelihood of him/her being involved in child labour.

3.5.2 Impact of remittance on child welfare

This study takes the health and education level of children as a measure of child welfare and the proxy of human capital of children. The relationship between human capital asset and remittance is dynamic and changing over time. It is not unsurprising that the earnings of parents influence the health and education of the children. Remittance income of a household is different from other types of financial flows because it is purely private and is jointly determined and controlled by the sender and the recipient. Better management of available resources and investment in human resources is likely to be associated with the better well-being of family members in future.

In theory, the relationship between migration and schooling of the children is ambiguous. It is often argued that unlike earned income, remittance income may have adverse consequences because the departure of an adult member may disrupt family life as it reduces the number of

adults in the home. It may increase the responsibilities of older children to assist in running and supporting the household. Hence, older children may find it difficult to remain in school (McKenzie and Rapoport, 2011). Similarly, the study by Acosta (2011) concluded that the impact of remittance in child schooling was not significant in El Salvador. The study further points out that the impact is different by gender and age of the child. It showed that the receipt of remittances reduces labour activities and increases school attendance of girls. Unlike girls, the boys were not benefitted from remittances as household work activities disrupted their schooling.

A clear majority of the studies have shown that there exists statistically significant positive effect of migration and remittance on education and health of children at the origin (Maitra and Ray, 2004; Antón, 2010; Binci and Giannelli, 2016). Similarly, a study by Acharya and Leon-Gonzalez (2014) showed various effects of the migration–remittance process on the educational attainment of Nepalese children. It suggested that children from more educated parents suffered from parental migration, although children from less educated parents benefitted.

A study by Binci and Giannelli (2016) focused on the effect of remittance on child schooling and labour in Vietnam. Using datasets from the Vietnam Living Standards Surveys of 1992/93 and 1997/98, they made a comparison between remittance receiving and non-receiving households. The study concluded that remittances increased child schooling and decreased child labour in Vietnam.

3.5.3 Effect of remittance on child schooling

Several recent studies (Edwards and Ureta, 2003; McKenzie and Rapoport, 2011; Bouoiyour and Miftah, 2016) analysed the effect of remittance on household investments in children's schooling on different aspects such as enrolling children in school, attendance of children at school, school retention rates of the children, and schooling on private or government schools in developing countries. In their studies, Edwards and Ureta (2003) used the Cox proportional hazard model to examine the effect of remittance on child schooling in El Salvador. The study found that remittance income had a large, significant and positive impact on school retention rates of the children. Remittances caused a larger reduction in the hazard of leaving school than any other type of income.

Similarly, in her study Mansuri (2006a) explored the relationship between temporary economic migration, remittance and investment in child schooling in rural Pakistan. She

concluded that there was a large positive effect of remittance on human capital accumulation. Remittances tended to decrease the inequality between boys and girls in access to education. Also, female headship caused by the male migration appeared to protect the boys at the cost of girls.

In an empirical study, Alcaraz et al. (2012) made a comparison between remittance recipients in Mexico from the US before recession crisis of 2008 with never-recipient households to determine the effect of remittance in child labour and school attendance. After controlling for selection problems, they used differences-in-differences to evaluate the effect. They found that negative shock (a reduction) of remittance significantly decreased the school attendance of children and increased child labour in Mexican children.

Moreover, Bouoiyour and Miftah (2016) investigated the effect of remittance in children's human capital accumulation in Morocco. Using an extensive data from the households' living standard survey 2007, they estimated the effect of remittance on some key variables such as school attendance, school dropouts and non-school attenders. The findings of the study confirmed that children from remittance receiving households were more likely to attend a school and less likely to drop-out. The study also pointed out that remittances helped the recipient households to reduce the level of girls not schooled. Hence, the study concluded that remittances contributed to increasing human capital accumulation in Morocco.

3.5.4 Effect of remittance on child health

Child health is one of the important components of household well-being. The receipt of remittances may improve the health of the next generation by improving their access to nutrition and health care. Valero-Gil (2009) focused his analysis on the impact of remittance on the share of health-related expenditure in Mexico. After setting controls for the household's total per-capita spending, the study used Tobit model with random effects to estimate the impact. The result concluded that there was a significant effect of remittance on health outcome for those households that did not have health insurance. The contribution to remittance on health outcome was estimated to be 10 %. Similarly, Antón (2010) analysed the impact of remittances on the nutritional status of children (less than five years) in Ecuador. The study used a weight for age z-score (WAZ) as a short-term measure of the nutritional condition. The study found the significant positive effect of remittance income on short and middle-term child nutritional status.

In an empirical study, Headey and Hoddinott (2015) studied about the causes of the rapid decline of malnutrition in the Nepalese children analysing the data of 2001, 2006, and 2011 rounds of Nepal's Demographic Health Surveys. The study found that migration-based remittances is one the factor in the reduction of undernutrition of the children.

3.6 Summary of the literature review

Remittance, an additional fund for the household budget to spend on different bundles, impacts the households and the communities of the origin country in a number of different ways. The remittance money does not impose any burden on the taxpayers and directly goes to the households, and is readily available for expenditure. In fact, when migrants send remittances at home, it is included in the household budgets and hence, alters the behaviour of household spending. Using NLSS data of 1996 and 2004, Wagle (2012) examined the socioeconomic implications of foreign remittance in Nepal. The result indicated that foreign remittance helped to increase household income sizablely and to reduce poverty and income inequality marginally. His findings also showed that smaller families from lower socioeconomic backgrounds with less asset-holdings were likely to receive less remittance.

Although some of the evidence show a mixed or negative effect, most of the literature studies discussed above find a significant positive impact of remittances on the reduction of poverty alleviation, the growth of the economy, agricultural production, expenditure behaviour of households, and human capital formation. The remittances obtained from abroad may relax constraint on a household's income and raise it to allow children to complete more schooling, although migration of parents may also increase the household responsibility of older children hindering their progress. The table below shows a summary of the studies and their findings.

Table 3:1 Findings of the studies on remittance and expenditure behaviour

Study	Country	Data/Period	Estimation method	Instrumental Variables	Main Findings
Edwards and Ureta (2003)	El Salvador	Annual household survey (1997)	Cox Proportional Hazard Model	No	Remittance has large, significant effect on school retention
Acosta (2006)	El Salvador	Cross-sectional household Survey (1998)	Robust Regression	Village and Household Network	Additional income from migration reduces women's labour supply and increases girls' education

Study	Country	Data/Period	Estimation method	Instrumental Variables	Main Findings
Lu, Y. (2013)	Indonesia	Indonesia Family Life Survey 1997 and 2000 waves	Fixed Effect Regression	--	Women are more likely to allocate more resource than men from migration
Adams and Checuecha (2010a)	Guatemala	Guatemala ENCOVI 2000 Survey	Two Stage Multinomial Model	Distance to railroad, Rainfall shock 1990 and employment creation rate with age of HH	Household receiving international remittance spend less at the margin on food but spend more on education and housing
Amuedo-Dorante & Pozo (2010)	Dominican Republic	Latin American Migration Project survey (LAMP-DR7)	Two-stage linear probability model	Unemployment rate and average real earning in the US	Migration negatively impacts school attendance of children
Alcaraz, Chiquiar and Salcedo (2010)	Mexico	Mexican national occupation and employment Survey (2008/ 09)	differences-in-differences estimation approach	Remittance	The negative shock on remittance causes a significant increase in child labour and a significant reduction of school attendance.
Antman (2012)	Mexico	Mexican migration project (MMP) 1982-83 and 1987-2007	fixed-effects estimation Method		Parental US migration significantly increases the educational attainment of girls more than boys.
McKenzie and Rapoport (2011)	Mexico	Encuesta Nacional de la Dinámica Demográfica (ENADID) 1997	Maximum likelihood Estimation (bivariate IV-probit model)	historical rates of migration	Significant negative effect of migration on schooling attendance and attainments
Prabal K. De & Dilip Ratha (2012)	Sri Lanka	Sri Lanka Integrated Survey (1999–2000).	Ordinary least squares and Probit model	No IV but uses bias-adjusted matching estimators	Remittance income has a positive and significant effect on children health and education
Koska et al. (2013)	Egypt	Egypt Labour Market Panel Survey 1998 to 2006 (ELMPS)	OLS/ modified OLS with regional fixed effects /IV method	average oil supply (2002–06) in Arab countries with Egyptian migrants	Significant association between remittances and human capital formation

Study	Country	Data/Period	Estimation method	Instrumental Variables	Main Findings
Mansuri, G (2006a)	Pakistan	Pakistan Rural Household Survey (PRHS) 2001/02	OLS Regression function with IV method	the prevalence rates of migration at the village level	Effects of temporary economic migration on human capital accumulation are highly significant
Hu, F. (2013)	China	Gansu Survey of Children and Families (GSCF) 2004	OLS function with IV Method	Migration network (village level and family chain)	A significant adverse effect on the performance of girls' education but not boys
Salas, V. B. (2014)	Peru	National Survey of Households (2007 to 2010) Panel Dataset	Random-Effects Probit model and Pooled - Probit with IV	Historical migration rate	After controlling for absenteeism of parents, international remittances have a positive effect on the education of children.
Aubrey D. Tabuga (2008)	Philippines	Family Income and Expenditure Survey (FIES) and the Labour Force Survey (LFS)	Seemingly Unrelated Regression (SUR)	Percentage of migrant workers per province in 2001	Overseas remittances tend to increase the spending of Filipino families in basic household needs
Lopez et al. (2005)	Mexico	Mexico National Rural Household Survey (2003)	Gini coefficient	---	Although remittances have a positive effect on income inequality, international remittance is more efficient than internal remittances in reducing poverty in Mexico.
Ebeke, C. H (2012)	a sample of 82 developing countries	Compiled Data (ILO from 1950 from 172 countries)	An econometric equation between remittances, financial development and child labour	the cost of sending back remittances and the existence of dual exchange rate	Remittances significantly reduce the prevalence of child labour in developing countries
Adams Jr, R. H. & Cuecuecha,	Ghana	Ghana Living Standards Survey (GLSS 5) 2005/06	Two-stage multinomial selection model	The rate of job creation at destination times	Households receiving remittances spend less at the margin on food and

Study	Country	Data/Period	Estimation method	Instrumental Variables	Main Findings
A. (2013)				age of family head and distance to the nearest railroad station built in 1930 times the age of household head	more on investment goods: education, housing, and health.
Hildebrandt & Mckenzie (2005)	Mexico	Encuesta Nacional de Dinámica Demográfica (ENADID) 1997	Two-stage least squares (2SLS) estimation	State-level migration rates in the US	Migration from Mexico to the U S results in lower rates of infant mortality and higher birth weights

Although most of the above studies conclude that remittances have important consequences on all aspects of rural livelihood, the main research questions of the current study are not fully addressed in the existing literature. Clearly, there is a growing need to extend the scope of these studies to examine the impact of remittances on expenditure behaviour of households by using larger, nationally representative samples.

3.7 Studies in Nepalese context

Although some of the researchers have studied the inflow of remittances and its impact on different sectors, the end use of remittances is not widely discussed in Nepalese context. Most of these studies have concentrated on the impact on poverty, inequality and child education. This section shows the relevant literature in Nepalese context. The following table indicates the name of researchers, data, study period, the estimation methods and main findings in brief of these past studies.

Table 3:2 Empirical findings of past studies in Nepalese context

Study	Data/Period	Estimation Method	Instrumental Variables	Main Findings
Bansak and Chezum (2009)	Nepal Living Standard Survey (2003/04)	Instrumental variable model	Past literacy rate and political unrest by district	Positive net remittance increases probability of young children being in school

Study	Data/Period	Estimation Method	Instrumental Variables	Main Findings
Vogel, A and Korinek, K. (2012)	Nepal Living Standard Survey (2003/04)	Ordinary least square using control variables	No	Household remittances are spent disproportionately on boys
Lokshin et al. (2010)	Nepal Living Standard Survey (1995/96) and (2003/04)	Full Information Maximum Likelihood (FIML)	the proportion of domestic and international migrants in ward in 2001	One-fifth of the poverty reduction in Nepal occurring between 1995 and 2004 is due to remittance of the migrated workers
Acharya, C. P. & Leon-Gonzalez, R. (2014)	Nepal Living Standard Survey NLSS-I (1995–1996) and II (2003/04)	Multinomial Logit (MNL) models	Migration networks	The children of more educated parents suffer from parental absence, while the children of less educated parents gain from migration.
Lokshin, M. & Glinskaya, E. (2009)	Nepal Living Standard Survey(NLSS-II) 2003/2004	full information maximum likelihood method		The migration of male has a negative impact on the level of female participation in the labour market
Nepal, R. (2013)	A sample of 542 households from Jhapa and Sunsari districts of Nepal (2009)	Logistic regression	No	Remittance has increased food expenditure and has a significant role on health expenditure but no role on education expenditure.
Regmi, T. and Tisdell, C. (2003)	National Migration Survey 1996	Tobit and Probit Models	No	Remittance does not help long term capital formation in rural area
Milligan, M. and Bohora, A. (2007)	NLSS-II (2003)	Heckman's two-step analysis.	Fitted values of remittance and non-remittance income	Remittance has a positive contribution to child welfare in Nepal.

Study	Data/Period	Estimation Method	Instrumental Variables	Main Findings
Wagle, U. R. (2009)	NLSS-II and NLSS-III	Generalised least square (GLS) method and simultaneous equations	No	remittance income has helped to reduce both poverty and inequality in Nepal
Sapkota, C. (2014)				There exist remittance-induced Dutch disease effects in Nepal.
David. S., Adhikari J., and Gurung, G (2002)				Uneven flow of remittances into Nepal has contributed to growing social inequalities, both in regions and social classes.
Karki Nepal (2015)	Nepal Living Standards Survey (NLSS) 2010	Fixed effect model	Yes	Remittance leads to a significant increase in non-food expenditures, including education spending.
Bhatta (2011)	Monthly data (import, export, remittance and trade deficit) of Nepal Rastra Bank (NRB) from 08/2001 to 05/ 2011	Vector Error Correction Model (VECM)	No	Remittance increases merchandise import and deteriorates trade balance in the long run.
Nepal Rastra Bank	459 households of 12 VDCs of Dhanusha district, Nepal	Propensity score matching (PSM)	No	Households with remittances spend more in health and education of family members.
Bohra-Mishra (2014)	Chitwan Valley Family Study	Heckman probit model	social network	Decision to remit is motivated by semi-altruism and pure self-interest

Study	Data/Period	Estimation Method	Instrumental Variables	Main Findings
Nepal (2016)	NLSS-III (2010/11)	OLS and IV methods	Percentage of exchange rate between Nepal and host country	Child educational expenses has incresed with the receipt of international remittances although educational outcomes are not improving.

The focus of this study is to examine the impact of remittance on the economic development through a change in expenditure behaviour and human capital. A report on the Nepal NLSS-III survey shows that 78.9% of total remittance is spent on consumption, 7.1% to pay off loans, 4.5% on the household property and 3.5% on education. Only a tiny fraction 2.4% is spent on capital formation (CBS, 2011a). Hence, in recent years consumption has been the main driver of economic growth in Nepal.

3.8 The gaps in literature

Although, in the past two decades, a significant number of researches have been conducted on the consequences of migration and remittances both on micro and macro levels; relatively little has been done to describe or analyse the impact of migration and remittance in the expenditure pattern of households on different bundles of goods. Most of the past studies focused on poverty (KC, 2003; Lokshin et al., 2010; Wagle, 2012) and the impact on the education of children (McKenzie and Rapoport, 2011; Acharya and Leon-Gonzalez, 2014). None of these studies, however, covered the impact of remittances on expenditure behaviour of the households' in Nepal. Moreover, most of them are fragmentary that cover only a small area or these studies are based on Nepal Living Standard Survey-II (NLSS-II) conducted on 2003/04. This study makes a comparison of household expenditure between remittance receiving and non-receiving households in Nepal. Although most of the studies conclude that remittances have significant consequences on both micro and macroeconomic level, the main questions of the current study are not fully addressed in the existing literature. In this context, this study tries to fill existing research gaps in the literature on the expenditure behaviour of the households with recently published data NLSS-III.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter reviews common challenges faced by researchers interested in measuring the impact of migration and remittances on income, expenditure, poverty, human capital, and economic development. This chapter is mainly on methodological issues and discusses the empirical econometric models that will be used in this study for the analysis of the impact of remittances on spending behaviour and human capital investment. The equation of interest is the 'treatment effect' of remittances on different outcomes.

The chapter commences with the conceptual and empirical challenges. Section 4.3 presents the methodological issues in the study of the impact of remittances, while Section 4.4 discusses quantitative methods used in past research. Section 4.5 provides a description of causal effect models while Section 4.6 presents the description of the treatment effect model. Section 4.7 presents the mathematical model used in the study while section 4.8 outlines the independent variables. Section 4.9 discusses the empirical form of the econometric model used in this study. Section 4.10 discusses the assumptions of the treatment effect model. Finally, Section 4.11 presents the post-estimation tests that can be used in treatment effect models.

4.2 Conceptual and Empirical Challenges

Migration is a very broad and complex phenomenon that includes refugees, asylum seekers and the internationally displaced people. This study does not distinguish between 'forced' and 'voluntary' population movements within and outside their country of origin. Migration of individuals is always a dynamic phenomenon; hence, the remittance received by a household is also dynamic in nature. It is useful to examine the change in the expenditure behaviour of a household that is caused by the receipt of the remittance. As pointed out by McKenzie and Sasin (2007), the most common conceptual and empirical challenges in measuring the impact of migration and remittance on income, poverty, and expenditure of households are definition and classifications of some of the concepts, harmonisation of the research questions and the proper design of methodologies.

4.3 Methodological issues

A precise measure of the impacts of remittance on expenditure behaviour requires a comparison of the well-being of households with remittance with the counterfactual situation of their welfare if they had not obtained any remittances. There are many methodological challenges when a cross-sectional household data is used in the study and the obtained result may be biased. A bias is a difference between the original value of a variable (Y) and its estimated value E(Y), i.e.

Bias = Y – E(Y).

In this study, the most common problems that cause a biased result are i) simultaneity ii) reverse causality iii) selection bias and iv) omitted variables bias. These are discussed under the following headings:

4.3.1 Endogeneity problem

When a regressor (x) correlates with the error term (u), it is said to be endogenous. In such a case, the error term (u) affects the regressor (x) and therefore has an indirect effect on the dependent variable (y). This problem may arise due to both simultaneity bias and omitted variables. The unobserved economic shocks such as loss of job at home, illness of a household member, loss of crops due to drought or flood, and natural disasters can simultaneously affect the receipt of remittances and the expenditure behaviour of households. Similarly, the other variables such as the sender–receiver relationship and past migration experience of the household member may cause endogeneity in an econometric model with expenditure behaviour as an outcome and the receipt of remittance as a treatment. The Hausman test is often used to check either a regressor is endogenous (Katchova, 2013).

4.3.1.1 Simultaneity

Households take many decisions simultaneously. For example, a household may decide to send one of their members for a foreign job, and at the same time, send one of the daughters to school. Hence, the variable that affects the probability of receiving remittances may also change the education expenditure. Thus, the variable influences both the receipt of remittances and expenditure pattern of households.

4.3.1.2 Omitted variables bias

Sometimes a lack of data may lead to the omission of an important variable even when economic principle prescribes it. The omission of an important variable from a model leads to an estimator to be biased. Such a bias is called as omitted-variable bias (Hill et al., 2012). NLSS-III survey data does not provide any information of the economic shocks such as loss of job of members at home, crop loss due to unfavourable weather conditions and so on. These omitted variables may affect the probability of receiving remittances leading to the bias on the result obtained.

4.3.2 Reverse causality

When there exists a two-way relationship between the independent variables (x's) and the dependent variable (y), reverse causality may appear. In this case, the dependent variable (y) also has an effect on some of the independent (x) variables. Such two-way relationship leads to the endogeneity problem in the model. In a developing country like Nepal, the remittance obtained reduces the level of poverty and the level of poverty also affects the receipt of remittances.

4.3.3 Selection bias

Selection bias is one of the fundamental problems in the studies on the change in the households' expenditure behaviour due to remittances. This issue exists if the remittance receiving households have different unmeasured characteristics (e.g. skill, motivation, and ability) from that of their counterparts not receiving remittances. It can cause the resulting statistical analyses of the data to be distorted. An econometric model can obtain a better result if all unobservable characteristics are controlled. In a binomial logit model, the selection bias problem is usually addressed by using the method proposed by Dubin and Mcfadden (1984), the semi-parametric approach proposed by Gordon (2002), the method suggested by Lee (1983) and the method of Monte Carlo experiments. Bourguignon et al. (2007) have shown that the approach used by Dubin and MacFadden and Monte Carlo experiments provide fairly good corrections for the outcome equation. The chosen model must be in a proper functional form so that it provides a good statistical fit to a wide range of goods, captures the change in the marginal propensities of the expenditure and satisfies the criterion of additivity (Adams and Cuecuecha, 2010b).

To meet these methodological issues the following methods are often used: Panel data using repeated observations on the same household over two or more time periods, 'natural experiment' that uses an exogenous shock from 'nature', and construction of counterfactual situation or the use of propensity score matching. Use of randomised experiment creating a control group, use of OLS method like the two-stage Heckman model and use of the Instrumental variable (IV) method are also commonly used to minimise the errors that arise from the methodological problems relating to migration and remittances (Adams, 2011). The instrumental variables (IV) method is one of the empirical methods used to deal with the endogeneity problem of a regression model.

Several approaches have been developed over the years to measure the change in spending behaviour caused by the migration and remittances (Göbel, 2013; Bertoli and Marchetta, 2014). In the Nepalese context, the effect on the educational outcomes of children remains an empirical question as there are comparatively little research studies. The younger children, who are still in school, may be affected more positively by the parental migration experience than the older ones.

4.4 Quantitative Research Methods

For a long time, migration and remittance studies have been studied by both qualitative and quantitative survey methods (Iosifides, 2011). In a qualitative approach, different methods such as focus groups, participant observation, and qualitative interviewing are most often used whereas the quantitative method uses sophisticated mathematical models. Although, both methods are very efficient for examining the effect of migration and remittance in development perspectives and can contribute to more effective policy formation in rural development and livelihood studies, this study is based on regression based qualitative research method.

Regression models are the commonly used in data analysis to estimate the effect of predictor variables on the outcome variable. Several researchers have studied the effect of migration and remittances on the families left behind in developing countries using regression models (Amuedo-Dorantes and Pozo, 2010; Antman, 2012; De and Ratha, 2012). In estimating the effects on expenditure pattern, it is common to use various econometric models such as Robust Regression, propensity score matching (PSM), hazard models, instrumental variables (IV), fixed effect regression model, simultaneous equations models and two-stage

multinomial models. All these methods aim to reduce common problems that arise in the estimation of migration and remittance models to estimate unbiased and consistent estimators.

Many researchers have used different econometric methods to estimate the effect of remittances on expenditure and child welfare. Tabuga (2007) used quantile regression to estimate the effect of remittance in the spending behaviour of households in the Philippines. Adams and Cuecuecha (2010a) used the instrumental variable (IV) approach to estimate the impact of international remittance on household consumption, investment and poverty in Indonesia. Vogel and Korinek (2012) examined the utilisation of remittance on child schooling in Nepal using ordinary least squares (OLS) regression analysis. Edwards and Ureta (2003) used the Cox proportional hazard model to examine the impact of remittances on school retention rates of children in El Salvador. Nepal (2013) used a logistic regression model to estimate the determinants of migration and remittance in Nepal. Acosta (2006) and Bouoiyour and Miftah (2015) examined the impact of remittances on human capital formation in the children using a probit regression approach. Mansuri (2006a) used OLS Regression function with IV method to estimate the effect of migration and remittances on school attendance and child labour in rural Pakistan. Lokshen et al. (2007) used the full information maximum likelihood (FIML) method to analyse the effect of work-related migration on the poverty of Nepal. Antón (2010) used a two-stage least square (2SLS) method to estimate the impact of remittances on young children in Ecuador. The choice of statistical tool for modelling remittance expenditure depends the on the characteristics of households and the assumptions made about the migrants' behaviour. It also needs proper identification of the effects of the household variables such as age, education, gender and the other family composition, which are likely to affect both remittances receipt and expenditure directly and indirectly.

4.5 Causal effects models

Neyman (1923) and Fisher (1935) put forward the concept of causal effects models for the comparison of potential outcome in randomised experiments. Rubin (1974) and Heckman (1992) formalised it as a widely acceptable econometric model in the observational studies on social and health sciences. Rubin put forward treatment assignment mechanism in empirical work and potential outcome as a measure of causal effect. Causal effect models try to analyse the cause-and-effect relationship between two variables in social science studies. The cause is

an intervention that influences the outcome variable. In the causal effect model the alternative states of the cause is called as treatments.

This study takes the receipt of remittances as the cause that affects the expenditure behaviour of households and child welfare as outcome variables. It analyses the causal effect of the receipt of remittances on the expenditure behaviour and well-being of children. The model tries to answer the questions: does the receipt of remittances bring a change in expenditure behaviour of the household? Moreover, if the receipt of remittance brings a change of spending behaviour, how large is the effect on different bundles of goods. In this study, each household is exposed to one of two alternative states of the cause: with remittances or without remittances. There are two potential allocation of budget share on each bundle of goods: one if households receive remittance and the other if they do not receive it. That means each household has a potential outcome in both treatment levels, although each household has an observed value only in one treatment level. For a remittance receiving household we know its budget share on different bundle of goods, although we will never know what would be the allocation of the budget share if it had not received any remittances. Similarly, for a remittance non-receiving household, we will never know what expenditure the household would have allocated in these bundles if it had received remittances. Some of the common regression methods that are used for the analysis of causal effects are: matching estimators and regression based treatment effect models.

4.5.1 Matching estimators

Matching estimators are the most common type of methods used for the estimation of the treatment effect on the outcome variable. Matching estimators use propensity scores to match the observations between control and treated groups. Rosenbaum and Rubin (1983) have defined propensity score of an individual as a conditional probability of assignment to a particular treatment (t = 1) versus non-treatment (t = 0) given a vector of observed covariates. Treatment is a binary variable with value 1 for the treated group (that receive treatment) and 0 for the controlled group (that do not get treatment).

At first, the propensity score of each observation both from the treated and control group is calculated. Next, for each of treated group (*i*) we find matches from the controlled group (*j*) with similar propensity score using some matching algorithm. The most common types of matching estimators are exact matching, nearest-neighbour, difference-in-differences matching, and radius matching.

These estimators are used for observational data to compute the average treatment effect (ATE) and average treatment effect on the treated (ATET) by computing the mean difference between the observed and potential outcomes for each. This approach can be used to evaluate the impact of migration and remittance on expenditure behaviour of the migrated families. After controlling for selectivity bias, several researchers (Clément, 2011; Dey, 2015; Mahapatro et al., 2015) have used matching estimators to analyse the effect of remittances on expenditure behaviour of households. Bertoli and Marchetta (2014) have used propensity score matching to study the effect of migration on poverty in Ecuador. Similarly, Clément (2011) has used propensity score matching to analyse the effect of remittances on expenditure pattern of households in Tajikistan. Similarly, in a study, the central bank of Nepal (NRB) (2012) used propensity score matching method to estimate the impact of remittances on various socio-economic dimensions of remittance receiving households in the Dhanusa district.

The main advantage of matching estimators is that they are nonparametric and do not need any explicit functional form for either the outcome model or the treatment model. The main drawbacks of matching estimators are that they control only for observed variables and need sufficiently large dataset.

4.5.2 Regression-based model

In the study of remittances and expenditures, researchers mostly use one of two following approaches. Firstly, studies based on household survey data mostly rely on the answer to the questions about the “uses of the remittances received". This method ignores that remittance is a part of household income and that household income is fungible. When households receive remittance, it increases their expenditure budget and hence, affects their expenditure in all different bundles of goods simultaneously, not just the one or two items mentioned in the answer. Second, in some econometric analysis the amount of remittance received is included in the set independent variables. This activity may cause endogeneity in the model because variables such as education of migrants may affect both the receipt of remittance and expenditure behaviour. Due to the endogeneity, the result may be biased and inconsistent. This study will use treatment effect model to overcome the problems of missing data and endogeneity. Treatment effect models are counterfactual models that are used to estimate the impact of causal effect. In this study, the empirical models try to answer the questions such as:

If the households without any remittances had instead obtained any remittances, how much would their proportional expenditure on different bundles of goods have changed? If the households that are receiving remittances had not obtained any remittances, how much would their proportional spending on different bundles of goods have changed?

4.6 Treatment effect model (TEM) inverse probability weight

Let us consider that a household that did not receive any remittances so that its observed per capita expenditure shares on a bundle of goods (such as food) will Y0. Its share of expenditure on that bundle would be Y1 if it were receiving any remittances. The value Y1 is the potential outcome or counterfactual for that household. For a household that did receive remittances, we observe Y1. Hence, Y0 would be the counterfactual outcome for that household. Thus, there exists a missing-data problem, so we can never find the actual effect on the outcome variable. There may be systematic differences in some characteristics between these two treatment groups. These problems complicate the analysis and the result obtained may be biased. In this study, inverse probability weight (IPW) is used in the treatment-effect method (TEM) to address the missing data problem. The selection of econometric model is based on past studies, theoretical guidelines, and construction of the variables in the dataset in NLSS-III survey.

The treatment effect model is composed of two equations: one for the outcome variable and other for the treatment variable. The outcome variable may be continuous, binary, count, fractional, and nonnegative while the treatment variable may be binomial or multinomial. This study takes the receipt of remittance as the treatment, and the households are divided into two groups: receiving remittances and those receiving no remittances at all. The outcome variables for the analysis of the expenditure behaviour of households are the per-capita shares of spending on a different bundle of goods (food, housing, consumer goods and durables, education, health, and others).

Although the treatment effect model is based on Heckman's two-stage selection model, there are two important differences between these two models. First, in the treatment effect model the treatment variable enters into the regression and second, the outcome variable is observed in all levels of treatment conditions (Guo and Fraser, 2014). The use of the treatment effect model in the study of the impact of remittance on household expenditure pattern and child welfare has the following advantage compared to the other econometric models:

First, the treatment effect model (inverse probability weight with regression adjustment) allows very flexible specifications. Although, the model requires us to make two models: one for treatment model and other for outcome model, only one of them requires to be correctly specified. If either the treatment model or the outcome model is correctly specified, the model gives correct estimates.

Second, in this study, the treatment effect model makes use of all the available information of about the expenditure behaviour of households and child welfare.

Third, the model estimates the potential mean for the treated group, control group and whole population. Hence, it is easy to make a comparison between the control group and the treated group.

Fourth, the treatment effect model estimates first stage selection equation (probability of receiving remittances) using a nonlinear binomial probit method. Hence, there is no need to estimate separate equation for the determinant of the receipt of the remittances.

4.7 Mathematical Model for the Study

A proper functional form of an appropriate econometric model is necessary to analyse the expenditure behaviour of remittance receiving and non-receiving households. As pointed out by Adams and Cuecuecha (2010b) a proper functional form should fulfil the following criteria:

First, it must provide a good statistical fit for a different variety of goods. Secondly, it must capture the changing behaviour of the average propensities of spending on a broad range of goods.

Although various functional forms fulfil these criteria, this study follows the treatment effect model. In this method, after conditioning on the covariates, the estimators make the outcome conditionally independent of the treatment (Imbens and Wooldridge, 2009). The procedure of the treatment effect model is based on the conditional expectation which gives consistent estimates that are asymptotically efficient for all parameters in the model.

This study analyses the impact of remittances on the expenditure behaviour of households; expenditure data is more useful than income data. Also, in an agriculture-dominated economy like Nepal, it is difficult to define and measure the various incomes obtained from agriculture. Most of the household members are engaged in production and consume most of what they

produce. Finally, as pointed out by Salas (2014), there may exist multicollinearity problem between income and remittances because the amount of remittance sent to the origin country is related to the household income.

In this study, inverse probability weighting (IPW) method is used for the estimation of the model. IPW estimators use weighted averages of the observed outcome to correct for the problem of missing data. Here, the expenditures of households are given, some receiving remittances and others not. The outcome variable (i.e., per capita expenditure shares) is observed in both groups (receiving no remittances and receiving remittance). The expenditure behaviour of the households' is an individual choice that is determined by many factors; the binomial treatment variable (receiving remittances vs. no remittances) may be endogenous and should be modelled first. Without modelling this treatment variable first, the regression of the expenditure showing the impact of remittances would be biased, regardless of whether the regression model controlled for covariates such as household characteristics or socioeconomic variables.

4.7.1 The econometric model

Causal inference from observational data involves two stages. At the first stage, an expression that relates to the treatment variable is obtained. At the second stage, the parameters of the variables involved in outcome variable are estimated, that ultimately results in an estimate of the intervention parameter of interest. The econometric model can be written as:

$$Regression\ equation: y_i = x_i\beta + w_i\delta + \varepsilon_i$$

$$Selection\ equation: \quad w_i^* = z_i\gamma + u_i, w_i = 1\ if\ w_i^* = 1\ and\ w_i = 0\ otherwise$$

$$Prob(w_i = 1|z_i) = \Phi(z_i\gamma)$$

$$and \qquad Prob(w_i = 0|z_i) = 1 - \Phi(z_i\gamma)$$

where,

x_i: Vector of independent variables in the outcome equation

y_i: Dependent or the outcome variable (the expenditure share on different bundle of goods and child welfare) on which the study wants to assess a difference between treated and control groups

z_i: Vector of independent variables in the selection equation that determines the selection process

w_i*: Latent variable (treatment variable that denotes intervention condition)

$$when\ w_i^* > 0, w_i = 1\ and\ y_i = x_i\beta + (z_i\gamma + u_i)\delta + \varepsilon_i$$

$$and \qquad when\ w_i^* \leq 0, w_i = 0 \quad and \quad y_i = x_i\beta + \varepsilon_i$$

$\Phi(.)$: Standard normal cumulative distribution function.

This treatment effect model can be estimated in a two-step procedure either by using two-step estimator or by using a maximum likelihood estimator (Guo and Fraser, 2014).

4.8 Functional form of the model used in the study

The study uses the model of Dubin and McFadden (1984), followed by Adams and Cuecuecha (2010) and subsequent studies. At the first stage, treatment model is estimated using a binomial logit and inverse-probability weights are estimated for each treatment level. At the second stage, the estimated inverse-probability weights are used to fit the weighted regression models of the expenditure bundles for each treatment levels. Finally, it computes the means of the treatment-specific predicted outcomes. If the same variables are selected both in the treatment equation and outcome equation, it leads to multicollinearity in the model leading to poor estimates of the parameters (Berk, 1983). The functional form used in this model can be outlined as following.

4.8.1 First stage: Treatment effect model (Receiving Remittances)

The treatment is a binary variable: households with no-remittance (0) and households with remittances (1). The first stage treatment effect model will be a binomial probit model.

The functional form of this model is as:

$$Prob(R_j = receive\ remittances) = f(M_j,\ Z_j,\ \mathrm{I}_j) \quad \ldots \qquad (i)$$

where,

M_j: a variable that gives the number of family members that have migrated from a household.

Z_j is the characteristics of the j^{th} household. It includes family size, the gender of the household head, the age of household head, education of household head, whether the household owes loans.

I_j: Instrumental variables (Political unrest in Nepal during the Maoist conflict, Historical migration rate by district, Educational level by the district in 2001, and Ethnicity and Caste).

This study uses inverse probability weights (IPW) to estimate the likelihood of a household being in the observed treatment group.

4.8.2 Second stage: Expenditure share equation

Although the outcome variable may be continuous, binary, count, fractional, or nonnegative, this study uses the proportion of expenditure shares as the outcome variables for the analysis. The model assumes budget proportion of different basket of goods (C_i) is linearly related to the logarithm of total expenditure. This can be written as:

$$\frac{C_i}{Y} = \beta_i + \gamma_i(logY) \dots (ii)$$

Here, $\frac{C_i}{Y}$ is the share of total expenditure (Y) on the bundle of goods i and, summing up $\sum \frac{C_i}{Y} = 1$.

To address the observed differences in the expenditure behaviour, it is appropriate to include the households' characteristic variables such as family size, the number of children, location, and so on in the model shown in equation *(ii)*. These household characteristics (Z_i) provide better flexibility in the model. Adding those features, the model will be:

$$\frac{C_i}{Y} = \beta_i + \gamma_i(logY) + \sum(\theta)Z \quad \dots (iii)$$

Here, we have a dichotomous choice model because the household can choose one out of the two mutually exclusive conditions: (1) receive no remittances and (2) receive remittances (from internal or international remittances). Hence, we have an equation like (i*v*) for each combination of the bundle of goods (i) and condition. Adding the error term (ε_i), we have:

$$\frac{C_i}{Y} = \beta_i + \gamma_i(logY) + \sum(\theta)Z + \varepsilon_i \quad \dots (iv)$$

In the above equations, C_i is annual per capita expenditure on the commodity group *i*. These groups are given in Appendix 1.

Y is the total annual per capita expenditure.

Z is a set of household characteristics variables.

4.8.3 The estimation of the model

One of the contributions of this study is that it estimates two potential expenditure estimates, one for the household with remittances and the other for the households without remittances, for each treatment level. The causal effect of remittance is the difference between these two

potential outcomes. To estimate the effect of remittance on the expenditure behaviour of households this study uses potential outcome mean (POM), average treatment effect (ATE) and average treatment effect on the treated (ATET).

4.8.3.1 Potential outcome means (POM)

In a binary treatment model, t with t = 1 means the household is treated and t = 0 means it is not treated. For a household, y_0 is the outcome if the household is not treated and y_1 is the outcome if the household is treated. If the household is treated, then y_1 is observed, and y_0 is a potential outcome which is not observed. If the household is not treated, then y_0 is observed, and y_1 is a potential outcome which is not observed. The POM refers to the means of the potential outcomes for a specific treatment level. Mathematically, POM at treatment level t = 1 will be: $POM_1 = E(y_1)$. It is not possible to observe both potential outcomes (the expenditure pattern of the remittance receiving and remittance non-receiving households) for each household since each household either receives remittance or not.

4.8.3.2 Average treatment effect (ATE)

In a binary treatment model, ATE is defined as the average effect of the treatment in the population under study. In this above case, ATE shows the average effect of remittance on the households that receive remittance instead of households that are not receiving any remittances. Mathematically, $ATE = E(y_1 - y_0)$.

4.8.3.3 Average treatment effect on the treated (ATET)

In deciding whether remittance affects the expenditure behaviour of households on different bundles of goods, it is a good idea to take those households only that are receiving remittances instead of taking average effect in all households. For this, the appropriate method is to use the treatment effect on the treated (ATET). The average treatment effect on the treated (ATET) is the average change in expenditure from remittance (the treatment variable) for those households that have received remittances. The ATET can be rewritten as $E(y_1 - y_0 \mid t = 1) = E(y_1 \mid t = 1) - E(y_0 \mid t = 1)$. Here, y_1 denotes the potential expenditure of individual household if it were to receive remittances and y_0 denotes the potential expenditure of that household if it were not-receiving remittances. It provides information on whether the households which receive remittance make expenditure in a different way from those which do not receive it. ATET is also used to determine whether the expenditure of households should be controlled by some policy or not.

4.9 The working models

Since, the household income absorbs the amount of remittance in it, the contribution of remittance in household expenditure may be complex. Hence, this study does not include the remittance amount as an independent variable in the model. Instead, it uses a two-step causal model of which the two steps are discussed under the followings subheadings.

4.9.1 First stage: treatment model (Receiving Remittances)

The first stage selection model will be a binomial treatment model. A binomial treatment model in survey data is modelled using binomial probit regression. The variables used in this equation improve the effect of the treatment variable (the receipt of the remittances). In this case, the probability of receiving remittances by a household is a function of observed and unobserved variables. The functional form of this model is as:

$$Prob(R_j = receive\ remittances) = f(sexHH, ageHH, fsize, Nchild, Nchild6\_18, Nmigrated, ethnicity, eduHH, loan, poor, land, A\_index, urban, hevent, ezone, mnetwork, conflict \quad \dots (v)$$

4.9.2 The second stage working model

Although first stage treatment model is same in all the equations, the second stage model is different for expenditure share and child welfare equations. The description of the nonlinear econometric model used to estimate the second stage working model is as following.

4.9.2.1 Expenditure shares equation

The second-stage expenditure equation on different bundles of goods is as:

$$C_i/Exp_i = \alpha + \delta_i(lnExp_i) + \lambda_1 sexHH_i + \lambda_2 ageHH_i + \lambda_3 fsize_i + \lambda_4 Nchild_i + \lambda_5 Nchild6\_18_i + \lambda_6 hevent_i + \lambda_7 Nmigrated_i + \lambda_8 eduHH_i + \lambda_9 A\_Index_i + \lambda_{10} htype_i + \lambda_{11} land_i + \lambda_{12} ethnicity_i + \lambda_{13} loan_i + \lambda_{14} urban_i + \lambda_{15} ezone_i + \lambda_{16} poor_i + \varepsilon_i \quad \dots (vi)$$

4.9.2.2 Child welfare

This study takes education and health of children as proxies for the measurement of child welfare. T. W. Schultz (1982) concluded that the miraculous recovery of Japan and German after the Second World War was only possible due to a healthy and highly educated

population. Sound health, better education, quality training and the skills acquired by the people play a crucial role in easing their livelihood. Any expenditure on education and health such as expenditure on schooling, training or medical care are investments in child welfare and are important factors for the overall development of a country in the future. The following regression function is used to examine the contribution of remittance on child welfare regarding education and health:

For the analysis of per child educational expenditure ($eduexp_i$) the second stage treatment outcome model is:

$$\begin{aligned} eduexp_i = {} & \alpha_i + \beta_1 cgender + \beta_2 cage + \beta_3 class + \beta_4 sexHH + \beta_5 ageHH + \beta_5 eduHH \\ & + \beta_6 ethnicity + \beta_7 totchild + \beta_9 nadult + \beta_8 tuition + \beta_{12} poor \\ & + \beta_{11} ezone + \beta_{12} conflict + \beta_{13} loan + \beta_{14} urban + \beta_{15} land + \varepsilon_i \quad \dots (vii) \end{aligned}$$

For the analysis of difference in quality education expenditure ($edutype_i$) the second stage treatment outcome model is:

In this case, the second stage outcome model is:

$$\begin{aligned} edutype_i = {} & \alpha_i + \beta_1 cgender + \beta_2 cage + \beta_3 class + \beta_4 sexHH + \beta_5 ageHH + \beta_5 eduHH \\ & + \beta_6 ethnicity + \beta_7 totchild + \beta_9 nadult + \beta_8 tuition + \beta_{12} poor \\ & + \beta_{11} ezone + \beta_{12} conflict + \beta_{13} loan + \beta_{14} urban + \beta_{15} land + \varepsilon_i \quad \dots (viii) \end{aligned}$$

Edutype: if a child is admitted to a private school the value of the dependent variable (edutype) is 1, otherwise 0. This outcome model is for the quality of education received by the children in Nepal. It is estimated by using logit model.

For the analysis of malnutrition among children ($nutrition_i$) the second stage treatment outcome model is:

$$\begin{aligned} nutrition_i = {} & \alpha_i + \beta_1 cgender + \beta_2 cage + \beta_3 sick + \beta_4 nchild + \beta_5 nchild6\_18 + \beta_6 fsize \\ & + \beta_7 ageHH + \beta_8 genderHH + \beta_9 gparent + \beta_{10}\, educHH + \beta_{11} ezone \\ & + \beta_{12} ethnicity + \beta_{13} land + \beta_{14} A\_index + \beta_{15} urban + \beta_{15}\, poor \\ & + \beta_{16}\, \mathrm{n}migranted + \varepsilon_i \qquad \dots (ix) \end{aligned}$$

Here, ($nutrition_i$) is a dichotomous variable with value 1 if he/she is weight for age z-score (WAZ) is less than -2, otherwise 0.

In the above equations from (v) to (ix), ${}^{C_i}/_{Exp_i}$ is the budget share on different bundle of goods, Exp is total per-capita expenditure, $lnExp$ is Logarithm of total expenditure, $sexHH$is

the gender of head, $ageHH$ is the age of household head, $fsize$ is the household size, $Nchild$ is the number of children (below 6 years) at home, $Nchild6\_18$ is the number of children (6 to 18 years old), $hevent$ is the family event, $Nmigrated$ is the number of migrated members, $eduHH_i$ is the education of head, A_Index is the asset index of the household, $htype$ is the type of house in which the family is living, $land$ is the land (in hectare) owned by the household, $ethnicity$ is the ethnicity of head, $loan$ denotes whether the household have outstanding loan to pay or not, $urban$ is a dichotomous variable to denote the household is urban region or not, $ezone$ is the ecological zone in which the household is located, $poor$ is a dummy variable to identify poor households. Similarly, $mnetwork$ is a categorical variable to show the migration rate in 2000/01, $conflict$ is a categorical variable to denote the degree of conflict during internal conflict period in Nepal (1996 – 2006), $cgender$ is the gender of child, $cage$ is the gender of child, $class$ is the level in which a child is studying, $totchild$ is the number of total children at home, $nadult$ is the number of adults (above 18 years) at home, $tuition$ is a dummy variable to denote whether the child takes private tuition or not, $sick$ is a dummy variable to denote whether the child had been sick in the past month, $gparent$ is a dichotomous variable to show whether a family member above 60 years is present at home, and ε_i is the error term of the model.

The construction of the dependent and independent variables of the above equations is given in Section 5.5 to 5.8 of Chapter 5. A short description of all the variables used in this study is also given in Appendix 7.

4.10 Assumptions of treatment effect model

The causal effect does not make a comparison of outcomes at different point of times, which means it does not compare household's budget share on each bundle of goods before and after receiving the remittances. Instead, there is a comparison of the allocation of budget between remittance receiving and non-receiving households at the same point of time. Hence, it is assumed that the receipt of the remittances precedes the budget allocation of household at a time point. The study makes the following assumptions to implement the treatment-effect estimators for the above model.

4.10.1 Unconfoundedness

A confounded variable is one that obscures the effect of another variable. Unconfoundedness generically maintains that we have enough controls so that, conditional on those controls,

treatment assignment is essentially randomised and there are no unmeasured confounding variables. Hence, after adjusting for observed covariates of the model a comparison of means between the treated and control group is possible. This assumption is also known as conditional independence (C-I) and selection-on-observables in the literature.

4.10.2 Independent and identically distributed (i.i.d.) sampling assumption

This assumption implies that the treatment applied to one unit does not interfere the outcome of the other. That means the potential outcomes and treatment status of one household is independent of the potential outcomes and treatment statuses of all the other households in the population.

4.10.3 Overlap assumption

This assumption requires that each household has a positive probability of receiving each treatment level. In other words, each household in the population has some probability of being in the remittance receiving group and some probability of not being in the remittance receiving group. For this, there should be similarity of the covariate distributions for the remittance receiving and remittance non-receiving subpopulations.

Mathematically, for all households (x) in the population with treatment level t_i, $0 < \Pr(t = t_i|x) < 1,\ i = 1, \ldots, n.$

If this assumption is violated, we cannot predict the unobserved potential outcome of some households.

4.10.4 Endogeneity assumption

The study assumes that there are not any unobservable variables that affect both treatment assignment and the potential outcomes. The treatment assignment process would be endogenous if the unobservable components affect both treatment assignment and the potential outcomes.

4.11 Post-estimation tests in the treatment effect models

This study applies some diagnostic tests that are standard in the context of treatment effect models. These are as follows:

4.11.1 Test of endogeneity

The study model uses a first stage treatment model (receipt of remittances) and second stage outcome model (expenditure share on different bundles of goods) with several variables in these models. In this type of model, endogeneity could arise if unobservable factors that determine the expenditure on various bundles of goods are correlated with the receipt of the remittance. Several variables such as previous migration experience and health status of household members, the presence of spouse and children at home, use of remitted money in the past, information and suggestion from migrants, and education of migrants may cause endogeneity. These variables may affect the receipt of remittance and the expenditure behaviour of households, hence, may cause biased results arising from the endogeneity. For example, poor health conditions of a family member would increase household expenses on health reducing the budget share allocated to food and other bundles of goods. Hence, if there is endogeneity in the model, the estimated effect of treatment on outcome variable simply has no meaning because the actual effect could be higher, lower, or even of a different sign from the estimated one.

This study uses the Wald test to determine whether there exist any significant correlations between the treatment assignment and potential-outcome models. The null hypothesis tells us that there is no correlation between receipt of remittances and unobservables of the proportional expenditure outcome models. If these correlations are zero, we have no endogeneity. A rejection of the null hypothesis implies that there is endogeneity in the model.

4.11.2 Test of overlap assumption

This study uses a graphical method to check the overlap assumption of the models used in expenditure function. For this, plots are drawn for the estimated densities of the probability of getting remittances by the households. If these plots overlap each other, it can be concluded that the overlap assumption is not violated.

4.11.3 Balance test

If the distribution of a covariate does not vary over treatment levels, it is said to be balanced. For a balanced covariate, the standardised difference of a covariate is zero, and its variance ratio is 1 in each treatment groups.

CHAPTER 5

DEFINITIONS AND DATA DESCRIPTION

5.1 Introduction

This chapter presents the definitions of terms, data description and construction of variables. It also includes a short description of the study area (Nepal) and a discussion of the ethical considerations employed.

The chapter commences with the introduction of the study area which provides a short introduction to Nepal and discusses the current aspects of migration and remittance. Section 5.3 presents definitions of the terms used in the study, while Section 5.4 provides a brief description of NLSS-III survey data. Section 5.5 gives the description of the construction of the expenditure bundles used in this study. Section 5.6 provides the description of the treatment variable – remittance- in NLSS-III survey. Section 5.7 contains the description of the outcome variables, while Section 5.8 outlines the independent variables used in the study.

5.2 The Study Area

5.2.1 A general introduction of the country

Nepal is a landlocked mountainous country situated in South Asia. It is a developing country between India and China with GDP per capita of US$ 732 in 2015. The growth rate of the economy was only 3.6% in 2015 compared with 6.9% in China and 7.6% in India. Among 8 South Asian countries, only two countries, Bhutan and Afghanistan, have GDP growth rate (in 2015) less than Nepal at 3.3% and 1.5% respectively. The share of agriculture in GDP is 32.8%. Nepal's life expectancy at birth is 70 years with a Human Development Index (HDI) of 0.548 with rank 145 out of 188 countries. The following table shows some facts about Nepal.

Table 5:1 Nepal in Figures

Indicators	Measurement
Total area	147,181 Sq. Km
Latitude: Longitude:	80^0.40' to 88^0 12' East 26^0.22' to 30^0 27' North
Border	China's Autonomous Region Tibet in the North and India to the South, East and West.
Total population	28.1 million (HDR, 2015)
Language	Nepali
Government	Parliamentary Democracy
Per capita GDP (Current US$)	US$ 732.3 (WB, 2015)
Population Economically active (aged 15 to 59)	 57%
Literacy rate (5 years and Above) in 2011	65.9% (CBS, 2015)
Arable land (out of total area)	About 27%
Emigrated Population	1.92 million

Source: (CBS, 2015; UNDP, 2015; World Bank, 2015)

The headcount poverty rate was 25.2% in 2010/11(CBS, 2015). In the rural and remote areas, access to education and health remains still low. The life expectancy at birth is 68 years (WB, 2015). About 83% of people in Nepal live in the rural areas. The rural economy is primarily agricultural-based and more than two-thirds of people are dependent on agriculture. However, the contribution of agriculture in GDP in 2013/14 was only 33.1% (GON, 2014).

Geographically Nepal is divided into three regions: Terai, Hills and Mountains. There is less arable area in the hills and least in the mountains and, hence agricultural production is mainly concentrated in the Terai region. Only 20% of the total land of Nepal is cultivated (Adhikari, 2009). A report by ICIMOD (2010) pointed out that fragmented land, traditional methods of farming, unfavourable weather, and lack of improved seeds and fertilisers contribute to the low agricultural production in much of Nepal. As agriculture production is not sufficient to fulfil their basic needs, rural families take migration as one of major livelihood strategies to

diversify their sources of income. Migration is mainly a male-centric activity and the females stay at home to look after the family, business and property.

5.2.2 Aspects of migration and remittance in Nepal

For Nepalese households, remittance has become an important source of revenue, and for the government, it is a tool for poverty reduction. Pant (2006) points out that in the context of the national economy, remittance is a reliable source of foreign exchange and an important source of development finance that strengthens the balance of payment of the country. The fees paid by manpower companies, passport fees, value added tax and other non-tax revenues are the important sources of revenue for the government. Not only that, various recruitment agencies and their agents, medical institutions, orientation and training institutes, advertisement agencies, airlines and transport companies, commercial banks, finance companies and money transferring agencies have been collecting a significant amount of their revenue from emigration and remittances and hence, are highly benefitted. With the increase in the number of foreign employment, remittance has risen steeply since 2001, and the dependency of the national economy on remittance is going up. The ever-increasing inflow of international remittances in Nepal has led to a flurry of economic activity in the society, both in rural and urban regions.

Most of the Nepalese youth who enter the labour market each year seek foreign employment. Currently, more than 1,500 youths emigrate daily in the international market for foreign employment making departures on all-time high. Out of them, 74% are unskilled; 24% are semi-skilled, and only 1% are skilled (DOFE, 2013). A yearly report by the department of foreign employment (MOLE, 2016) Nepal, shows that 55,025 people migrated to the international market in 2000/01 which reached 527,814 in 2013/14. The share of international remittance is more than 80% of total remittance.

Until very recently the Nepalese government had little or no policy on migration, despite having a long history of foreign employment of Nepalese personals. The Foreign Employment Act 2042 (1985) was a milestone in the legislation process. Despite having a high unemployment rate in the country and the promulgation of the act in 1985, the attitude of the government towards foreign employment business was restrictive (Sijapati and Limbu, 2012). Nowadays, the foreign jobs in Nepal is governed by the Foreign Employment Act 2064 (2007), bilateral agreements, and international laws and conventions including the ILO multilateral framework. Most of the Nepalese migrants have jobs arranged for them through

recruitment agencies and their brokers. The latter are often blamed for undermining prospects for safe migration and deceiving migrants. Past studies have shown that most of the problems faced by Nepalese migrants were caused by a lack of laws or inadequate law enforcement on the part of the Nepalese government (AI, 2011).

5.3 Definitions and Classifications

Migrant: migration is a very broad and complex phenomenon of population movement within or outside of the country of origin. Although in general, a person is a migrant if he/she has changed their usual place of residence, this study takes the definition of a migrant from the absentee member of a household in NLSS-III survey report (2011b) that defines migrant as one who was away from the household for more than six months during the study period and is expected to return in future.

Remittances: the remittance in this study is "cash" remittance. Remittances in-kind are also converted into cash for this study. Work is one of the main reasons of international migration for working-age adults from Nepal. Most of the Nepalese migrants in third countries (other than India) are documented and take the job for a fixed term. After the termination of the contract period, the contract must be changed /renewed, or they should return. Also, the remittance decay hypothesis applies on the behaviour of migrants if they stay longer in the destination. Hence, this study takes remittance income of households as transitory because it exists for a fixed and short period. Remittance income is further divided into internal and international remittance.

Internal remittance: it includes the remittances obtained by a household from one or more migrant(s) working elsewhere within the country of origin, Nepal.

International (foreign) remittance: it includes the remittances obtained by a household from one or more migrant(s) living outside the country of origin, Nepal. It includes the cash and monetary value of in-kind goods obtained from all international migrants and hence, does not address the question of the legal status of migrants. Unauthorised immigrants are also included because the survey does not contain questions about the legal status of the migrant.

Household: the statistical unit of NLSS-III survey data is a household. The definition of household is taken from "Principles and Recommendations for Population and Housing Censuses, Rev 2" (United Nations, 2008: 128). It defines a household as a gendered institution that has one or more members with common arrangements for food or other

essentials for living. These members may be related or unrelated and may have the common budget or may pool their resources. Although there is clear distinction between household and family, this study takes both interchangeably. For the analysis of expenditure behaviour, this study takes the household as the unit of analysis.

Household head: the central bank of Nepal (NRB) had defined household head as the main person who takes responsibility for income and expenditure of the household and takes decisions in all family-related matters (NRB, 2008). In this study, the household head is the person who is acknowledged as head by other members of the household and takes responsibility for the income and expenditure of the household.

Household size: the definition of household is taken from Nepal Living Standard Survey-III. It has defined household size as a total number of members of the household (CBS, 2011a).

Cause and effect: a cause is a new intervention that may bring a change in the outcome variable. In this study, the receipt of remittances by a household is the cause that may influence the outcome variables: the expenditure behaviour and child welfare. There is a one-way relationship in which the effect passes from cause to outcome. In a binary intervention, the two causal states are also called as the treatment group and the control group. Hence, causal effect is the comparison of potential outcome under different treatments on a group of individuals under study.

Control and treated households: in this study remittance is the treatment variable. The households are divided into two groups: households that are not receiving any remittances are in the control group and households that are receiving remittances from Nepal or outside are in the treated group. The treatment variable has two values: 0 for the control group and 1 for the treated group.

Observed outcome: In a binary treatment model, t with t = 1 means the household is treated and t = 0 means it is not treated (the control group). For a household, y_0 is the observed outcome if the household is not treated and y_1 is the observed outcome if it is treated. So, observed outcome can be defined as:

$$y = y_1 \text{ if } t = 1 \text{ and } y = y_0 \text{ if } t = 0.$$

Hence, for the treated households we cannot observe the potential outcome under untreated state and the controlled households we cannot observe the potential outcome under treated status.

Potential outcome: it is defined as the outcome of an individual household would obtain if it is exposed to a treatment (StataCorp, 2015). For example, a household has a potential expenditure if it receives remittances and other potential expenditure had it not received any remittances.

Potential Outcome Means (POM): the average of the potential outcome of treatment (t) is known as POM of that treatment level.

$POM_t = E(y_t)$ and generalised method of moments (GMM) is used to calculate it.

Livelihood: in this study, a livelihood is taken in a broader sense that encompasses an income, social institutions, gender relation, property rights, as well as the access to social and public services provided by the government. Hence, the livelihood diversification is not same as income diversification.

Migrant household: a household is classified as a migrant household if it reports at least one male/female migrant member in the current period of one year (2010/11).

Expenditure: it refers to the expenses made by a family for household consumption during one year. This includes gifts, support, assistance, or relief in goods and services received by the family from friends and relatives. The expenditures do not include all those expenses to do with business operations, farm investment, and purchase of land, housing and real property which do not involve personal consumption. The value goods produced and consumed by the households such as the crops, fruits and vegetables are also considered as family expenditures.

Assets: a household consists of wide varieties of property in different forms with different characteristics. Broadly, these assets can be categorised into tangible and intangible.

5.4 Data Description

Migration is a household decision, and the obtained remittance is a flow capital. Remittance; a sum of small transactions sent and received by individuals using various methods of channels; is heterogeneous in nature, very complex to measure and contains several limitations. Adams (2011) clearly points out that there is need of larger and more representative sample in the study of the effect of remittance. The reliable and authentic data is the basis of every study. In a developing country like Nepal, there is generally a lack of availability, reliability of adequate data and the migration sector cannot be excluded from this situation. Household survey is one of best methods for obtaining information on the uses of

remittances, allocation of budget share on different bundles, and the expenditure behaviour of households. Keeping this in mind, this study is based on NLSS-III survey data that was conducted by the Central Bureau of Statistics (CBS) of Nepal on 2010/11. The survey strictly follows the Living Standards Measurement Survey (LSMS) methodology developed and promoted by the World Bank (WB).

The NLSS-III contains two independent samples: the first is a cross-sectional sample and the second is a panel. The survey enumerated 5,988 sample households from 499 primary sampling units (PSUs) from the cross-section sample, and 1,032 households were tracked and enumerated from 100 PSUs for the panel sample. The panel sample consisted of PSUs and the households that were previously enumerated in NLSS-I or NLSS-II or both. Although in total 7,020 households were listed in the survey, this study is based on the cross-section sample only. The cross-section sample contains detailed information from 28,670 individuals of 5,988 households. Of them, 2,016 households are from rural and 3,972 from urban regions. The NLSS-III survey covers the whole country, including both rural and urban areas. For sample selection, the 75 districts along with the urban and rural areas of Nepal were grouped into 14 different strata. The data sets of NLSS-III survey cover 71 districts of Nepal (it excludes Manang, Mustang, Dolpa and Humla districts).

An 80-page structured questionnaire was used to collect the household data in 21 different sections. The survey is comprehensive and contains information on many variables, such as housing, access to facilities, migration, expenditure on various categories, land holdings, income and asset, education, health, and remittance. Although NLSS-III was not designed as a migration/remittance survey, it gives detailed information on household income and expenditure. The detailed information on expenditure and household characteristics make it possible to construct the various variables that are used in this study. The following table gives the information about the different strata, some households and the primary sampling units (PSUs) in these strata in the cross-section sample in NLSS-III survey.

Table 5:2 Allocation of cross-section sample in NLSS-III survey data

Ecological zone	Number of households	Number of PSUs
Mountains	408	34
Kathmandu Valley	864	72
Urban hills	480	40
Rural Hills (Eastern)	384	32
Rural Hills (Central)	480	40
Rural Hills (Western)	480	40
Rural Hills (Mid-Western)	336	28
Rural Hills (Far-Western)	180	15
Urban Terai	672	56
Rural Terai (Eastern)	480	40
Rural Terai (Central)	480	40
Rural Terai (Western)	348	29
Rural Terai (Mid-Western)	240	20
Rural Terai (Far-Western)	156	13
Total	5,988	499

Source: NLSS-III

5.5 Description of expenditure bundles

In NLSS-III survey the time scale over which the expenditures on different bundles were measured varied widely from 7 days to one year. All the expenditures on various bundles of goods are aggregated to obtain yearly values. This study divides the household expenditure on different items into six categories comprising of food, housing, consumer goods and durables, health, education, and others. Although there are 5,988 households in the NLSS-III dataset, two households do not satisfy the condition necessary for the use of treatment effect model. Hence, this study is based on 5986 observations only. The construction of these expenditure bundles and their descriptions are as followings:

5.5.1 Food expenditure

Section 5 of the NLSS-III dataset contains information about the household food consumption in a typical month and in the past seven days. It gives item-wise expenditure on 72 different food items and an estimate of total expenditure on these articles. For this study, spending on tobacco items is excluded from the estimates of annual food consumption. The expenses on the use of smoking items are included in the category of non-food consumption. To minimise bias this study, at first, calculates the annual food expenditures from the past seven days and from the typical one-month period. Finally, to calculate annual food expenditure, an average is taken from these two different estimates. It includes the yearly consumption value of all food items such as rice, maize, wheat, cooking oil, pulses and vegetables, dairy products, tea and bread. These items may be home-produced, purchased and gifted in-kind.

5.5.2 Housing expenditure

Housing expenditure is an important indicator of household welfare. It contains an estimate of the annual use value of accommodation of a rented or owned house. Section 2 of the NLSS-III dataset provides information on the monthly rent paid by a household if it has rented a house or a part of it and if it is provided free of cost, it contains an estimate of rent. It also presents an estimate of the monthly use value of the house or a part of it used by the owner. The reported housing expenditure is considered as highly unlikely if the monthly value is reported as less than NRs 100 or greater than NRs 30,000. In such cases, the monthly reported rent is replaced by its estimated value. For this purpose, the unlikely values are left censored at NRs 100 and right censored at NRs 30,000. A hedonic regression model is used to estimate these highly unlikely values. For this regression, the logarithm of the imputed rent is taken as the dependent variable with some household characteristic variables as the independent variables. Finally, the highly unlikely values are replaced either by the estimated values of the hedonic regression model or by the censored values. The independent variables, their estimated coefficients and standard errors are shown in the following table.

Table 5:3 Coefficient of variables used for housing estimate

Variables	coefficients	Standard error
Log of area inside the dwelling	0.1981*	0.0201
Number of rooms at house	0.0976*	0.0064
Dwelling has a kitchen	0.1101*	0.0271
Dwelling has a cemented wall	0.2762*	0.0435
Dwelling has cemented foundation	0.2145*	0.0431
Dwelling has cemented or tin roof	0.1879*	0.0288
Dwelling has a window	0.2614*	0.0278
Has piped water supply	-0.2221*	0.0297
Has piped water inside the dwelling	0.2518*	0.0365
Has communal garbage collection	0.3203*	0.0428
Has municipal sewage	0.3946*	0.0439
Has electricity at home	0.3168*	0.0290
Has telephone at home	0.3538*	0.0366
Has paved road next to dwelling	0.5002*	0.0339
Value of durables at (,000) NRs	0.0001*	0.00003
Number of dependents at home	-0.0156*	0.0073
Education of head	0.1524*	0.0344
Constant	6.6081*	0.1121

Note: calculated from NLSS-III dataset (* significant at 5% level, $R^2 = 0.6095$)

5.5.3 Consumer goods and durables

This includes the value of day-to-day consumer goods (purchased or home produced) and household durables. The expenditure on clothing and tailoring, foot ware, cleaning and washing goods, TV, computer, bike, vehicle, and refrigerator and similar items are included in this bundle. This bundle of goods consists of the items mentioned in part A and part C of section 6 of NLSS-III dataset.

This part of NLSS-III survey contains information about the expenditure on frequent non-food goods that are incurred on a regular basis. All the items included in this section (except items 236, 237 and 238) are divided into regular and non-regular items according to the standard procedure mentioned in the report of CBS (2011a, vol 2, pp 29). For the regular items, the monthly expenditure is multiplied by 12 to get yearly expenditure values. If the

value of regular items is not reported, then that one is replaced by the non-regular using the same procedure.

The part C of section 6 of NLSS-III contains durable household goods. They include items such as TV, cameras, washing machines, stoves, refrigerators, and automobiles. The annual use values of these items are calculated using the following annual depreciation rate. The purchase prices of the goods are re-expressed as current values using the average historical inflation rate.

Table 5:4 Median depreciation rates of the durable goods to calculate yearly use value

Item code	Item Description	Annual depreciation rate
501	Radio/cassette/CD player	0.278
502	Camera (still/movie)	0.227
503	Bicycle	0.265
504	Motorcycle/scooter	0.202
505	Motorcar and other vehicles.	0.146
506	Refrigerator or freezer	0.187
507	Washing machine	0.197
508	Fans	0.253
509	Heaters	0.311
510	Television/VCR/VCD Player	0.208
511	Pressure lamps / petromax	0.228
512	Telephone sets / cordless	0.351
513	Sewing machine	0.124
514	Furniture, rugs, clocks	0.143*
515	Kitchen utensils	0.143*
517	Computer/Printer	0.242

Source: CBS, Nepal (* Author's calculation)

5.5.4 Education expenditure

Section 7 of the NLSS-III survey contains information about all 28,670 individuals from 5,988 households. It includes educational background of each along with the expenses on tuition fee and other costs such as exam fees, lunch/breakfast cost, hostel fee, private tuition fee, and event fees, uniform expenditure, textbook and stationery expenditure, and transportation fees. The total value of all these items per household gives the spending on

education. The educational expenditure also includes the value of a scholarship if a child is given such a scholarship.

5.5.5 Health expenditure

Section 8 of the NLSS-III survey dataset contains information on the health of the individuals. This section collects detailed information on health for each member of the household over the period of past 12 months. The section 6 of NLSS-III dataset also contains information on the family expenditure on health (item 237 and 238). One of the shortcomings of the information provided in section 8 is that it gives spending of individuals suffering acute illness within past 30 days only. Also, it does not give the monetary value of in-kind medications. Hence, the values obtained in section 8 are compared with the household estimates over the period of past 12 months provided in section 6 of NLSS-III survey dataset, and the maximum of these two estimates is taken as the health expenditure of household. It includes yearly health expenditures such as money spent on consultation fees, hospital charges, medicine, and travel for treatment.

5.5.6 Other goods

This includes expenditure on infrequent items and utility bills such as repair and servicing of household durables, entertainment and holiday expenditures, religious ceremonies and charities, bill of electricity, telephone and internet, expenditure on cooking fuel, and the value of the infrequent items produced for self-consumption.

Part B of section 6 of the NLSS-III dataset contains non-regular items. For these non-regular items, the reported yearly values are taken as reported. It includes elements such as toys and sports goods, holiday expenses, postal expenses, gifts and donations to charities. Similarly, part D of section 6 of NLSS-III dataset contains the description of the items and their values that are produced and consumed by the households. The estimated annual values of these items are used to compute the cost of these articles. Also, the section 2 of NLSS-III dataset contains information on the amount paid on utility such as water, telephone, electricity and TV. The annual amount of these items is summed to find the yearly expenditure on these articles.

Total expenditure (Y): is the annual per-capita household expenditure. It is obtained by the sum of the household's annual spending on the bundles mentioned above divided by the family size.

5.6 Description of remittance on the NLSS-III survey

5.6.1 Construction of the variable Remittance

The sections 16, 17A and 17B of NLSS-III dataset contain information about the migrants and the remittances sent and the remittances received by the households. The datasets show that some of the values are highly unlikely. For analysis purpose, the following adjustments are made to some data values that are highly unlikely in the remittance section. For the amount sent, all highly unlikely values above NRs 900,000 are imputed as NRs 900,000 if it is sent to Nepal or India. This imputation has affected only one value of NRs 111,111,111 reported as sent to India. Similarly, due to the same reason the amount of remittance received from inside Nepal is imputed to NRs 1,000,000. This cap has affected 4 values of remittances received from Nepal. The data of NLSS-III survey shows that not all migrants remit. Moreover, some households receive remittances without having any migrated household member.

5.7 The dependent variables in the study

5.7.1 The dependent variables in the expenditure function

Food (C_{1i}): includes the proportion of per capita consumption value of food items such as rice, maize, and wheat, cooking oil, pulses and vegetables, dairy products, tea and bread in the period of one year.

Housing (C_{2i}): it includes an estimated per capita annual use value of housing if the owner utilises it or the rental value if it is rented.

Consumer and durables (C_{3i}): the proportion of per capita expenditure on frequent non-food items, and use value of durable household goods of the period of one year is included in this bundle.

Education (C_{4i}): it includes per capita proportional expenditure on education of the members such as registration fee, transportation fee, tuition fee, uniform expenditure, books and stationery charges.

Health (C_{5i}): includes per capita proportion of health expenditure such as doctor fees, x-ray fees, laboratory test fees, hospitalisation fee, travel fees and medicine fees over a period of one year.

Others (C_{6i}): it is the proportion of per capita expenditure of infrequent and non-regular items and household utility bills of the period of one year.

5.7.2 The dependent variables in child welfare

In Nepal, although educational coverage is going up along with the average gross enrolment rate in school, the dropout rate among girls is higher than of boys. Boys are preferred to girls, and gender disparity is significant. The parents treat boys as assets and girls as liabilities. For the poor, the direct costs associated with education such as admission and tuition fees, books, and uniforms may be more than the households are willing to pay. Sending children to school may lead children towards a higher income in future, but it reduces the current income of the family. It is often assumed that low-income households view schooling of girls as a relatively risky choice while higher-income households prefer to enrol girls in school to make them able for the future. After their marriage, daughters mostly engage themselves in domestic work and child-rearing responsibilities. Hence, it is appropriate to test whether the households discriminately allocate the remittance income between boys and girls in schooling. The following dependent variables are used to examine the allocation of remittance on the education of boys and girls.

Educational expenditure per child: is the annual education expenditure on a child up to the age of 18 years. This model is used to analyse the effect remittance on educational expenditure between remittance receiving and non-receiving households in Nepal. In this case, the estimated outcome model is also used to examine if there is any discrimination in educational expenditure between boys and girls in remittance receiving and non-receiving households.

Education type: if a child is admitted to a private school the value of the dependent variable (edutype) is 1, otherwise 0. This outcome model is for the quality of education received by the children in Nepal. It is estimated by using logit model.

Malnutrition: Anthropometric measures, such as the weight, height and body mass index (BMI) give a direct signal about of nutritional and health status of a child. Three main child health measures for the children up to the age of 5 years are: weight for age z-score (WAZ), height for age z-scores (HAZ), and body mass index z-score (BMZ). These z-scores are the most appropriate descriptor of nutritional status of early childhood and are widely used for analysis and presentation of anthropometric data (Mansuri, 2006b). Weight for age (WAZ) is the most commonly used measure of the short-term nutritional status of children. Similarly,

height for age is assumed to indicate the long-term cumulative effects of inadequate nutrition and poor health status.

The dependent variable is nutritional status (nutrition). It takes the value one if the obtained z-score of weight for age (WAZ) score is less than -2 indicating that the child is in a condition of malnutrition. Its value is 0 if the WAZ score is greater than or equal to -2 implying that the child is in normal health condition. For the construction of the dependent and independent variables, the detailed information given in different data files of NLSS-III survey are used. The dependent variable is constructed from the WAZ of the children below 60 months using the anthropometric information given in NLSS-III.

Although there are 2,846 children below the age of 60 months, 343 observations are dropped from the study as they contain incomplete information. So, the analysis of this study is based on 2,503 children. The WAZ score for this study is calculated according to the guidelines given by world health organisation (WHO) using SAS software.

5.8 The independent variables in the study

The following independent variables are constructed for the analysis of treatment model using the NLSS-III dataset. The explanatory variables can be grouped into four categories: household variables, community variables, loans and assets, and migration.

5.8.1 Household characteristic variables

Age of household head (in years): is the variable used to represent the experience of the household head. This variable is assumed to have a significant role in the decision of household expenditure pattern.

Sex of household head: Nepalese society is male dominated, and males play a major role in the decision of household matters. Hence, this study takes the gender of the head as one of the variables in the model. It is a dichotomous variable with value one if the sex of household head is male and 0 for female.

Household size: it is the number of family members of a household. It is expected that the household size is positively correlated with gross annual household expenditure.

Household head's education is the level of formal education (in years) obtained by the household head. In this study, it is a proxy for his decision skills. According to New Economics of labour migration (NELM), all adult household members take part in the

decision to do migration related activities. Educated people can have more knowledge about international job opportunities and hence, make better decisions. So, the educational attainment of household head counts significant and is included as a variable in the model.

Children below age 6: it represents the number of children that are to be looked after by someone at home. The higher the number of kids the more resource is needed to maintain the family.

Children between 6 and 18 years: it represents the number of school age children in a household in Nepal. They are dependents, hence, increase net household expenditure in all type of bundle of goods.

Ethnicity is the ethnicity of the household head. There is a very complex caste system in Nepal as there are more than 120 castes and religious groups. Some ethnic communities such as Gurung, Rai and Limbu (Hill Janajatis) have a long tradition of migration, hence, reflect a greater extent of migration networks at the destination than other ethnoreligious groups. They are more likely to produce children who become migrants and receive more remittances. The ethnicity reflects social stratification on wealth, education, power, influence and occupation. Dalits, Muslims and Terai Janajatis are socially backwards groups. The lower caste people (Dalits) are socially and economically backward. In this study, ethnicity is categorical variable with value from 1 to 8 with values as: 1= Dalits (base group), 2 = Muslims, 3 = Terai/Madeshi, 4 = Hill Janajati, 5 = Terai Janajati, 6 = Brahman/Chhetri, 7 = Newar/Thakali, and 8 = Others.

5.8.2 Community Characteristics Variables

Rural/Urban dummy: it is assumed that there are different expenditure priorities in rural and urban households. It is a dummy variable with value one if the household is in the urban region and 0 if it is in a rural region.

Ecological zones: Geographically, Nepal is divided into three ecological zones. It is widely believed that there is a difference in the receipt of remittance and expenditure behaviour among these three areas in Nepal. Hence, a categorical variable with three values (1 = Terai, 2 = Hills, and 3 = Mountains) is constructed to represent it.

Table 5:5 Classification and sample size in the ecological zone

Ecological zone	Number of districts	Number of households (NLSS-III) data set	Height above sea level (in meters)
Terai (1)	20	2,376	60 - 300
Hills (2)	39	3,204	300 – 3,000
Mountain (3)	16	408	Above 3,000
Total	75	5,988	

Source: CBS (2011)

Land: this study uses land measured in hectares as an explanatory variable in the model. In a developing country like Nepal land represents both social and economic value. It has remarkably high importance in the receipt of remittance and expenditure behaviour of households in Nepal. The Ropani and Bigha are the two measuring units of land in Nepal used in NLSS-III dataset. Each unit is further sub-divided into two smaller sub-units. The following formula has been used for the conversion of land in a hectare.

Ropani:

Hectares = (Ropani * 64 + Aana * 4 + Paisa) * 0.000794875.

Bigha:

Hectares = (Bigha * 400 + Kattha * 20 + Dhur) * 0.001693114.

House type is categorical variable with values ranging from 0 to 2. Here, 0 is assigned to a temporary house, 1 for the semi-permanent house, and 2 for a permanent house. The type of house is an important indicator of household's social and economic status in Nepalese society. This variable is constructed on the following basis:

Three dummy variables are constructed from the questions 2.04, 2.05, and 2.06 of the dataset provided in section 2 of NLSS-III survey. They are: dwelling has a cemented wall or not, the dwelling has cemented foundation or not, and the dwelling has cemented or tin roof or not (1 if they have and 0 if they do not). A house is considered as permanent one if it contains all three, and semi-permanent if it contains one or two of them and temporary if it contains none of them.

Loan: borrowing is common in Nepalese households. The remittance is often sent in Nepal to pay off the outstanding household loans. It is a dummy variable with values 0 = no outstanding loan, and 1 = households have an outstanding loan.

Poor: represents those households that have per capita expenditure below the first quartile (q1). It is expected that they may have different expenditure pattern than that of other families. It is dummy variable with value one if the expenses of a household is below the poverty level.

Asset index: shows the economic status of a household. In this study, an asset index is derived from the ownership of durable household goods (bicycle, bike, camera, cable TV, computer, freezer or refrigerator, kitchen utensils, radio and vehicles), access to services (the number of rooms, availability of kitchen garden, availability of separate toilet/bathroom and its type, a source of drinking water, connection to piped water at home, a source of light, main cooking fuel, having a mobile phone, email/internet, type of salt used for cooking), and other dwelling characteristics (materials of outside wall and roof, foundation of housing, type of window, ownership of land). The asset index is the ratio of the number of assets owned by a household to the total number of assets (altogether 24 different assets). In general, inequality in income reflects inequality in asset holdings; hence, asset index of the households is used as a dummy for household income.

5.8.3 Other variables

The degree of Political conflict: it represents the degree of political unrest during Maoist movement by the district. The political turmoil in Nepal during 1996 – 2006 is widely responsible for the disruption of the social network in rural Nepal. It represents a good instrumental variable because it is related to the need to send migrants in the past. Furthermore, it is not related to the expenditure behaviour of the household over the period of the survey (2010/11). The degree of conflict has also been used before in the literature as an instrumental variable in the case of Nepal (Bansak and Chezum, 2009). The violence and feeling of insecurity was the leading cause of internal and international migration in the 1990s. The receipt of remittances is affected by migration posed by the political conflict in the past, but the household consumption in 2010/11 is not directly affected by the conflict. This political unrest which varied by district is one of the instrumental variables in this study.

Migration rate by district: In this study, the proportion of migrants (number of migrants by total population of the district in 2001) is a proxy for the district-level migration networks.

The receipt of remittances has been affected by migration in the past, although the household consumption in 2010/11 is not directly affected by the migration networks in 2001. Acosta (2006) in the Case of El Salvador and Mansuri (2006a) in the case of Pakistan has used migration network as an instrumental variable. They claim that it has a positive impact on the opportunity for migration but not in the schooling of children. Households in Nepal form migration networks by ethnicity and relationship. It is a categorical variable whose value ranges from 1 (least) to 5 (highest). The migration rate is calculated dividing the number of migrated people by the number of population of the district in the year 2001.

Age of child: represents the age of children that are up to 18 years and are currently attending a school/college to study.

Class: represents the class in which a child is currently studying (class 1 and above).

Gender of the child: it is a dichotomous variable with values 0 for female and 1 for a male child.

Age of infants (in months): this variable is used in the study of malnutrition of children. Hence, its value goes from 1 to 59.

Number migrated: it is the number of family members that are currently in migration and are expected to come back in future.

CHAPTER 6

DESCRIPTIVE STATISTICS

6.1 Introduction

This chapter presents the descriptive statistics of the variables such as frequency, mean, variance and cross-tabulation of the variables used in this study because such statistics provide valuable information about the variables. Also, the statistics such as standard deviation, skewness, kurtosis, and correlation matrix among the independent variables are examined to check the consistency of data. Detailed study of these household characteristics contributes to the theoretical and practical understanding of the selection of variables and the model used in the empirical analysis. The information obtained from this chapter is useful for the understanding of remittance inspired expenditure and economic development.

The chapter is organised as follows. To start with, section 6.2 explains the basic characteristic of Nepalese households and depicts the facts about the migration, poverty, ethnicity of households, distribution of the poverty along ecological zones, and rural/urban regions in Nepal. Section 6.3 explains the descriptive statistics of the inflow and outflow of remittances and depicts the relation of remittance to other variables such migration, poverty, ethnicity, distribution of the receipt of remittance along ecological zones, and rural/urban regions in Nepal. Section 6.4 provides an analysis of the expenditure pattern of Nepalese households and its relationship with other socio-economic variables. Section 6.5 presents the estimated results on the expenditure behaviour of households on different bundles of goods. Section 6.6 shows the descriptive statistics of the child welfare in Nepalese households. It compares the educational expenses and WAZ score of children between remittance receiving and non-receiving households. Finally, Section 6.7 presents a summary of the descriptive analysis.

6.2 Basic characteristics of Nepalese households

6.2.1 Characteristics of the household head

The average age of household head in Nepal is 46 years with a minimum age of 11 years and a maximum of 95 years. Out of total 5,988 households 1,599 (26.7%) are female-headed, and 4,389 (73.3%) are male-headed. The percentage of male headed household in remittance

receiving households is 61.39 while that in remittance non-receiving households is 87.76. Out of 5988 households, 47.13% has a head with no formal education, and less than one-third has a head that has completed primary education. The average schooling of the head is less than four years.

6.2.2 Characteristics of households

The average household size in Nepal is 4.8 while that of remittance receiving is 4.65 and 4.94 for remittance non-receiving households. 28.77% of the households do not have any land, and average land owned by a household is 0.88 hectare. 62.04% households have some outstanding loan to pay off. More households that are receiving remittances have loans than those that do not have any remittances. More than 50% of households have at least one migrant member within Nepal or outside. The rural region with 1.16 migrants per household is significantly higher of migrants than the urban region that has 0.73.

6.2.3 Housing and Asset Index

The data shows that 27% households live in permanent housing structure in Nepal. 29.15% of remittance non-receiving and 25.49% of remittance receiving households live in a house of permanent structure. The asset index of remittance non-receiving households is 0.463 while that of remittance receiving households is 0.458.

6.2.4 Ethnicity and caste

In Nepal, some ethnical groups such as Damain, kami, sarki, dom, gaine, collectively called as Dalits - are socially excluded as they face widespread discrimination. Most of them face discrimination and suppression in the society and live in extreme poverty and deprivation. The result shows that the ethnical groups Dalits, Muslims, Terai/Madhesi, and Terai Janajati have the percentage of poor 46.5, 31, 37, and 36.5 respectively which is higher than the national average of 0.25.

6.2.5 Region and poverty

34% of households in rural regions and 8.6% of the urban households are poor. The result (p-value = 21.26) shows that the proportion of poor in the rural regions is significantly higher than that of the urban region. Among the ecological region 29.5% households in the Terai region, 20.9% in the Hills and 30.6% in the Mountain region are poor.

6.3 Analysis of Remittance

NLSS-III dataset contains both inflow and outflow of remittance to and from Nepalese households. The following sub-sections contain descriptive statistics of the remittance and its relationship with other variables.

6.3.1 Summary of remittance inflow

In this study, remittances include both cash and in-kind remittances. The result shows that altogether 6,074 persons have migrated from 3,004 households. Out of them 4,390 (72.28 %) are male and 1,684 (27.72%) are female. Out of 5,988 households in NLSS-III dataset, 2,810 (46.93%) households do not receive any remittances, 3,178 (53.07%) households receive remittances from someone who may or may not be a household member. Out of those receiving remittances, 1,460 (45.94%) households receive internal remittances only and 1,189 (37.41%) households receive international remittances only, and 529 (16.65%) receive both. The households with internal remittances receive on average NRs 34,352 per year while those with international remittances receive NRs 134,152 and those receiving both internal and international receive NRs 137,269 per year.

Table 6:1 Analysis of remittance received (NLSS-III data)

Description	Number	Average amount (NRs)
Remittances received from within Nepal	2,939	20,128.58
Remittances received from outside Nepal	2,197	101,556.20
Remittances received from household members	2,482	95,997.54
Remittances received from outside household member	2,654	16,582.88
Remittances received from a male	3,857	65,050.57
Remittances received from a female	1,276	24,554.72
Remittances received from other donors	3	15,000.00
All remittances receiving households	3,178	88,822.17

Note: calculated from NLSS-III dataset

6.3.2 Summary of remittance outflow

The NLSS-III survey contains descriptions of remittance amounts that are sent to other family members, relatives (other than family) and friends within or outside Nepal. The following table shows the description of remittances sent by households in the period of one year. The obtained result shows that the number sending remittances within Nepal is very high compared to the figures sent outside Nepal. However, the average NRs amount is very low. 1,756 individuals received some remittances from their households, of them 1,322 (75.28 %) are male, and 434 (24.72 %) female. The average amount of out-remittance per male and female is NRs 26,056 and 12,682 respectively. Similarly, 2,241 migrants received remittances from 1,415 households with a mean of NRs 6,189 from the households of which they are not members. In total, 2,295 households sent remittances to someone in their family members or outside with an average of NRs 32,157 per HH.

Table 6:2 Analysis of remittance sent by Nepalese households

Description	Number	Average amount (NRs)
Remittances sent within Nepal	3,163	12,998.97
Remittances sent outside Nepal	834	39,191.43
Remittances sent to a household member	1,756	34,128.85
Remittances sent outside household member	2,241	6,189.72
Remittances sent to a male	1,728	26,056.29
Remittances sent to a female	2,269	12,682.30
Remittances sending households	2,295	32,157.48

Note: calculated from NLSS-III dataset

6.3.3 Analysis of migration and remittances

The table below presents the cross tabulation of the number of migration and receipt of remittances in Nepalese households. The result shows that out of 3,178 remittance-receiving households 897 (28.2%) have not sent out any migrants. Similarly, out of 2,810 remittance non-receiving households, 723 (25.7%) households have sent out migrants. Hence, migration of a family member is not a sufficient condition for the receipt of remittance for a household. It is not possible to distinguish between potential remitters and non-remitters in the migrant

population. The focus of this study is on remittances. Hence, households that have migrated members with no remittance are classified as non-remittance receiving households.

Table 6:3 Remittance by migration

Remittances	Having migrants		
	No (0)	Yes (1)	Total
Without remittances (0)	2,087 (74.3)	723 (25.7)	2,810
With remittances (1)	897 (28.2)	2,281 (28.8)	3,178
Total	2,984	3,004	5,988

Note: calculated from NLSS-III dataset (Percentage value on parenthesis)

6.3.4 Remittance by rural/urban region

Out of 3,178 remittance-receiving households, 2,246 are from the rural regions and the rest are from the urban region. 45% of urban and 58% of rural households receive remittances in Nepal. The result obtained indicates that the proportion of remittances receiving households in a rural area is significantly higher than that of urban area.

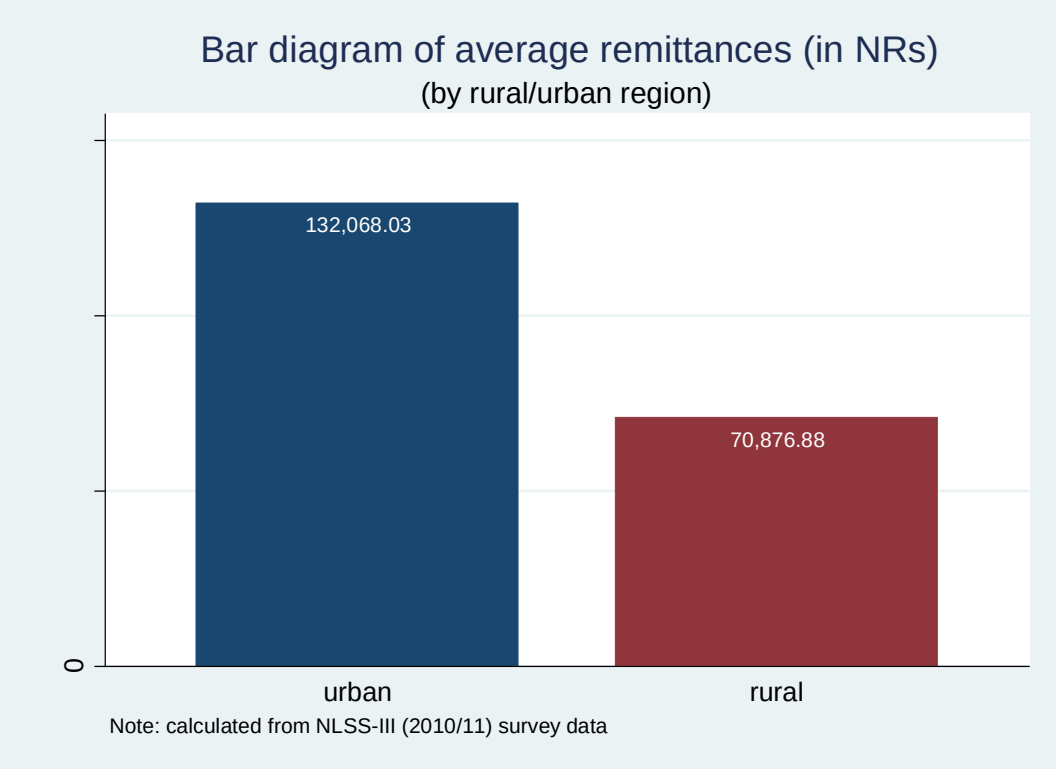
Table 6:4 Proportion of households receiving remittances in rural/urban region

Variable	Total households	Remittance-receiving households	Proportion of remittance receiving
Rural	3,900	2,246	0.5759
Urban	2,088	932	0.4464
t-test	9.57**		

Note: calculated from NLSS-III (2010/11) dataset

The following bar diagram shows the average remittance received by the households that are receiving any remittances by rural/urban region. Rural households receive less NRs 70,877 as remittance while urban households receive NRs 132,068. The t-test (= 6.64) indicates that the mean amount of remittances received by urban households are significantly higher.

Figure 6.1 Average remittance by region



6.3.5 Association between remittance and poverty

This study assumes that the households whose total per capita annual expenditure below the first quartile (Q25) (=NRs 25,057) as poor and others as non-poor. The following table depicts the difference in the remittance received between the two groups. The result shows that the poor households receive NRs 36,216.75 average remittance per year while non-poor receive NRs 104,397.80. The obtained t-test (= 6.829) shows that the difference is significant.

Table 6:5 Poverty and remittance

Poverty	Remittance-receiving households		
	Number of households	Average remittance received	t-test of the difference
(1= poor)	726	NRs 36,216.75	6.829*
(0 = Non-poor)	2,452	NRs 104,397.80	
Total	3,178	NRs 88,822.17	

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

The following table shows the number, proportion and t-test the proportion of poor in remittance receiving and non-receiving households. According to the obtained result, the proportion of remittance non-receiving households that are poor is 0.2744 while in remittance receiving households is 0.2284. The t-test (=4.096) indicates that the proportion of poor in remittance receiving households is significantly less than the proportion of poor in remittance non-receiving households.

Table 6:6 Proportion of poor in remittance receiving and non-receiving households

Description	Number of households	Number of poor households	Proportion of poor	t-test
No remittance	2,810	771	0.2744	t = 4.096*
With remittance	3,178	726	0.2284	
Total	5,988	1,497	0.1242	

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

6.3.6 Association between remittance and loans

The following table gives a comparison of remittance received in the households with and without outstanding loans to pay off. Out Of 3,178 remittance-receiving households in Nepal 1,137 households do not have any outstanding loans while 2,041 have some loan to pay. In an average, the households without any outstanding loans receive NRs 112,599 remittance per year while those with loan receive only NRs 75,577. The difference is significant.

Table 6:7 Remittance and loan

Variable	Households		
	Number	Average remittances (NRs)	t-test
Without loan (0)	1,137	112,598.60	t = 4.215
With loan (1)	2,041	75,576.80	(p = 0.0000)
Total	3,178	88,822.17	

Note: calculated from NLSS-III dataset

6.3.7 Association of remittance and migration with ethnicity/caste

Nepal has the very complex structure of the ethnic composition, as there are more than 120 different ethnic groups. Although NLSS-III survey lists 103 different ethnic groups living in Nepal, it gives information on 80 various ethnic groups. For the analysis purpose, these ethnic groups are classified into eight major classes according to their socio-economic status. The detail of the classification is given in the appendix 4. The following table shows the average rate of migration in the ethnic groups. The groups Hill Janajati and Brahman/Chhetri have a higher migration rate compared with the other ethnic groups.

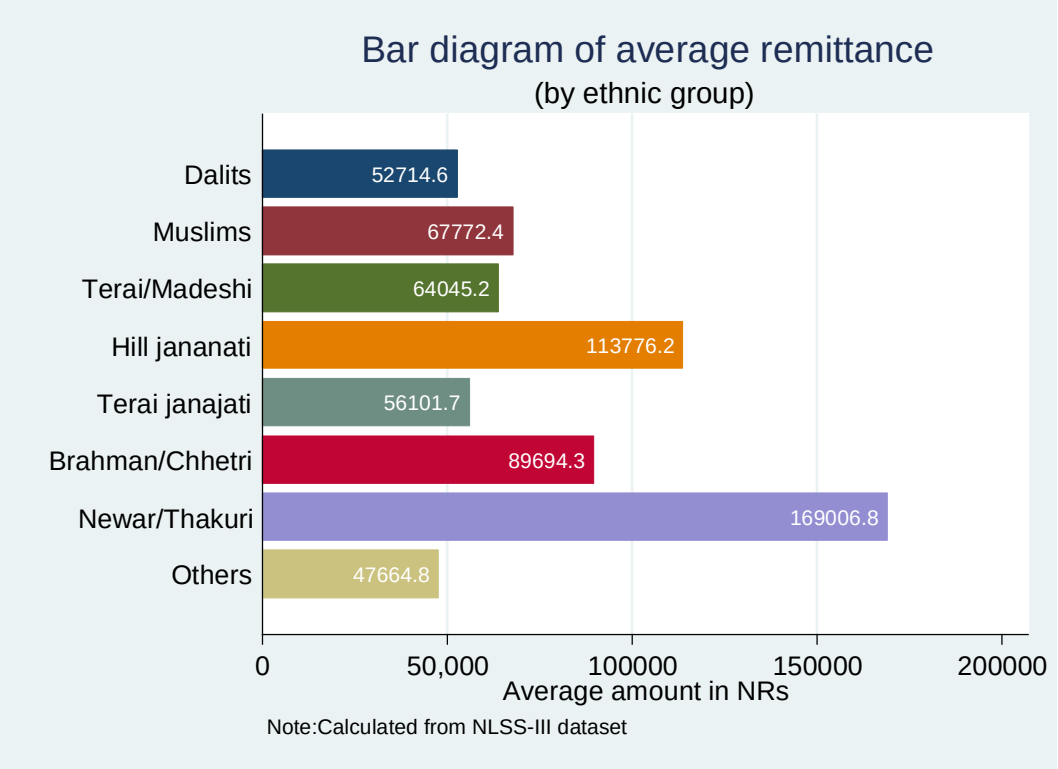
Table 6:8 Migration by ethnicity

Migration	Dalits	Muslims	Terai/ Madeshi	Hill Janajati	Terai Janajati	Brahman/ Chhetri	Newar/ Thakali	Others
Rate (%)	15.30	15.28	12.07	20.11	14.76	19.96	14.84	11.59
Per household	0.91	1.09	0.78	1.14	0.89	1.12	0.79	0.65

Note: calculated from NLSS-III (2010/11) dataset

The following bar diagram shows the average amount received by the households that receive remittance in different ethnic groups. The result indicates that the groups in higher socio-economic status such as Newar/Thakali along with Hill Janajati groups that have long experience in migration receive higher remittances. The backwards classes such as Dalits, Muslims, Terai/Madeshi groups, and others classes received relatively lower remittances.

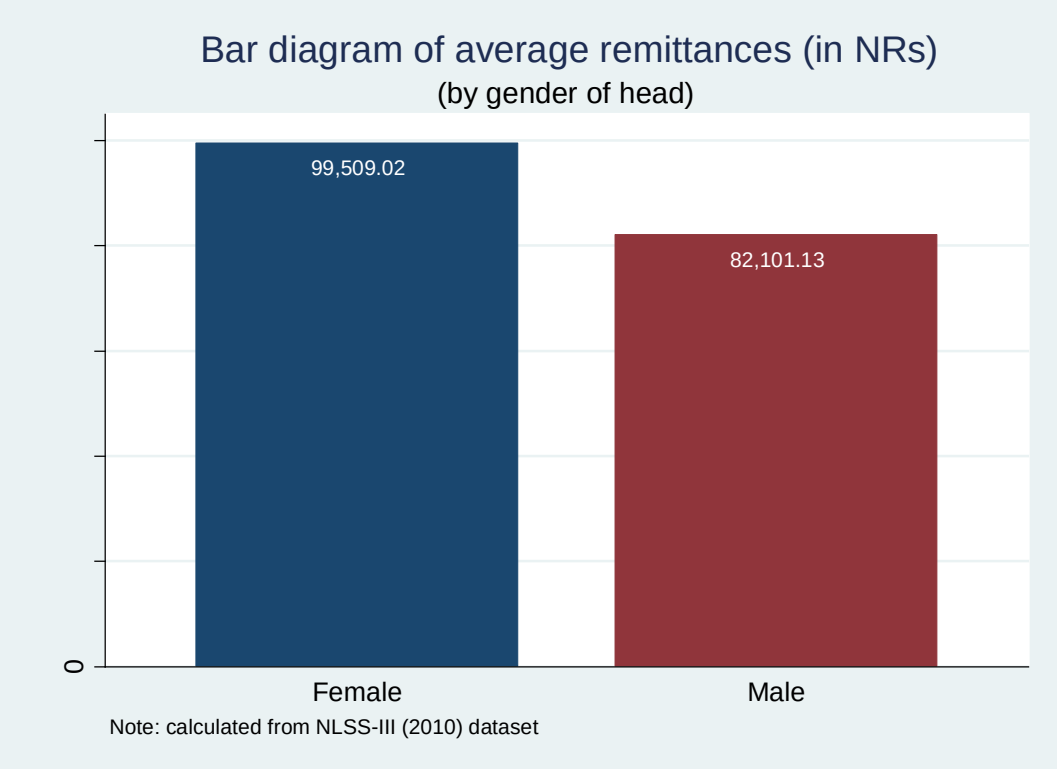
Figure 6.2 Average remittance by ethnic group



6.3.8 Association between remittance and gender of head

In the NLSS-III dataset, out of 3,178 remittance-receiving households, 1,227 households are female headed. The bar diagram below shows the average remittance received by the gender of head on those households that have obtained remittances in the period of one year. The Figure 1.1 Remittance in South Asian countries (% of GDP)result indicates that female-headed households have received NRs 99,509.02 while the male headed household have received NRs 82,101.03. The t-test (p-value = 0.0447) indicates that the difference is statistically significant are significant at 5% level.

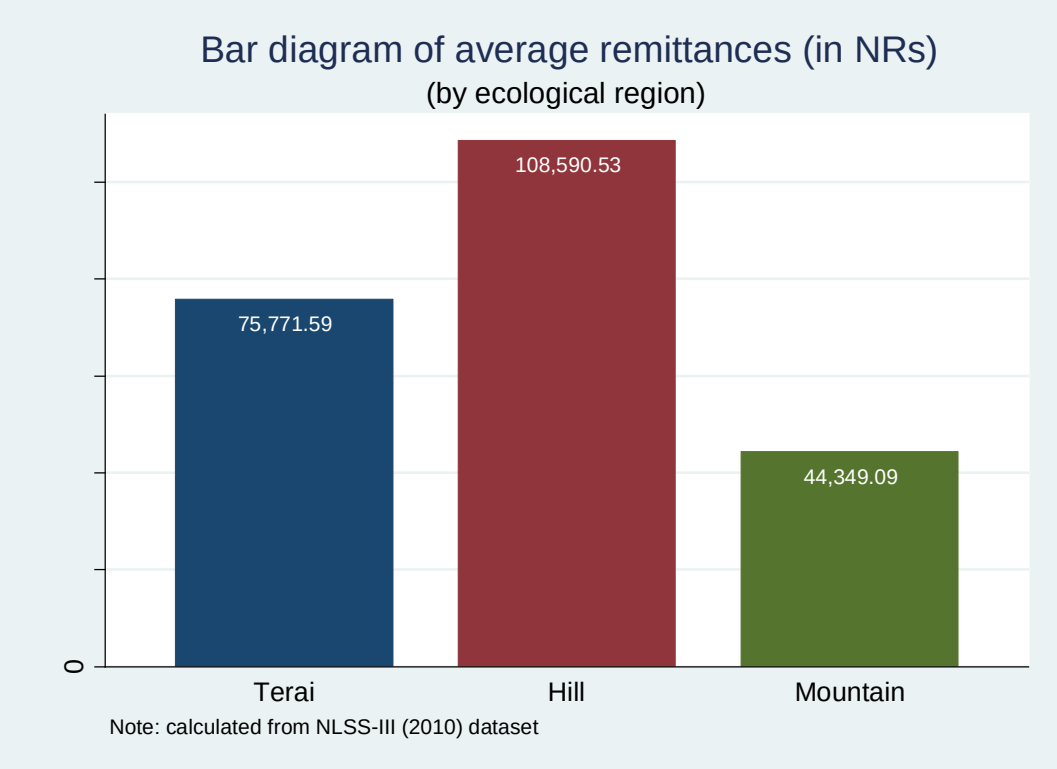
Figure 6.3 Average remittance by gender of head



6.3.9 Analysis of remittance by ecological zone

Out of 3,178 remittance receiving households in NLSS-III dataset, 1,466 households are from Terai, 1,483 from hills, and 229 from Mountain region. The bar diagram shown below depicts the average remittance received by the households living in different ecological zones in Nepal. Each household in Hills has received NRs 108,591 remittance per year compared with NRs 44,349 in mountain zone and NRs 75,772 in Terai region in Nepal. The test shows that there is a significant difference (F= 11.39 with p = 0.000).

Figure 6.4 Average remittance by ecological zone



6.4 Analysis of per-capita expenditure

The descriptive statistics of per-capita expenditure and its inter-relationship with other variables are shown in the following sub-sections.

6.4.1 Descriptive statistics of the expenditure bundles

Table 6:9 shown below gives average per capita annual expenditure on different bundles in Nepalese households. The highest per capita annual expenditure of Nepalese households is on food group followed by consumer goods and durables with NRs 21,534 and 12,509 respectively.

Table 6:9 Descriptive analysis of the per capita expenditure on different bundles

Expenditure bundles	Mean	Std. Dev.	Minimum	Maximum
Food Expenditure	21,533.96	12,334.18	2,220.00	150,115.00
Housing Expenditure	7,452.73	14,844.84	92.00	300,000.00
Consumer and Durables	12,508.71	18,050.55	536.00	484,173.00
Education Expenditure	3,853.84	10,616.07	0.00	300,000.00
Health Expenditure	2,726.98	9,223.86	0.00	252,500.00
Other Expenditure	8,083.19	19,860.99	0.00	388,650.00
Total	56,159.40	55,340.55	5,712.00	1,201,444.00

Source: calculated from NLSS-III (2010/11) dataset

The table below shows that the highest proportion of the expenses of Nepalese households is on food group with 48.21% share. On average, Nepalese households spend approximately 70% of their budget on food and consumer goods/durables. The result indicates that households allocate the least proportion of their budget for health and educational purposes.

Table 6:10 Descriptive statistics of proportional allocation of per capita expenditure

Variables	Mean	Std. dev.	Minimum	Maximum
Food expenditure (C1i)	0.4821	0.1606	0.0334	0.8782
Housing expenditure (C2i)	0.1007	0.0982	0.0030	0.8307
Consumer goods and durables (C3i)	0.2157	0.0783	0.0107	0.8728
Education expenditure (C4i)	0.0563	0.0688	0.0000	0.8129
Health expenditure (C5i)	0.0446	0.0738	0.0000	0.8783
Others expenditure (C6i)	0.1006	0.1142	0.0000	0.8883

Note: calculated from NLSS-III (2010/11) dataset

6.4.2 Quintile groups of per-capita expenditure

The following table shows an average per-capita expenditure of Nepalese households on the quintile basis. The poorest quintile group make just NRs 17,352.88 expenditure per year while the richest quintile group make NRs 136,397.10 expenditure per year. The result shows

that the households with highest 20% expenditure spend 7.86 times more than the lowest 20%. The lowest quintile group of households have a share of 6.18% on total expenditure while the highest quintile group have 48.55 % proportion.

Table 6:11 Per-capita expenditure by quintile groups

Quintiles	Average expenditure (NRs)	Share expenditure (%)	Cumulative share (%)
First (poorest)	17,352.88	6.18	6.18
Second	27,613.30	9.84	16.02
Third	39,532.10	14.07	30.09
Fourth	59,954.73	21.36	51.45
Fifth (Richest)	136,397.10	48.55	100.00
Total	56,159.40	100.00	

Note: Calculated from NLSS-III dataset

6.4.3 Association between proportional expenditure and loan

The following table presents the comparison of the expenses between the households that have outstanding loans to pay and those that do not. The result obtained shows that except in the basket of consumer goods and durables goods there is statistically significant difference in the proportional allocation of budget between these two groups.

Table 6:12 Difference in expenditure proportion by loan (done)

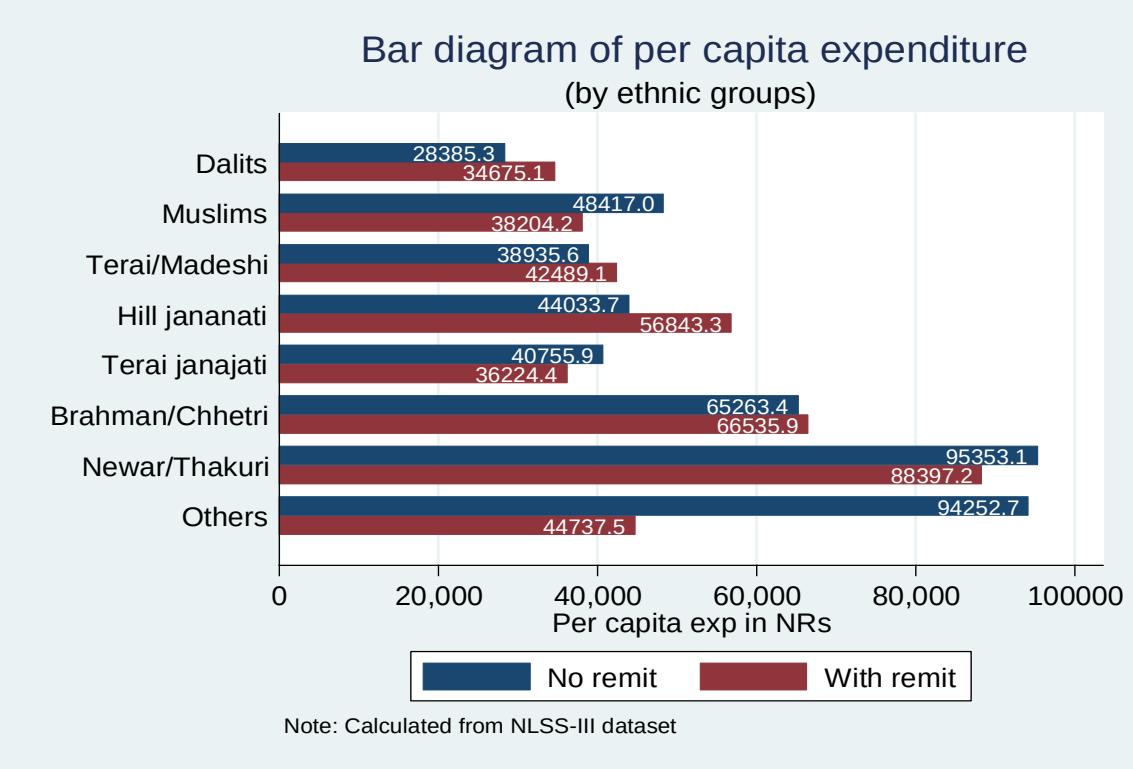
loan Status	Number	Expenditure Bundles					
		Food (c1i)	Housing (c2i)	Consumer durables (c3i)	Education (c4i)	Health (c5i)	Other (c6i)
0 (has no-loan)	3,715	0.4630	0.1250	0.2166	0.0622	0.0371	0.0961
1 (has loan)	2,273	0.4938	0.0859	0.2152	0.0526	0.0492	0.1033
t-test		-7.24 *	15.25 *	0.69	5.26*	-6.17 *	-2.39 *

Note: t-test (* significance at 5%, ** significance at 10%)

6.4.4 Per-capita average expenditure by ethnic groups

Similarly, the bar diagram shown below compares per capita average expenditure among different ethnical groups. The result shows that per capita annual expenditure in Muslims, Newar/Thakali, and others group is less in those households that receive remittances. However, average per capita average expenditure in Dalits, Terai/Madeshi, Janajati, and Brahman/Chhetri ethnical groups is higher in remittance receiving households in Nepal.

Figure 6.5 Per capita average expenditure by ethnicity (with and without remittances)



6.4.5 Expenditure on different bundles by quintile groups

The following table shows the comparison of budget share on a different basket of goods among those households that are in various per capita quintile groups. The result indicates that the proportional spending on food decreases as the households move from lower quintile expenditure group to higher quintile group while the proportional spending on housing, consumer goods and durables, education, health and other bundles goes up with the movement from the lower to higher per capita expenditure.

Table 6:13 Proportional expenditure on different bundles among quintile groups

Per capita quintile groups	Number	Expenditure Bundles					
		Food (C1i)	Housing (C2i)	Consumer durables (C3i)	Education (C4i)	Health (C5i)	Other (C6i)
1 (first)	1198	0.6205	0.0610	0.2062	0.0336	0.0347	0.0440
2 (second)	1198	0.5666	0.0676	0.2133	0.0424	0.0421	0.0681
3 (third)	1197	0.5040	0.0837	0.2173	0.0560	0.0466	0.0924
4 (fourth)	1198	0.4238	0.1222	0.2193	0.0697	0.0475	0.1177
5(fifth) highest	1197	0.2955	0.1692	0.2226	0.0797	0.0522	0.1808

Note: calculated from NLSS-III dataset

6.5 Remittance and expenditure

6.5.1 Per capita quintile groups and remittance

The following table presents average remittance received by per capita quintile groups. The average household remittance increases from NRs 36,803.22 to NRs 183,702.09 from lowest quintile group to highest quintile group. The percentage share of the first quintile on total remittance received is just 7.18 % while that of highest (fifth) quintile group is 40.54 %.

Table 6:14 Household remittance by per capita quintile groups

Per capita quintile group of households	Number of remittances receiving households	Average remittance received (NRs)	Percentage share in total remittance
First quintile group (1)	574	36,803.22	7.48
Second quintile group (2)	664	49,996.53	11.76
Third quintile group (3)	687	76,277.29	18.56
Fourth quintile group (4)	630	96,992.40	21.65
Fifth quintile group (5)	623	183,702.09	40.54
Total	3,178	88,822.17	99.99

Note: Calculated from NLSS-III dataset

6.5.2 Comparison of expenditure shares on different bundles between remittance receiving and non-receiving households

One of the objectives of this study is to examine the impact of the receipt of remittances on expenditure behaviour of households in Nepal; it is important to show the comparison of allocation of budget between remittance receiving and non-receiving households. The following table shows the average budget share devoted to the six bundles of expenditure between by these two groups in Nepal. The obtained result reveals that both the groups allocate the highest proportion on food category and least on health.

Table 6:15 Expenditure shares on different bundle of goods in NLSS-III (2010/11)

Expenditure Bundles	**Description**	**Examples**	**Average Expenditure Share**	
			Households without remittances (n = 2810)	**Household with Remittances (n= 3178)**
Food (C1i)	Household expenditures on food (purchased and non-purchased)	Rice, milk, flour, egg, vegetables, potatoes, and so on.	0.4819 (0.1660)	0.4823 (0.1557)
Housing (C2i)	Value of houses (rental or owned)	One year's use value of rented or owned houses.	0.1068 (0.1014)	0.0953 (0.0950)
Consumer goods and Durables (C3i)	Consumer goods and household durables	The cost of clothes, shoes, toothpaste, newspapers and so on. One year's use value of durable goods (such as TV, Freezer, computer)	0.2171 (0.0819)	0.2145 (0.0749)
Education (C4i)	Educational Expenditures	Tuition, uniform, stationery, and transportation cost	0.0566 (0.0684)	0.0560 (0.0691)
Health (C5i)	Health Expenditures	Hospital, medical and medicine cost	0.0409 (0.0702)	0.0479 (0.0767)
Others (C6i)	infrequent items and utilities	Insurance cost, religious expenses, cost of electricity, water bill, and so on.	0.0967 (0.1066)	0.1040 (0.1204)

Source: calculated from NLSS-III (2010/11) dataset. (values in parenthesis are standard deviation)

6.5.3 Analysis of proportional expenditure by gender

The following table presents the comparison of spending behaviour between male and female headed households in Nepal. The obtained result shows that there is statistically significant difference in the proportional expenditure in food, housing, consumer goods and durables, and education between male and female headed households. There is significantly higher proportional spending on housing and education in female-headed households and less on food and consumer goods and durables bundles.

Table 6:16 Comparison of proportional expenditure between male and female headed households

Household head	Number	Expenditure Bundles					
		Food (c1i)	Housing (c2i)	Consumer durables (c3i)	Education (c4i)	Health (c5i)	Other (c6i)
0 (Female)	1,599	0.47	0.11	0.21	0.06	0.04	0.10
1 (Male)	4,389	0.49	0.10	0.22	0.05	0.04	0.10
t-test		-2.86*	2.41*	-2.24*	5.71*	0.06	0.013

Note: t-test (* significance at 5%, ** significance at 10%)

6.5.4 Analysis of proportional expenditure by rural/urban region

The following table makes a comparison of expenditure between households on rural and urban regions in Nepal. The obtained result depicts that there is statistically significant difference on the proportional expenditure in all six bundles of goods in the households of these two regions. The result shows that the households in the rural region have allocated significantly less proportion of their expenditure budget on housing, consumer goods and durables, education and other goods than households in the urban region while they allocate more on food and health.

Table 6:17 Comparison of proportional expenditure between rural and urban households

Region	Number	Expenditure Bundles					
		Food (c1i)	Housing (c2i)	Consumer /durables (c3i)	Education (c4i)	Health (c5i)	Other (c6i)
0 (Rural)	3,972	0.5329	0.0731	0.2130	0.0411	0.0476	0.0922
1 (Urban)	2,016	0.3819	0.1551	0.2212	0.0860	0.0387	0.1172
t-test		38.384*	-33.185*	-3.847*	-25.085*	4.450*	-8.050*

Note: t-test (* significance at 5%, ** significance at 10%)

6.6 Descriptive statistics of the welfare of children

This study takes education and health of the children as proxies for the analysis of child welfare in Nepalese households. It is common in Nepal to invest more on their young children than other members of their family. In this section, this study discusses the descriptive statistics of the allocation of educational expenditure on children.

6.6.1 Analysis of the children that are not attending any school currently

Altogether, there are 9,370 children aged between 6 to 18 years, 8,201(87.52%) are currently attending a school, and 1,169 (12.48%) are not attending any school. The following table makes an analysis of no-schooling children among other socio-economic variables. The result indicates that the proportion of no-schooling is higher in girls, poor households, no-remittance households, and rural regions of Nepal. Hence, it is appropriate to study the educational expenditure between boys and girls.

Table 6:18 Analysis of the children (6 to 18 years) that are not attending any school

	Gender		Poverty		Remittance		Region	
	Girls	Boys	Poor	Non-poor	With	Without	Rural	Urban
Total Number	4,809	4,561	3,447	5,923	4,889	4,481	6,789	2,581
Number (not in school)	685	484	579	590	571	598	875	294
Proportion	0.14	0.11	0.17	0.10	0.12	0.13	0.13	0.11
p-value (t-test)	0.0000*		0.0000 *		0.014*		0.050 *	

Note: t-test (* significance at 5%, ** significance at 10%)

6.6.2 Per child educational expenditure in Nepal

The table shown below presents the descriptive statistics of education expenditure of the children in Nepal. The mean of educational expenditure per school-going child in Nepal is NRs 7,018 and for girls and boys is NRs 6,595 and NRs 7,443 respectively with a significant difference between them (p-value = 0.0098).

The average of educational expenditure of those going to private school is NRs 15,436 while that of going to government and other schools is NRs 3,396 per child with a statistically significant difference (p-value = 0.000). Similarly, the child education expenditure between rural and urban region also differ significantly (p-value = 0.0000) with per child expenditure being NRs 3,576 on the rural region and NRs 15,752 on the urban region. The obtained result also shows that remittance-receiving households are spending only NRs 6,464 while remittance non-receiving households are spending NRs 7,642 on the education per child. The p-value (= 0.003) shows that the difference is significant.

In part (b) of the table depicts the average educational expenditure per child is least in Dalits; the most backwards class in Nepal. The children of higher socio-economic category get more educational expenditure than that of Dalits. In the ecological region, the children of the hills region have highest educational expenditure while children of the mountain region have least.

Part (c) of the following table shows yearly educational expenses by expenditure quintiles. It indicates that there is a continuous decrease in the number of children with the increase in

expenditure quintiles and the households with higher quintiles are spending more on child education.

Table 6:19 Association between educational expenses and socio-economic variables (a)

	Gender		School type		Remittance		Region	
	Girls	Boys	Private	Public	With	Without	Rural	Urban
Number	4,630	4,604	2,915	6,319	4,889	4,345	6,624	2,610
Mean Expenditure	6,595.14	7,443.56	15,435.66	3,396.13	6,463.50	7,642.26	3,576.71	15,752.31
(p-value) t-test	0.0098*		0.0000 *		0.0003*		0.0000 *	

Note: calculated from NLSS-III survey dataset (* significance at 5%, ** significance at 10%)

Table 6:20 Association between educational expenditure and socio-economic variables (b)

	Caste and ethnic groups							Ecological region		
	Dalits	Muslim	Terai / Madeshi	Janajati	Brahman /Chhetri	Newar / Thakali	Others	Terai	Hills	Mountain
Number	1,167	367	1,113	2,632	3,204	695	56	1,590	6,624	2,610
Mean Expenditure	3,023.32	4,303.70	4,286.30	5,255.81	8,867.56	17,697.54	6,831.91	5,281.13	9,079.00	3,209.95
ANOVA (p-value)	0.0000*							0.0000 *		

Note: calculated from NLSS-III survey dataset (* significance at 5%, ** significance at 10%)

Table 6:21 Per child educational expenditure by expenditure quintiles (c)

	First (lowest)	Second	Third	Fourth	Fifth
Number	2,648	2,173	1,861	1,457	1,095
Mean expenditure(NRs)	1,482.61	2,885.95	5,395.17	11,189.35	25,813.04

Note: calculated from NLSS-III survey dataset

6.6.3 Private school education in Nepal

In Nepal, the education in public school, is provided by the government. The tuition fee in such schools is either free or very low, but the quality of the education remains poor. The following table reveals several interesting contrasts between the children going to private school or the public school in Nepal. The table shows that there is a difference in the proportion of the children attending a private school by gender, region, and poverty. However, the result indicates that there is no difference in the proportion of children going to private school in remittance receiving and non-receiving households.

Table 6:22 Comparison of educational expenditure among socio-economic variables

Number of children	Gender		Remittance		Region		Poverty	
	Girls	Boys	With	Without	Rural	Urban	Poor	Non-poor
Total (a)	4,630	4,604	4,889	4,345	6,624	2,610	3,223	6,011
Attending a private school (b)	1,212	1,566	1,478	1,300	1,220	1,558	278	2,500
Proportion of children on a private school (c) = (b)/(a)	0.26	0.34	0.30	0.30	0.18	0.40	0.09	0.42
t-test	-8.21*		-0.033		-21.99 *		-32.92*	

Note: calculated from NLSS-III survey dataset (* significance at 5%, ** significance at 10%)

6.6.4 Nutritional condition among children in Nepal

To make a comparison of the health status of children this study concentrates on the households that have at least one child below age 60 months. It uses weight for age z-scores (WAZ) of the children aged less than five years because WAZ is one of the most commonly used measures of the nutritional status of early childhood and is widely used for analysis and presentation of anthropometric data (Mansuri, 2006b).

The following table shows a comparison of the number of malnourished children in the rural/urban region, male/female headed households, and poor/non-poor households in Nepal. The result depicts that rural regions have a significantly higher proportion of malnourished children than urban regions. Similarly, male headed and poor households have a significantly

higher proportion of malnourished children. The ratio of malnourishment does not differ by the gender of children.

Table 6:23 Association of malnourishment with other (socio-economic) variables

	Region		Gender of head		Poverty		Gender of child	
	Urban	Rural	Female	Male	Poor	Non-poor	Female	Male
Total children (a)	619	1884	554	1949	1138	1365	1209	1294
Malnourished Children (b)	119	680	152	647	459	340	398	401
Proportion of malnourished (c) = (b) / (a)	0.19	0.36	0.27	0.33	0.40	0.25	0.33	0.31
(z-value)	7.81*		-2.57 *		8.24*		1.03	

Note: calculated from NLSS-III survey dataset (* significance at 5%, ** significance at 10%)

6.6.5 Remittances and health of children

The result of expenditure function discussed earlier shows that there is no significance difference in the spending pattern of households with and without remittances in the health care of household members. Further, this study discusses equality of child health status between remittance receiving and non-receiving households. Out of 2,503 children, 1,365 are from remittance receiving households and 1,138 are from remittance non-receiving households. Of them, 799 (31.9%) are malnourished (WAZ score < -2).

6.6.6 WAZ of Children in remittance receiving and non-receiving households

This study uses the anthropometric information given in NLSS-III survey to estimate the WAZ values of children. The table below shows the comparison of WAZ between boys and girls aged up to 59 months in remittance receiving and non-receiving households. The p-value of obtained result concludes that there is no significant difference in the mean WAZ score among boys and girls in remittance receiving and non-receiving households.

Table 6:24 Comparison of WAZ score of children between remittance receiving and non-receiving households

	All		Remittance-receiving		Remittance non-receiving		Mean difference
	Count	WAZ	Count	WAZ	Count	WAZ	
Boys	1,294	-1.4456	691	-1.4203	603	-1.4747	0.0544 (0.413)
Girls	1,209	-1.4937	674	-1.5000	535	-1.4858	-0.0141 (0.838)
Total	2,503	-1.4689	1,365	-1.4596	1,138	-1.4799	-0.0385 (0.450)
Mean difference		0.0481 (0.314)		0.0797 (0.189)		0.0111 (0.884)	

Note: p-value of t-test on parenthesis, * significant at 5% level and ** significant at 10% level

6.6.7 Remittance and Malnutrition among children

The following table presents a comparison of the proportion of malnutrition between boys and girls in remittance receiving and non-receiving households in Nepal. The z-score of nutritional value among children is divided into four categories by the degree of malnutrition: Normal (> -1 SD), Mild (-1 SD to -2 SD), Moderate (-2 SD to -3 SD) and severe (< -3 SD). There is significance difference in the proportion of severe and mild categories for boys, and mild categories in the combined group of remittance receiving and non-receiving households in Nepal. There is no difference in the proportion of malnutrition in girls. Although these descriptive statistics are based on simple proportional comparisons, suggest that the proportion of the number of boys in remittance receiving households is significantly less in severely malnutrition group than their counterparts in remittance non-receiving households in Nepal.

Table 6:25 A comparison of proportional malnutrition among children

Degree of malnutrition	Boys			Girls			Combined		
	NR	RR	Dif	NR	RR	Dif	NR	RR	Dif
Severe (< -3)	0.0962	0.0608	0.0354*	0.1028	0.1009	0.0019	0.0993	0.0806	0.0187
Moderate (-3 to -2)	0.2521	0.2156	0.0365	0.2449	0.2136	0.0313	0.2487	0.2147	0.0340*
Mild (-2 to -1)	0.3134	0.3835	-0.0700*	0.3196	0.3620	-0.0424	0.3163	0.3729	-0.0564*
Normal (> -1)	0.3383	0.3401	0.0018	0.3327	0.3234	0.0093	0.3357	0.3319	0.0038

Notes: NR refers to no-remittance households. RR refers to remittance receiving household. Dif is the difference in proportion. ** denotes a p-value <0.10; * denotes a p-value<0.05

6.7 Summary of descriptive statistics

6.7.1 Summary of the treatment variable - the remittance receiving households

A total 6,074 people migrated from 3,004 households of whom 4,390 (72.28%) are male, and 1,684 (27.72%) are female. It shows that migration in Nepal is predominantly male dominated and the average amount sent by a male migrant is significantly higher than by a female migrant. The households with international remittances receive the significantly higher amount than those receiving internal remittances only, which indicates that international remittance is of great importance in Nepalese context. Out of 3,900 rural households 2,246 (57.59%) have received remittances while of 2,088 urban households 932 (46.64%) have received remittances. Average remittance amount received by an urban household is significantly higher than that received by a rural household in Nepal. Similarly, poor households have received significantly low NRs 36,217 only while compared with other households that have received NRs 104,397.80.

6.7.2 Summary of the outcome variables

6.7.2.1 The expenditure bundles of goods

The result shows that large proportion of household budget is allocated for food. Altogether, Nepalese households spend approximately NRs 56,159.40 per year and spend 70% of their budget on food and consumer goods/durables. The poorest quintile group has 6.18% share of expenditure while the richest quintile group has 48.55 % share of expenditure showing a high level of inequality on expenditure. The result obtained also indicates that there exists a

significant difference in the proportional spending on different bundles of goods between urban and rural households. The rural households' expenditure behaviour seems to be quite distinct from that of urban households. The result also reveals that male headed households and female-headed households differ in the allocation of budget in food, housing, consumer goods and durables, and health bundles.

6.7.2.2 Child welfare

The result reveals that per capita expenditure on education of school-age children (up to 18 years) is NRs 7,018. The average educational expenditure of a child in Nepal significantly differs in rural and urban region, male and female child, remittance receiving and non-receiving households, and government and private schools. Also, the proportion of children going to private school differs significantly in the rural and urban region, male and female child, and poor and non-poor households although it does not differ in remittance receiving and non-receiving households.

The result indicates that the proportion of malnourished children is significantly higher in rural regions, and in male-headed, and poor households, although, it does not differ between boys and girls, in Nepal.

CHAPTER 7

EMPIRICAL ANALYSIS

7.1 Introduction

This chapter is the key component of this thesis as it presents the statistical finding on the effect of remittance on Nepalese households. This chapter provides the descriptive statistics of the households, makes a comparison of some important variables between remittance non-receiving and remittance-receiving households, and finally quantifies the effect of remittance on the expenditure behaviour of households and education and health of the children.

The chapter is organised as follows. Section 7.2 explains the result of the treatment function. It discusses the determinants of receipt of the remittances in the Nepalese context. Section 7.3 explains the impact of remittance on the share of expenditure of the different bundles of goods while section 7.4 explains the determinants of the expenditure share for the households without remittances. Section 7.5 explains the determinants of the expenditure share for the households with remittances. Section 7.6 presents the estimated results the impact of remittances on child welfare. Finally, Section 7.7 depicts post-estimation tests of the treatment effect model.

7.2 The Analysis of Result of Treatment Model

The table below shows the result of the estimation of the first stage treatment model with remittances (1) and without remittances (0). The result shows that the following types of households are less likely to be in the remittances receiving group: those with a male head (compared with female), larger family size, higher education of household head, on an urban region (compared with rural region), living on ecological region hills and mountains (compared with base Terai), and poor (households whose per capita expenditure is less than first quartile).

Also, the following types of households more likely to be in remittance receiving group: with more children (below 6 years), with more school-age children (6 to 18 years), more migrated members, higher asset index, having a family event (experiencing crisis), living in a region

where the migration network is greater, and residing in a highest conflict region (compared with the least one).

Moreover, the variables age of head, household loan, the land (in hectares), the asset index, the ethnic groups other than Janajati and Newar/Thakali do not have any significant effect on the probability of being of a household in the remittance receiving group (in the treated group). The obtained result indicates that the remittance receiving and non-receiving groups differ in some key characteristic variables in Nepal.

Therefore, some of the covariates significantly differ between remittance receiving and non-receiving households. These covariates need to be controlled before the evaluation of the household budget share on different bundles of goods.

Table 7:1 Parameter estimate of binomial treatment model

	Robust					
Variables	Coefficient	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Gender of Head	Female (base group)					
Male	-.7671009	.0474846	-16.15	0.000	-.8601689	-.6740328
Age of Head	.0015776	.001583	1.00	0.319	-.0015251	.0046802
Household size	-.0678959	.0171909	-3.95	0.000	-.1015895	-.0342023
Child (<6 years)	.1837208	.0335818	5.47	0.000	.1179016	.2495399
Child (6-18 yrs)	.0821379	.0226611	3.62	0.000	.0377231	.1265528
Number (migrated)	.3029927	.0211653	14.32	0.000	.2615095	.3444759
Caste	Dalits (base group)					
Muslims	-.2050019	.1154731	-1.78	0.076	-.4313251	.0213212
Terai/Madeshi	-.0006292	.0798268	-0.01	0.994	-.157087	.1558285
Hill Janajati	-.1682953	.0655266	-2.57	0.010	-.2967252	-.0398655
Terai Janajati	-.1362095	.0910127	-1.50	0.134	-.3145911	.0421722
Brahman/Chhetri	-.1143496	.0639462	-1.79	0.074	-.2396819	.0109827
Newar/Thakali	-.4603301	.0873455	-5.27	0.000	-.6315242	-.289136
Others	-.2591848	.2134745	-1.21	0.225	-.6775871	.1592175
Education of head	-.0118313	.0050139	-2.36	0.018	-.0216583	-.0020043
Loan						
Yes	.0597482	.0378681	1.58	0.115	-.0144719	.1339683
Poor						
Yes	-.2046067	.0509141	-4.02	0.000	-.3043965	-.1048169
Land (hectare)	.024108	.0221989	1.09	0.277	-.0194011	.0676171
Asset index	.7245266	.1515581	4.78	0.000	.4274781	1.021575
Urban						
Yes	-.2262768	.048324	-4.68	0.000	-.3209901	-.1315635
Household event						
Yes	.1256775	.037905	3.32	0.001	.0513851	.1999698
Ecological zone	Terai (base group)					
Hills	-.4738798	.0525448	-9.02	0.000	-.5768656	-.3708939
Mountain	-.2773796	.0847599	-3.27	0.001	-.443506	-.1112533
Migration network	Least(1) (base group)					
2	.1577137	.0561257	2.81	0.005	.0477094	.267718
3	.2206908	.0629693	3.50	0.000	.0972732	.3441083
4	.1802253	.0653125	2.76	0.006	.0522151	.3082355
5	.4605236	.0710011	6.49	0.000	.3213641	.5996831
Degree of conflict	Least affected area (1) (base group)					
2	.0633078	.0612665	1.03	0.301	-.0567724	.183388
3	.0700504	.0663575	1.06	0.291	-.0600079	.2001086
4	.1087347	.0648373	1.68	0.094	-.0183441	.2358136
5	.1624937	.0682813	2.38	0.017	.0286649	.2963225
_cons	.2729414	.1296487	2.11	0.035	.0188346	.5270481

Note: calculated from NLSS-III dataset (* significance at 5%, ** significance at 10%)

7.3 Remittance effect on expenditure behaviour of households

This study takes that the expenditure behaviour of households (the potential outcome) is influenced by the receipt of remittance (the treatment variable) along with other household and community variables. Also, some household and community variables also affect the receipt of remittance. Finally, this study is based on a comparison of expenditure on different bundles between two distinct and disjoint groups to estimate the effect of remittances on expenditure behaviour of households in Nepal.

The households themselves choose whether to send any of the family member/s (or a relative) for migration to obtain remittances. Hence, the households self-select into treated and untreated groups. Treatment may be binary or multivalued. In binomial treatment cases, each can receive one of two different treatments: take the treatment or not take the treatment at all. For the analysis of remittance effect on expenditure behaviour of households, this study uses binomial treatment having two alternatives: receive no remittances, or receive remittances (internal or international or both). This binomial treatment is estimated using a binomial logit model and is estimated at the first stage of analysis.

In the analysis of expenditure behaviour of Nepalese households, the outcome variables are the proportion of spending on six different bundles: food, housing, consumer goods and durables, education, health and other. They are estimated at the second stage of the model. The covariates used in this are based on the theoretical model, past studies, and the recent developments in this field.

7.3.1 Potential outcome means (POMs)

Potential outcome means (POMs) use a counterfactual framework to provide the solution of the problem of missing data. Here, POM gives the average of potential outcomes on different bundles of goods for a specific treatment level (without remittance and with remittance). The Table 7:2 shows that the potential outcome (POM) on the proportion of food bundle of the expenditure function for the households with no-remittance is 0.482. It means that if none of the households in NLSS-III survey dataset had received any remittance, on average the households would make 48.20% of their expenditure on food. Similarly, the POM if all households had received remittances is 0.484; it means that if all households in NLSS-III survey dataset had been given any remittance, on average the households would make 48.4% of their expenditure on food. The result obtained shows that the highest share of expenses is on food followed by consumer goods and durables. Also, Nepalese households allocate the

least proportion of their budget on health and education; it does not matter either they are receiving remittances or not. The robust standard errors show that all the expenditure shares on the different bundles are significant.

Table 7:2 Table of potential outcome means (POMs) on different bundles of goods

Expenditure Bundles	Without Remittances (a)	With remittances (b)
Food Expenditure (C1i)	0.4820* (0.0036)	0.4840* (0.0026)
Housing Expenditure (C2i)	0.1042* (0.0025)	0.0983* (0.0019)
Consumer goods/durables (C3i)	0.2160*(0.0017)	0.2148* (0.0014)
Education Expenditure (C4i)	0.0548* (0.0019)	0.0607* (0.0014)
Health Expenditure (C5i)	0.0428* (0.0017)	0.0447* (0.0013)
Other Expenditure (C6i)	0.1009* (0.0026)	0.0977* (0.0019)

Note: Robust standard error in parenthesis (* significance at 5%, ** significance at 10%)

7.3.2 Average treatment effect (ATE)

The following Table 7:3 shows the average remittance effect of remittance by making a comparison with the no-remittance group and the remittance effect on expenditure pattern on different bundles of goods on a percentage basis. The result obtained indicates that remittance has a positive effect on food, education and health bundles of goods while it has a negative effect on housing, consumer goods and durables and others expenditure group. Hence, the receipt of remittances tends to increase the expenditure on food, education, and health while it tends to decrease the expenditures on housing, consumer goods and durables, and other groups. The spending of households increases by 0.18 % percentage points on housing, 10.75 % on education and 3.50 % on health bundles. The result shows that only the changes in housing and education expenditure are significant at the 5% level.

Table 7:3 Average effect of remittance on expenditure bundles

Variables	Average remittance effect		
	Average effect		Average effect in percent
Food Expenditure (C1i)	0.0020	(0.606)	0.41 % increase
Housing Expenditure (C2i)	-0.0059 *	(0.050)	5.7% decrease
Consumer goods and durables (C3i)	-0.0012	(0.759)	0.56 % decrease
Education Expenditure (C4i)	0.0059 *	(0.010)	10.77 % increase
Health Expenditure (C5i)	0.0019	(0.391)	4.44 % increase
Other Expenditure (C6i)	-0.0032	(0.295)	3.17 % decrease

Note: p-value on the parenthesis (* significance at 5%, ** significance at 10%)

7.3.3 Average treatment effect on the treated (ATET)

The ATET is the average effect of remittance on expenditure bundles among those households that are receiving remittances. In this study, it is used to calculate how much the remittances have brought a change in the expenditure pattern among those households that have received it. To compare the expenditure behaviour of Nepalese households, this study takes the proportion of expenditure of the households with no remittance as the baseline. To estimate the remittance (treatment) effect on expenditure behaviour of those households that are receiving remittances, we need the understanding of some counterfactual situation: what if the expenditure behaviour of households would be if the remittance (treatment) were not received. Column (3) of the table given below shows the expenditure that households with remittances would have spent if they were without remittances i.e. give the counterfactual proportion of expenditure on different bundles of goods. The columns (4) shows the average change in expenditure bundles when each household receives remittances.

In the group of households receiving remittances, the average proportion of expenditure on food group would be 0.4812 if none of these households received remittances. For the households having remittances, the percentage of expenses on food group is 0.4824 with 0.2329 % more than if none of these households received remittances. The table shows that the change in proportional expenditure is statistically significant in housing only. The percentage change in housing expenditure 6.4 % lower because they received remittances.

Table 7:4 Average treatment effect on the treated (ATET) on expenditure bundles

Expenditure bundles (1)	No-remittances Counterfactual (2)	Households receiving remittances	
		Estimated (3)	Change (percentage points) (4)
Food	0.4812	0.4824	0.2329
Housing	0.1018	0.0952	-6.4122**
Consumer goods/durables	0.2142	0.2145	0.1393
Education	0.0535	0.0560	4.6524
Health	0.0443	0.0479	8.2591
Other goods	0.1051	0.1040	-0.9894
Total	1.0001	1.0000	

Note: calculated from NLSS-III dataset (* significance at 5%, ** significance at 10%)

7.4 Analysis of Expenditure Function of the Households without Remittances

The table below shows the estimated expenditure function on the bundles of goods for the households without remittances. This shows that not all the covariates have equal effect on the outcome model. The variables are discussed under the following headings:

7.4.1 Food expenditure

The obtained result suggests that the expenditure on food is statistically significantly affected (at 5% level) by these variables - the number of school age children, family event, rural/urban region, and asset index. The coefficient of the variable logarithm of per capita total expenditure is negative implies that the proportion of food expenditure decreases at a decreasing rate with the increase in per-capita total expenditure. The result indicates 1 % increase in per-capita total expenditure leads to 0.14% decrease in food expenses. It also shows that the covariates sex of household head, number of school-age children at home,

structure of housing, the number of family members with higher education, and the household loan do not have a significant effect on food expenditure.

7.4.2 Housing expenditure

The obtained result shows that the spending on housing is significantly affected (at 5% level) by the covariates age of household head, household loans, permanent house type (compared with temporary type), rural/urban region, hill region (compared with Terai), the ethnic groups Brahman/Chhetri and Newar/Thakali (compared with Dalits). The result also indicates that the variables gender and education of head, household size, the number of children, the number of migrants, and the size of land holding do not have a significant effect on the housing expenditure.

7.4.3 Consumer goods and durables

The variables have significant effect on the proportion of expenditure on consumer goods and durables are - number of school-age children (6-18 years), education of head, asset index, house type semi-permanent and permanent (compared with temporary), household loans, and ethnicity except Terai/Madeshi and Terai Janajati (compared with base Dalits).

7.4.4 Education expenditure

The result shows that the variables the age of household head, the number of school-age children (6 to 18 years), asset index, outstanding loans to pay, rural/urban, and ecological zone have a statistically significant effect on the share of educational expenditure of households. Out of them, the age of head and outstanding loan to pay has a negative effect while the others have a positive effect.

7.4.5 Health expenditure

The share of health expenditure is significantly affected by these covariates: the number of children, education of head, asset index, permanent house type (compared with temporary type), Hill region (compared with base Terai), and asset index. The result also shows that proportion on health expenditure increases at a decreasing rate with total per-capita expenditure.

7.4.6 Others

The budget share of this bundle is significantly affected (at 5% level) by the covariates household size, household event, education of head, asset index, household loans, rural/urban

and mountain zone (compared with base Terai), and poor. The variables gender and education of head, the number of children at home, and the house type do not have any significant effect on these bundles of goods. The result also shows that an increase in total per capita expenditure leads to a rise in the proportion of this bundle at a decreasing rate.

Table 7:5 Parameter estimate of expenditure function (households without remittances)

Variable	Food	Housing	Consumer/dur	Education	Health	Others
Log(total exp)	-0.1387*	0.0052	-0.0157*	0.0143	0.0343*	0.1007*
Gender of Head						
Male	-0.0084	-0.0173	0.0078	0.0005	0.0097	0.0077
Age of Head	0.0002	0.0006*	-0.0002	-0.0007*	-0.0000	0.0001
Household size	-0.0061	-0.0032	0.0023	0.0007	0.0007	0.0056*
Child (<6 years)	-0.0059	-0.0008	0.0015	-0.0026	0.0087*	-0.0008
Child (6-18 yrs)	-0.0097*	-0.0018	-0.0068*	0.0162*	0.0068**	-0.0047
Household event						
Yes	-0.0519*	-0.0119	-0.0072	0.0011	0.0001	0.0697*
Number (migrated)	0.0001	0.0019	-0.0011	0.0014	0.0009	-0.0031**
Education of Head	0.0015	0.0010	0.0027*	-0.0009	-0.0023*	-0.0021*
Asset index	-0.1418*	0.0510	0.1537*	0.0740*	-0.0542**	-0.0828*
House type	Temporary (base group)					
Semi-permanent	-0.0268**	0.0150**	-0.0116*	0.0136*	-0.0034	0.0133
Permanent	-0.0341**	0.0651*	-0.0232*	-0.0006	-0.0222*	0.0149
Land (hectare)	0.0015	-0.0026	-0.0007	0.0001	-0.0010	0.0027
Loan						
Yes	0.0132	-0.0159*	-0.0114*	-0.0153*	0.0065	0.0230*
Urban						
Yes	-0.0218*	0.0331*	-0.0028	0.0157*	0.0034	-0.0277*
Ecological zone	Terai (base group)					
Hills	0.0163	-0.0251*	0.0024	0.0122*	-0.0134*	0.0076
Mountain	0.0017	-0.0088	0.0109	0.0380*	0.0157	-0.0574*
Caste	Dalits (base group)					
Muslims	-0.0100	-0.0072	-0.0608*	-0.0275*	-0.0068	0.1123*
Terai/Madeshi	-0.0017	-0.0011	-0.0115	-0.0050	0.0105	0.0089
Hill Janajati	-0.0043	0.0126**	0.0146**	-0.0097	-0.0082	-0.0050
Terai Janajati	-0.0008	-0.0012	-0.0074	0.0266	0.0082	-0.0253*
Brahman/Chhetri	0.0058	0.0193*	-0.0270*	0.0006	0.0167*	-0.0154**
Newar/Thakali	-0.0088	0.0867*	-0.0351*	-0.0079	0.0012	-0.0361*
Others	-0.1113*	-0.0370	-0.0732*	-0.0243	0.2863*	-0.0404
Poor						
Yes	-0.0136	0.0110**	-0.0051	-0.0054	-0.0063	0.0193*
_cons	2.0934*	-0.0022	0.3388*	-0.1279	-0.3131*	-0.9893*

Note: calculated from NLSS-III dataset (* significance at 5%, ** significance at 10%)

7.5 Analysis of Expenditure Function of the Households with Remittances

The table below shows the estimated expenditure function on the bundles of goods for the households with remittances. The obtained result shows that not all the covariates have the same effect to the different bundles of goods. All the expenditure bundles are discussed in the following:

7.5.1 Food expenditure

The proportion of food expenditure is significantly affected (at 5% level) by the covariates gender of household head, household size, number of children (below age 6 years), household event, asset index, land (in hectares), Hill region (compared with Terai), rural/urban region, and poor. The result also indicates that the proportion of food expenditure decreases at a decreasing rate with the percentage increase in per-capita total expenditure. It also shows the covariate ethnicity does not have a significant effect on the group of households that receive remittances.

7.5.2 Housing expenditure

The result obtained suggests that the housing expenditure is statistically significantly affected (at 5% level) by the variables gender of head, age of head, household size, household event, education of head, asset index, house type permanent (compared with temporary), household loans, rural/urban region, ecological region mountain (compared with base Terai), poor, and Terai Janajati and Newar/Thakali ethnicity (compared with base Dalits). The proportion of housing expenditure increases at a decreasing rate with the increase in the per-capita total expenditure. It also shows that these covariates do not have a significant effect on the proportion of housing expenditure: number of children at home, ownership of land, and the number of migrated members.

7.5.3 Consumer goods and durables

The variables have significant effect on the proportion of expenditure on consumer goods and durables - gender of head, age of head, household size, family event, number of migrants, education of head, asset index, house type permanent (compared with base temporary) and ethnicity caste except Muslims and others (compared with base Dalits). There is a decrease in the budget share of this bundle of goods with the increase in per-capita total expenditure.

7.5.4 Education expenditure

The covariates have a statistically significant effect on the share of expenditure on education of households age of head, number of children (below 6 years), number of school-age children (6 to 18 years), household event, number of migrated members, education of head, asset index, land area, the outstanding loans to pay, rural/urban, ecological zone hill (compared with base Terai), Brahman/Chhetri ethnicity (compared with base Dalits), and poor.

7.5.5 Health expenditure

The share of health expenditure is significantly affected by the covariates age of head, household event, asset index, the outstanding loans to pay, land (in hectares), ecological zones (hills and mountains), the ethnicity Muslims, Terai Janajati and Newar/Thakali, and poverty. The results also indicate that household allocate more proportion of their expenditure on health as the per-capita total expenditure goes up.

7.5.6 Others

The share of this bundle is significantly affected by the covariates gender of the head, household size, household event, asset index, outstanding loans to pay, rural/urban region, ecological zones: hills and mountain (compared with base Terai), Hill Janajati community (compared with base Dalits) and poor. There is a decrease in the proportional expenditure of this bundle of goods with the percentage increase in per-capita total expenditure.

Table 7:6 Parameter estimate of expenditure function (households with remittances)

Variable	Food	Housing	Consumer/dur	Education	Health	Others
Log (total exp)	-0.1301*	0.0115*	-0.0163*	0.0009	0.0232*	0.1108*
Gender of Head						
Male	0.0168*	-0.0141*	0.0090*	0.0011	-0.0029	-0.0100*
Age of Head	0.0002	0.0010*	-0.0005*	-0.0012*	0.0004*	0.0002
Household size	-0.0080*	-0.0045*	-0.0024**	0.0010	0.0021**	0.0118*
Child (<6 yrs)	0.0074*	0.0030	0.0009	-0.0078*	0.0022	-0.0057
Child (6-18 yrs)	-0.0008	-0.0025	-0.0010	0.0109*	-0.0024	-0.0041
Household event						
Yes	-0.0264*	-0.0163*	-0.0109*	-0.0059*	-0.0072*	0.0667*
Number (migrated)	0.0000	-0.0002	0.0018**	-0.0032*	0.0010	0.0007
Education of Head	0.0004	0.0012*	0.0009*	-0.0018*	-0.0003	-0.0004
Asset index	-0.2052*	0.0998*	0.1260*	0.1028*	-0.0427*	-0.0807*
House type	Temporary (base group)					
Semi-permanent	-0.0022	0.0067**	-0.0006	0.0009	-0.0003	-0.0045
Permanent	-0.0100	0.0297*	-0.0108*	0.0102**	-0.0080	-0.0111
Land (hectare)	0.0075*	-0.0004	0.0022	-0.0021*	-0.0024*	-0.0047**
Loan						
Yes	0.0015	-0.0191*	0.0005	-0.0094*	0.0132*	0.0133*
Urban						
Yes	-0.0221*	0.0336*	-0.0047	0.0253*	-0.0100**	-0.0222*
Ecological zone	Terai (base group)					
Hills	0.0165*	0.0025	-0.0016	0.0129*	-0.0082*	-0.0222*
Mountain	-0.0024	0.0248*	0.0035	0.0057	-0.0175*	-0.0141*
Caste	Dalits (base group)					
Muslims	0.0120	-0.0020	-0.0070	0.0041	-0.0125*	0.0054
Terai/Madeshi	-0.0027	0.0068	-0.0130*	0.0106*	-0.0023	0.0006
Hill Janajati	0.0133**	-0.0070	0.0140*	0.0028	-0.0089**	-0.0143*
Terai Janajati	0.0099	0.0144*	-0.0104**	0.0071**	-0.0148*	-0.0061
Brahman/Chhetri	-0.0075	0.0038	-0.0150*	0.0185*	-0.0045	0.0048
Newar/Thakali	-0.0006	0.0342*	-0.0164*	0.0024	-0.0136*	-0.0060
Others	-0.0114	-0.0083	-0.0019	-0.0110	-0.0062	0.0388
Poor						
Yes	-0.0168*	0.0159*	0.0017	-0.0078*	-0.0078*	0.0148*
_cons	1.9867*	-0.0989	0.3687*	0.0345	-0.1903*	-1.1006*

Note: calculated from NLSS-III dataset (* significance at 5%, ** significance at 10%)

7.6 Effect of remittances on child welfare

7.6.1 Comparison of education expenditure

This study uses a treatment effect model to determine the effect of remittance on the investment in child schooling. To analyse the effect of remittances on the educational expenditure of children, the target population of this study is a sample from NLSS-III dataset consisting of all those the households that have at least one child currently attending school or college with an age up to 18 years. This subset of data contains 9,234 individuals from 4,306 households.

In this case, two different models are used to examine the effect of remittance on child schooling. The first model has analysed the amount spent on child education while the second model examines the quality of education. In both models, the treatment variable is the receipt of remittance by the households. In the first model, the amount spent on the schooling of each child over one year period is taken as the outcome variable. Similarly, in the second model schooling of a child in private or government school (a dichotomous variable) is taken as the outcome variable.

7.6.1.1 POM and ATET on child educational expenditure

The following table presents the POM and ATET on child educational spending on remittance receiving and non-receiving households in Nepal. This shows that if all households were to receive remittances the average per child educational expenditure would increase by NRs 545 from the average expenditure of NRs 6,851 that would occur if none of the households had received remittances. Similarly, in the group of remittance receiving households the average educational expenditure per child is increases by NRs 238 when all the households receive remittances compared to the mean of NRs 6,226 that would have occurred if none of these households had received remittances. However, the difference is not statistically significant. Hence, it can be concluded that households with and without remittances are spending an equal amount of money on education of children below 18 years.

Table 7:7 POM and ATET on child educational expenditure per child

Educational expenditure	No-remittance (NRs)	With remittance (NRs)	Average treatment effect (NRs)
Potential outcome means POM	6,851	7,396	545 (0.169)
Average treatment effects on the treated ATET	6,226	6,464	238 (0.741)

Note: p- values on parenthesis (* significance at 5%, ** significance at 10%)

7.6.1.2 The outcome model on child educational expenditure

The table below presents the result of the second stage equation for analysing the educational expenditure on children in Nepalese households. These variables increase the child educational expenditure significantly - the age of child, class of child, education of household head, taking private tuition, and urban (compared with rural). Similarly, the variables that significantly decrease the educational expenditure in Nepalese households are: the number of children at home, the poor households, unpaid loans, and degree of conflict. The households with ethnic groups Newar/Thakali spend a significantly higher amount on the education of children compared to Dalits.

Table 7:8 Analysis of educational expenditure (in NRs)

Covariates	Remittance non-receiving	Remittance receiving
Gender of child (Male = 1)	733.89 *	493.61
Age of child	-213.04*	-323.53*
Class	890.10 *	1092.82*
Gender of head (Male = 1)	-2,298.64*	-354.85
Age of household head	29.04	34.26
Education of household head	565.07 *	398.62*
Ethnicity of head		
Dalit = 1 (base)	-----	-----
Muslims (2)	1178.78**	2548.15 *
Terai/Madeshi (3)	-710.40	1964.64*
Hill Janajati (4)	-332.26	1067.87
Terai Janajati (5)	-506.30	1445.24*
Brahman/ Chhetri (6)	550.11	1650.89*
Newar/Thakali (7)	5178.25*	2943.61**
Others (8)	1790.86	-892.03
Number of children (up to 18 years)	-561.71*	-910.08*
Number of adults above 18 years	751.06*	238.86*
Taking private tuition (1= yes)	2758.09 *	3041.28 *
Poor households	-1976.94*	-2037.14*
Ecological zone		
Terai (1) Base	---	---
Hills (2)	2344.87 *	1872.31*
Mountain (3)	1727.77*	553.40
Degree of conflict		
First (lowest) base	------	------
Second	1649.96*	975.04
Third	-1112.07**	-1542.54**
Fourth	-1057.30	-2256.81*
Fifth (highest)	-867.47	-2836.04*
Loan (1= yes)	-1152.40*	-2251.72*
Urban (1 = yes)	6506.86 *	7545.34*
Land (in hectares)	592.18	-435.12

Note: calculated NLSS-III dataset. (* significance at 5%, ** significance at 10%)

7.6.2 Comparison of schooling of children

In the second model, this study takes the quality of education as the basis for evaluation. Going to a private or government school is taken as a dichotomous variable. Its value is one if a child is admitted to a private school and 0 otherwise.

7.6.2.1 POM and ATET on private schooling of children

The table below gives the average probability of a child being in a private school in households with and without remittances. The POM indicates that if no household were to receive remittances the likelihood of being a child in a private school would be 0.2946. If all households were to receive remittances, the likelihood of being a child being in a private school increases by 0.0106 percentage points to 0.3052. Similarly, ATET shows that in the population of remittance receiving households the probability of a child going to private school would decrease from 0.3023 to 0.2919 if none of them had received remittance. Both ATE and ATET results show that there is no significant effect of remittance in the admission of a child to a private school in Nepal.

Table 7:9 POM and ATET of children on private education

Attending a private school	No-remittance	With remittance	Average effect
Potential outcome means (POM)	0.2946	0.3052	0.0106 (ATE) (0.218)
Average treatment effect on the treated (ATET)	0.2919	0.3023	0.0104 (ATET) (0.326)

Note: p- values on parenthesis (* significance at 5%, ** significance at 10%)

7.6.2.2 The outcome model on private schooling of children

The table below indicates that the variables gender of the child, education of household head, and urban region have a significant positive coefficient showing that they increase the likelihood of a child going to private school in both remittance receiving and non-receiving households. The negative and statistically significant values of the variables age of the child, gender of the head, age of head, the number of children (below 18 years), poor households, and loans suggest that these factors decrease the likelihood of a child going to a private school. The result also indicates that a household being in any ethnicity other than Dalit increases the probability of being of the child in a private school. Similarly, it also indicates

that a child from hills or mountains regions is less likely of being in private school than one in the Terai region of Nepal.

Table 7:10 Analysis of private education in Nepal

Covariates	Remittance non-receiving	Remittance receiving
Gender of child (Male = 1)	0.2867 *	0.3315 *
Age of child	0.0051	0.0104
Class	-0.1439*	-0.1629 *
Gender of head (Male = 1)	-0.3981*	-0.3646 *
Age of household head	-0.0041	0.0037
Education of household head	0.0753 *	0.0504*
Ethnicity of head		
Dalit = 1 (base)	-----	-----
Muslims (2)	0.3599**	0.2920*
Terai/Madeshi (3)	0.3990*	0.4542 *
Hill Janajati (4)	0.2574**	0.3120 *
Terai Janajati (5)	0.0756	0.3357 *
Brahman/ Chhetri (6)	0.5019 *	0.5276 *
Newar/Thakali (7)	0.8564 *	0.6842*
Others (8)	0.7294 *	-0.6540*
Number of children up to 18 years	-0.0926 *	-0.1277 *
Number of adults (above 18 years)	0.1154 *	0.0666*
Taking private tuition (1= yes)	0.3939 *	0.4485*
Ecological zone		
Terai (1) Base	---	---
Hills (2)	-0.3635*	-0.2675 *
Mountain (3)	-0.5172 *	-0.4175 *
Degree of unrest		
First (lowest) base = 1	--------	-------
Second (2)	-0.0335	-0.0171
Third (3)	-0.0681	-0.0336
Fourth (4)	-0.1643	-0.2191 *
Fifth (highest) (5)	-0.1879	-0.2272 *
Loan (1= yes)	-0.1836 *	-0.1853 *
Poor (1 = poor)	-0.2527 *	-0.8348 *
Urban (1 = yes)	0.8882 *	0.9727 *
Land area (in hectares)	0.0959*	0.0403

Note: calculated NLSS-III dataset. (* significance at 5%, ** significance at 10%)

7.6.3 The Impact of remittance on child growth

For the analysis of the impact of remittance on child growth, this study takes the children with z-scores below -2 SD as malnourished. The variable nutritional condition of the child takes the value 1 if malnourished and 0 otherwise. In this study, treatment effect model is used to estimate the ATE of remittance on child health. The child characteristic variables (such as age of child in month, square of child age, sex of child, and health condition of child), household variables (such as gender, age, and education of household head, family size, number of children below 18 years, presence of older family members), and community level variables (such as urban, poverty, ecological zone) are controlled.

7.6.3.1 POM and ATET on nutritional condition of infants

The POM indicates that if no household were to receive remittances the probability of being a child malnourished is 0.3606 ($p < 0.0001$). If all households receive remittances, the likelihood of a child being malnourished decreases by 0.0878 percentage points to 0.2728 ($p=0.000$) relative to a condition where no household received the remittances. Hence, it can be concluded that the malnutrition of children significantly decreases if households receive remittances.

Similarly, the values of ATET show that the probability of malnutrition among children in the households with remittances would increase to 0.3548 from 0.2947 if none of them had received any remittances.

Table 7:11 Potential outcome means (POMs) on child malnourishment

POM for child malnutrition	Coefficients (ATE)	Coefficients (ATET)
No-remittance (0)	0 .3581*	0.3548*
With remittance (1)	0.2721*	0.2947*
Change	- 0.0878*	-0.0601**

Note: calculated from NLSS-III dataset (2010/11) (* significance at 5%, ** significance at 10%)

7.6.3.2 The outcome model on child malnourishment

The table below shows the outcome model in the analysis of child health in remittance receiving and non-receiving households in Nepal. The result shows that the age of child, sickness of child, land holdings, and asset index are statistically significant for remittance

non-receiving households. This clearly indicates that these variables increase the probability of malnutrition in children in these households. For receiving remittances households, the variables age of the child, family size, sickness of child and asset index are significant. In comparison with Terai, keeping all other things as constant, the children of hills and mountains are less likely to be malnourished if household receive remittances.

Table 7:12 Estimation of outcome model for nutritional condition of children

Covariates	Remittance non-receiving	Remittance receiving
Gender of child (Male = 1)	-0.1107	-0.0461
Age of child (in months)	0.0157 *	0.0086 *
Gender of head (Male = 1)	0.1618	-0.0889
Age of household head	-0.0063	-0.0024
Education of household head	-0.0014	0.0060
Ethnicity of head		
Dalit = 1 (base)	-----	-----
Muslims (2)	-0.2719	-0.1588
Terai/Madeshi (3)	0.1569	0.1163
Hill Janajati (4)	-0.2303	-0.3869 *
Terai Janajati (5)	-0.1242	-0.1258
Brahman/Chhetri (6)	-0.2032	-0.2378
Newar/Thakali (7)	-1.0620*	-0.3756
Others (8)	1.0941**	-1.5240*
Number of children below 6 years	- 0.0454	-0.1400 *
Family size	-0.0001	0.0631 *
Sick within past month (1 = yes)	0.1978**	-0.1373*
Grandparents (1=yes)	0.1336	0.1178
Ecological zone		
Terai (1) Base	---	---
Hills (2)	-0.1960	-0.3066*
Mountain (3)	0.1806	-0.4648*
Poor households (1= yes)	0.2579 **	0.0047
Loan (1= yes)	0.0866	-0.1186
Urban (1 = yes)	0.0880	-0.2210**
Land in hectares	0.2556 *	0.0041
Asset index	-1.5144 *	-1.4713 *
Number of migrants	0.0225	0.0106
Degree of conflict	0.0112	-0.0667**

Note: calculated from NLSS-III dataset (* significant at 5% level, ** significant at 10% level)

7.7 Post-estimation tests on treatment effect model

7.7.1 Test of endogeneity

The treatment effect model used in the study includes several variables both in outcome and treatment assignment. It is possible that there may be endogeneity in the study model so that the estimated parameter may be biased. Hence, it is better to test for possible endogeneity. To test this, the null hypothesis (Ho) makes the assumption that the treatment and outcome unobservables are uncorrelated. The rejection of the null hypothesis (Ho) means there is endogeneity in the model.

The result is shown in the following table. The p-value in each bundle of goods is greater than 0.05, implying that there is no endogeneity in the model.

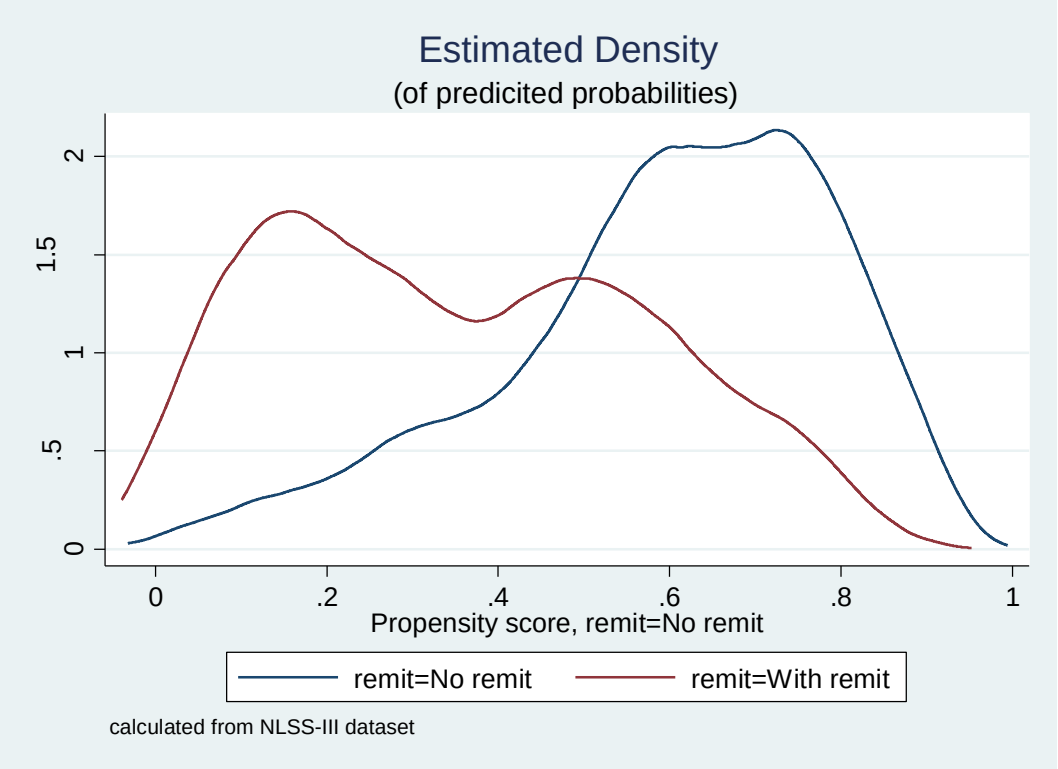
Table 7:13 Result of endogeneity test for the bundles in expenditure function

Description	Food	Housing	Con/dur	education	health	others
χ^2	0.28	2.94	0.60	1.68	1.81	0.06
$p > \chi^2$	0.8694	0.2296	0.7393	0.4310	0.4036	0.7949

7.7.2 Test of overlap of the model

Another assumption of the treatment effect model is that each household has a positive probability of receiving remittance or not receiving remittances. The estimated density plots of receiving remittances or non-receiving remittances are used to test it. The following figure shows the density plot. In graphical method, if the estimated density has too much mass around 0 or 1, this assumption is violated.

Figure 7.1 Density plot of estimated probability



The two density plots have most of their masses in the region in which they overlap each other. The graph above shows no evidence that they violate the overlap assumption.

CHAPTER 8

DISCUSSION

8.1 Introduction

The preceding chapters have analysed the different covariates that have an impact on the probability of Nepalese households receiving remittances and the causal effect of remittance on household expenditure behaviour and child welfare. This chapter discusses the obtained results in Chapter 6 and Chapter 7 and makes comparison between the findings with the literature and empirical analysis.

The chapter structure is as follows: Section 8.2 discusses the factors that differentiate remittance-receiving households from remittance non-receiving households, while Section 8.3 reviews the impact of the receipt of remittances on the outcome variables. Section 8.4 explains the link between the research questions and empirical findings while Section 8.5 discusses the impact of remittance on child education and gender disparities in Nepalese context.

8.2 Revisiting the Research Questions

As discussed in Chapter 2, the study has four research questions. The first is related to find out which variables have a significant effect on the receipt of remittances. This study used the binomial probabilistic model to estimate them. The results of the estimation are shown in Table 7:1 on page 115, which shows that the variables poverty, rural/urban region, caste/ethnicity, gender and education of the head, household size, number of children, number of migrants, asset index, household event, ecological zone, and migration network have significant effect on the receipt of remittances in the Nepalese households. The second research question is related to the impact of the receipt of remittances on different bundles of goods. The results obtained of Table 7:3 identify that the receipt of remittances affects the average budget share used for housing and education while the shares on other bundles goods: food, consumer goods and durables, health and others are not significantly affected. The third research question is related to the impact of the receipt of remittances on child welfare regarding health and education. The results obtained are shown in Tables 7.7, 7.9 and 7.11. The findings show that remittance reduces gender bias on the children sent to school in

Nepal. The fourth research question is to examine the developmental impact of remittances on the Nepalese economy. This analysis is based on the results obtained of the expenditure behaviour of households together with the theoretical background and past studies. The findings show that remittances can accelerate the economic development of Nepal through an investment in the human capital.

8.3 Linking Research Questions with Empirical Findings

The answers to the research questions set in Section 2.3 of Chapter 2 are given below.

8.3.1 Determinants of the Receipt of the Remittances

Research Question 1: What are the determinants of the receipt of the remittances in Nepalese households?

At first, this study estimated the receipt of remittance as a function of different household and community level variables. In this study, the likelihood of receiving remittance was the treatment variable and was estimated at the first stage using a binomial probabilistic model. This econometric model also depicted the fundamental characteristics in which the treated group (households receiving remittances) differ from the control group (households without remittances). The Table 7:1 shows the variables that are used in the estimation of the probability of the receipt of the remittances in Nepalese households.

The result clearly shows that community variables such as poverty, rural/urban, and ecological variables have a significant effect on the receipt of remittances by Nepalese households. These variables have a higher impact on the receipt of remittances than the household variables such as gender, age or education of the household head, and family size. The variables that have statistically significant effect on the receipt of remittances in Nepalese households are discussed below.

8.3.1.1 Poverty

The results obtained in Chapters 6 and 7 indicate a significant association between poverty and receipt of remittances. Firstly, the result of Table 7:1 shows that poor households are less likely to receive remittances compared with the other households in Nepal (p-value < 0.000). Secondly, the t-test (=6.829) of the Table 6:5 also points out that poor families get significantly less amount of remittances (NRs 36,217) compared with non-poor households (NRs 104,398). Third, the Table 6:6 shows that the proportion of poor households is 0.2744

in the control group and 0.2244 in the treated group. The obtained t-test (= 4.096) indicates that the percentage of poor is significantly higher in the control group. Hence, the study concludes that poor are benefited from remittances but relatively less than the other households in Nepal. The result also implies that the receipt of remittances might be contributing to the poverty reduction in Nepal as pointed by the earlier studies of Adams and Cuecuecha (2010a) in Indonesia and Dey (2015) in India.

The low skill level of migrants and deception of recruitment agencies and brokers are some of the main causes that tend to keep down the average remittances received by poor households in Nepal. A report of Amnesty International (2011) on returned migrants also pointed out the exploitation of Nepalese migrants. Also, the case study conducted by ICIMOD (2010) found that it was the less educated people that migrated from the villages of Nepal since educated people had more options. Moreover, migrants from poor households are often unable to select proper jobs at their destinations due to financial problems and lack of skills and knowledge.

8.3.1.2 Region (rural/urban)

Table 7:1 shows that households from the urban regions are less likely to receive remittances in comparison to the households from the rural regions, although, the average amount of remittance received by an urban household (NRs132,068) is significantly higher (t-test = 6.64) than that of the rural household (NRs 70,877). Rural Nepal is agriculture dominated, and there is a lack of other economic activities. The households in rural regions mostly depend on remittance money for their day to day needs, child education, and the harvesting and planting of agricultural products. A report of the World Bank (2011) on the remittances flows from Qatar to Nepal pointed that many uneducated migrants from rural Nepal work in low-skilled sectors such as construction, manufacturing and domestic work in the Gulf States. They generally receive lower wages than other nationals for the same work. Hence, Nepali migrants send money more frequently as they cannot send more due to lower income. So, lack of economic activity in villages and low wages of the unskilled rural migrants in destination country may be the main reasons why rural households receive less amount but with higher probability of receiving a remittance.

8.3.1.3 Caste / Ethnicity

The result of Table 7:1 indicates that in comparison to Dalits (the base group), the ethnic groups Hill Janajati and Newar/Thakali are less likely to receive remittances although, the

result of Figure 6.2 shows that average remittances of these groups are higher than Dalits. Dalits (backwards class) are marginalised in Nepal and are out of the main economic streams. Hence, households from lower socioeconomic status may have more dependency on remittances. That is why the migrants from these classes should send money more frequently increasing the probability of their receipt of remittances.

8.3.1.4 Gender of household head

Table 7:1 shows that the male headed households are less likely to receive remittances in comparison to female-headed households in Nepal. Also, the descriptive statistics of Figure 6.3 shows that the female-headed households received a significantly higher amount of average remittances. Migration in Nepal is a male-centric business, and most of the migrants are male (72%). This behaviour is common because females in Nepal are engaged in indoor activities, and males engage themselves in income generating and outdoor activities. Thus, more males have moved away from home seeking any jobs outside, leaving a female as the head. The conclusion is consistent with the research findings of Thapa (2008) and Nepal (2013).

8.3.1.5 Education of head

Table 7:1 shows that the education of head is negative (coef= -0.0118) and statistically significant (p-value = -2.36). The result implies that the probability of receiving remittances among households decreases with an increase in the education level of the household head. In Nepal, families with a more educated head are less likely to receive remittances because more educated heads are reluctant to send their family members to the Gulf or Malaysia for work. Instead, they want to provide higher education so that they will get a better job in future. Also, an educated head may himself have a good job in Nepal. Hence, education level of the head may have a negative relation with the receipt of remittances in Nepal.

8.3.1.6 Household size

The coefficient of household size is significant and negative, concluding that households with larger family size are less likely to receive remittances. In general, all adult members take responsibility in supporting the family, hence, the potential earning of a household increases with the household size. A migrant from a large family may be reluctant to send remittance home because he/she has less control on the end use of the remittances. Thus, such a household may have less probability of receiving remittances. This result supports the

findings of Bohra-Mishra (2014) which concluded that larger household size has a significant negative impact on the probability of remitting in Chitwan district of Nepal.

8.3.1.7 Number of children (up to 18 years)

The higher the number of children at home higher the likelihood of getting the remittances. The result reflects the common picture of Nepal. To give children a better education and health households need more resources. Hence, more children mean more cost for bringing them up. The result implies altruism is one of the motives of remitting behaviour of migrant(s) and so the probability of receiving remittances increases with the increase in the number of children at home.

8.3.1.8 Number of migrated members

The number of migrated members is statistically significant and positive. The result implies that it is highly likely that an increase in the number of migrated members enhances the probability of the household receiving remittances. It is common that a household has a higher likelihood of receiving remittance if it has more migrated members.

8.3.1.9 Asset index

Asset index is used as an index of the economic status of the households. The higher the index, the higher is the economic status of a household. A person with the better economic condition may have better skills that they can finance to enhance their abilities. Hence, these individuals have a higher opportunity to get a better job. Hence, the households with higher asset index are more likely to receive remittances.

8.3.1.10 Household event

This study takes the birth, marriage, or death of a family member as an ‘event’. These events cause an economic shock to a household because the families must allocate more resource to it. The positive and significant coefficient of result obtained indicates that households with the economic shocks are more likely to receive the remittances. Yang and Choi (2007) have shown that when there is an economic shock at home the flow of international remittance increases in Philippine households. Hence, the result of this study is in line with Yang and Choi.

8.3.1.11 Ecological zone

The households in the Hills and Mountains are less likely to receive remittances in comparison to a household in the Terai region in Nepal. The Terai is the most developed region with better infrastructure. With better communications, the members of families keep in touch with the migrants. Similarly, better transport and more financial institutions in the Terai region make it easy for the households to receive the remittances.

8.3.1.12 Migration network

The friends and family members who migrate first constitute a social network at a destination that helps subsequent emigration at a later period. Social networks play a crucial role in choosing a destination. They suggest about employment opportunities, support financially and provide valuable information for the trip and will often train and take responsibility for the new employees. Hence, the higher the quintile value of the migration network; the higher is the probability of getting remittances. This result is consistent with the findings of Dalen et al. (2005) which concluded that the remittances obtained from migrants induce the migration intention of other household members.

8.3.2 Impact on the Expenditure Bundles

Research Question 2: How do the expenditure behaviour of remittance receiving and non-receiving households differ in these bundle of goods: food, housing, consumer goods and durables, education, health and others?

The six major expenditure bundles of goods in this study are food, housing, consumer and durable goods, education, health, and others. When households receive remittances, this additional income may affect the budget share of all the component parts of household expenditure simultaneously. Since the household income absorbs the remittance amount into it, this study does not include the remittance amount as an independent variable in the model. In term of total expenditure, the budget share of each basket of goods is volatile in nature and it is vital to understand the sources that bring a change in these budget shares. Such type of analysis helps to determine the current expenditure and future investment. The empirical results obtained in Table 7:2 and Table 7:3 are used to compare the impact of the receipt of remittances on the budget share of different bundles of goods.

8.3.2.1 Impact on Food Expenditure

This study takes the following hypothesis to find the answer to the research question:

Hypothesis 1A: there is no difference in the expenditure behaviour of remittance receiving and not- receiving households in Nepal.

The result obtained in Table 7:2 shows POM of the households without remittances and with remittances. These two groups are spending 48.17 % and 48.25% of their budget share on food respectively. There is no significant difference in the allocation budget share on food in these two groups of households in Nepal. Hence, the study makes a conclusion that households in Nepal allocate of their budget on food just like the other source of income even if they receive remittances. This result is on the contrary to the conclusion of Sharma (2013) and Nepal (2013) who have found a significant positive impact of remittance on the main areas such as food and basic non-food consumption goods in Sri Lanka and Nepal respectively.

8.3.2.2 Impact on Housing Expenditure

In this case, the following hypothesis was tested.

Hypothesis1B: The receipt of remittances does not change the behaviour of households' expending on housing.

The result indicates that households that do not receive any remittances allocate 10.35 % of their budget share on housing expenditure while that is receiving remittances allocate 9.85 %. There is statistically significant difference (at 5% level) in these two groups. On a percentage basis, the households receiving remittances spend 4.77 % less share on housing in comparison of those that do not receive any remittances. Hence, households in Nepal reduce their budget share on housing if they receive remittances. The spending behaviour of remittance-receiving households is significantly different from those households that have not received any remittances. The low-income level of Nepalese households may be the main reason for the restriction of investment opportunities in housing. This finding contradicts with the conclusion of Adams and Checuecha (2013) which states that remittance-receiving households in Ghana spend more at the margin on housing.

8.3.2.3 Impact on Consumer and Durable goods

To make a comparison of the expenditure in consumer goods and durables the following hypothesis was tested.

Hypothesis1C: The receipt of remittances does make a significant difference in the budget share of consumer goods and durables in remittance receiving households in Nepal.

The POM of Table 7:2 shows that the households without remittances spend 21.60 % of their expenditure share on consumer goods and durables. Similarly, the households with remittances allocate 21.48 % of their budget share on this bundle of goods. Hence, this study concludes that there is no significant difference in budget share between remittance receiving and non-receiving households in Nepal. Hence, the receipt of remittance does not bring any change the proportion of expenditure on consumer and durables goods in Nepal. The result of this study is in contradiction of the findings of Chami et al. (2008) which concluded that remittance leads to an increase in status-oriented conspicuous consumption of the households.

8.3.2.4 Impact on Education Expenditure

To make a comparison of the educational expenditure of the households the following hypothesis was tested.

Hypothesis1D: the receipt of remittances raises the budget share of educational expenditure of Nepalese households.

Table 7:2 indicates that the households with remittances spend 6.08 % of their budget on education while the households without remittances spend only 5.49 %. The p-value (= 0.010) of Table 7:3 indicates that the households with remittance are making significantly higher expenditure on one of the important investment goods: the education of family members. This result supports the findings of the study of Cox-Edwards and Ureta (2003) which concluded that remittance income had a large and positive impact on the schooling of children in El Salvador. Also, this is in contradiction with the result of Nepal (2013) on the case study on remittance and livelihood strategy in eastern Nepal where she concluded that remittance did not have a significant influence on educational expenditure.

If the remittance receiving households have spent a sufficiently large proportion of their expenditure on education, we would expect that the members of these households will have a direct benefit from it. The remittances may also have indirect effects on remittance non-receiving households, through the changes induced in the schools attended by the members of these non-receiving households. Remitters may send money to their households to invest in the education of its members, increasing the total share of education in total household consumption.

Hence, remittances can have significant positive impact on the development of human capital by increasing the investment in the education of family members. Moreover, this study concludes that the receipt of remittances improves the welfare status of the households.

8.3.2.5 Impact on Health Expenditure

The health expenditure of the households was compared using the following hypothesis.

Hypothesis1E: The receipt of remittances increases the households' budget share on health.

Table 7:2 indicates that the least proportion of budget share is allocated to the health of household members. The households with remittances spend 6.08 % of their budget on education while the households without remittances spend 5.49 % only. The p-value (= 0.391) of Table 7:3 shows that there is no significant difference between the two groups on the allocation of budget share of health outcomes. So, this study concludes that Nepalese households do not increase the budget share on health with the receipt of remittances. In Nepal, most households do not have health insurance of their family members. Households incur health expenditures only in response to health shocks in a family member(s). Hence, the result depicts the true picture of Nepalese society. Although, this result contradicts the finding of Nepal (2013) that remittances have significant and positive effect on health expenditure.

8.3.2.6 Impact on other expenditure

This study uses the following hypothesis for the comparison of the budget share on this bundle of goods.

Hypothesis1F: The receipt of remittances does not have a significant effect on the behaviour of households' expenditure on other goods.

The households with and without remittances spend 9.87 % and 10.08 % percentage share of their budget on this bundle respectively. The obtained p-value (= 0.295) of Table 7:3 shows that there is no significant difference in proportional expenditure between the two groups. This is in contradiction with the result of Airola (2007) which states that remittance-receiving households spend a greater share of total income on durable goods and housing. Also, the result of this study does not support the findings of Démurger and Wang (2016) which states that remittance increases consumption rather than investment.

On the basis of above results, this study concludes that out of a total of six bundles, the expenditure pattern in these two groups differs only in bundles of housing and education. It supports the idea that remittance-receiving households allocate a larger share of their expenditure budget on education. Contrary to other studies, this study finds that remittance-receiving households spend less proportion of the budget on housing. The remittance-receiving and non-receiving households do not have a significant difference in the budget

shares of consumer goods and durables, food and others expenditure group. On the basis of budget shares on these bundles, this study does not support the view that remittance money is fungible and is spent on conspicuous consumption. Nor does it support the view that whatever the source may be "one pound is one pound"; in that it does not affect the spending behaviour of households. Rather, it supports the view that the expenditure behaviour of remittance receiving households is qualitatively different from others because they spend more on human capital – education.

Finally, by past findings and the result of this study it can be concluded that the receipt of remittances has an impact on the expenditure pattern of households although several other factors such as household factors, socioeconomic factors, and demographic factors play a vital role in it. The impact varies from country to country and from time to time. There are several interesting, and elaborated theories regarding the determinants of expenditure behaviour of households. The result obtained indicates that Nepalese households make a positive contribution to economic development investing more of budget share on education.

8.3.3 Impact on Child Welfare

In Nepal, although educational coverage along with the average gross enrolment rate in school is going up, the dropout rate among girls is higher than that of boys. Boys are preferred than girls, and gender disparity is significant. For poor, the direct costs associated with education such as admission and tuition fees, books, and uniforms may be more than the households are willing to pay. Sending children to school may lead children to a higher income in future, but it reduces the current income of the family. Although the government has tried to expand school coverage in Nepal, still there are not sufficient schools in rural part. In remote areas of Nepal children often walk a long distance to school. Low-income households take schooling of girls as relatively risky choices while higher-income households prefer to enrol girls in school to make them able for future. After their marriage, daughters mostly engage themselves in domestic work and child-rearing responsibilities.

This study takes education and health of children as the measure of child welfare. The Table 6:19 to 6.22 show the descriptive statistics of child education in Nepalese households while the Tables from 6:23 to 6:25 show the descriptive statistics of malnutrition among young children. Table 7:37 to 7:12 demonstrate the results of the average treatment effect (ATE) on child welfare (education and health). It depicts that the receipt of remittances has an impact on education and health. In Nepal gender disparity is large and boys are preferred to girls.

Agriculture is the occupation in rural Nepal where more people are engaged than in any other occupation. Most of these households find it difficult to pay the necessary education expenses of private school because such expenditures must be managed by themselves. The receipt of remittances may help them to smooth out these expenditures.

Some past researches also show that remittances have a significant effect on education and health of the children in recipient households. The study of Milligan and Bohara (2007) concluded that income from international remittance has a positive contribution in child welfare in Nepal. The research of Göbel (2013) on the impact of remittances on spending decision of Ecuador concluded that households with remittances spend more on housing, education and health but less on food. Also, in her study Nepal (2013) concluded remittances has a positive influence on food, land, health and housing in Nepal while no effect on education and business investment. Similarly, the study of Terrelonge (2014) concluded that the remittances had reduced the child and infant mortality in developing countries through improved living standards.

Research Question 3: How does remittance affect the child welfare (education and health) of children left behind in Nepal?

8.3.3.1 Education

Hypotheses 2A and 2B were set to analyse the impact of the remittance on the education of children.

Hypothesis2A: the hypothesis tells that households with remittances spend more on the educational expenditure of children.

The hypothesis is set to analyse the impact of the receipt of remittances on the education of children left behind. The descriptive statistics of Table 6:18 shows that the proportion of school-age children that are deprived of attending a school is significantly higher (p-value = 0.014) in remittance non-receiving households than in remittance receiving households in Nepal. Also, the simple descriptive statistics of Table 6:19 show that remittance non-receiving households are spending the significantly higher amount on the education of their children.

In contrast to the result of descriptive statistics, once we control the child characteristic variables, household characteristic variables, and the community label variables the result of treatment effect model on Table 7:7 gives the conclusion that the household with and without

remittances on average are spending NRs 7,038 and NRs 6,963 respectively on the education of each child in Nepal. The result also shows that there is no significant difference in amount between on child educational expenditure (p-value = 0.820) between the two groups.

The result of this study does not support the findings of Vogel and Korinek (2012) and Bansak and Chezum (2009) where they concluded that in Nepal young girls are less benefitted from remittances and household remittances are spent disproportionately for boys. Instead the findings of this study are in line with the conclusion obtained by Nepal (2016). This research finds that despite the increase of budget share on household education, child educational spending per child has not improved because of remittances sent back to Nepal.

The analysis of educational expenditure shows some meaningful outcomes in Nepalese perspective. The Table 7:8 shows that the gender of the child is significant only for the households without remittances. Hence, the gender of the child (male = 1) has significant effect on the educational expenditure if the household does not have any remittances. If the household has remittances, the gender is insignificant. The outcome shows there is gender disparity among children in Nepalese households and this disparity tends to decrease if the households receive remittances. Moreover, school costs are fixed so a remittance receiving family does not pay more per child instead it sends more children at school including females. Similarly, the class of child, education of head, taking private tuition, asset index and urban regions also have significant positive effect on a child's educational expenditure. It is a common phenomenon that the educational cost increases with the increasing of level of class and with taking additional private tuition. The educated parents mostly want to invest more in the education of their children; hence, level of education of head may have a positive effect on educational expenditure. The asset index represents the economic status of households. Hence, economically well-off families have a higher index and can pay more for education of its members. The households in the urban area spend more on the education of their children. This is particularly due to the higher cost of education, presence of school nearby, and the income level of the household.

The result shows that the outstanding loans have an adverse effect on the child educational expenditure. In the case of ethnicity, the base of comparison is Dalit; the most backwards class; in Nepal. The result shows that Muslims, Terai/Madhesi and others spend more on child education than Dalits if they receive remittances. Finally, the households with higher consumption quintiles invest significantly more in the education of their children than households with lower overall consumption.

Hypothesis2B: receiving remittances improves the quality of human capital by sending children to private schools.

In Nepal education is free up to the secondary level in government school. Hence, if children go to government school households spend little on education of their children. The quality of public education is often criticised for their poor academic performance. Private education in Nepal is better quality but expensive and is out of reach for many low-income families. In this case, a dichotomous variable (1 if a child is studying in private school and 0 otherwise) is the outcome variable and is estimated with a probit model. This shows that there is no significant difference in the probability of a child attending private school between remittance receiving and non-receiving households.

Table 7:9 shows that the receipt of remittances does not significantly increase the probability of a child going to private school (p-value = 0.218). Table 7:10 also indicate that the gender of the child (male = 1) is positive and significant in both remittance-receiving and non-receiving households. Hence, it can be concluded that a male child in comparison to its female counterpart is more likely to attend a private school both on remittance receiving and non-receiving households in Nepal. Similarly, the variables age of the child, education of head, asset index, and being in the urban region significantly increase the probability of a child going to private school in Nepalese families. The coefficient of the variables grade, the gender of the head (male = 1), the number of children between 6 to 18 years, and loans are significant and negative, implying that these variables decrease the probability of a child attending a private school both in remittance receiving and non-receiving households. The categorical variable ecological zone, taking Terai as a base, the negative and statistically significant values for hills and mountains imply that it is less likely that a child will go to a private school in the hills and mountains than in the Terai region. The result also shows that children in households with higher per-capita consumption are more likely to go to the private school when compared with the lowest quintile group. Similarly, Nepal has very diverse ethnicity. The Dalits are one of the most backwards groups both socially and economically. It is as expected that a child in groups such as Brahman/Chhetri, Terai/Madeshi has a higher probability of attending a private school.

Finally, the result shows that the probability of a child attending a private school does not differ in remittance receiving and non-receiving households in Nepal, hence, it can be concluded that remittance does not improve the likelihood of sending a child to a private

school. Also, the male child in comparison to their female counterparts are more likely to have to attend a private school both on remittance receiving and non-receiving households, hence, gender disparities still exist in the case of private schooling in Nepal.

8.3.3.2 Nutritional status of children

The children of remittance-receiving households are significantly less likely to be malnourished in comparison to the households that do not receive any remittances, although remittance does not have a significant impact on the budget share spent on health. In Nepal, people do not spend on health unless there is any health issue with any household members. Also, it is general that the household members receive benefits from income gain and knowledge gain. It is possible that the knowledge gain of household members due to migration of a member helps them to a bringing up their children better. The following hypothesis is set to analyse the difference in the health condition of the children between remittance receiving and non-receiving households.

Hypothesis2C: the receipt of remittances does not improve the quality of human capital of the children (less than six months) left behind.

The hypothesis is tested using treatment effect model on NLSS-III (2010/11) datasets. Child growth measure (weight for age) z-score is used to analyse the nutritional difference between remittance receiving and non-receiving households in Nepal. Table 7:11 shows the potential outcome mean (POM) while Table 7:12 gives the result of regression. POM of the weight for age z-score (WAZ) score is 0.36 and 0.27 for the infants of no-remittance and with remittances households respectively. This implies that there is significant difference in the likelihood of being malnourished in these two groups. Hence, this study rejects the above hypothesis and concludes that there is a higher probability of a child (under age 60 months) being malnourished where the household does not receive any remittance. The result obtained also shows that the "age of children (in months)" is statistically significant, implying that there is a higher likelihood of children being malnourished with an increase in their age, in both remittances receiving and non-receiving households in Nepal. The remittance money enhances the ability of the household to buy more food and nutritional inputs for the child and mother and increases the ability to pay the cost of medical services. Hence, an improvement in the health of the early age children is commonly expected for the households with remittances. The result is consistent with the result of Chauvet et al. (2010) that demonstrated that remittances significantly improve child health and the impact, being nonlinear, is more

efficient in the poorest countries. Similarly, the result supports the result of Antón (2010) that remittances have a positive effect on short- and middle-term nutritional status of Ecuadorian children.

The result also shows that the age, gender and education of the head, the gender of the child, rural/urban, household loans, the presence of an older family member in the household, and the number of migrants do not have a significant effect on a child being malnourished. This result shows a contradiction with the findings of Mansuri (2006) in the case of rural Pakistan. Finally, it can be concluded that although the proportion of expenditure on the health bundle on remittance receiving and non-receiving do not differ significantly, there is a higher probability of being malnourished if a child is from a household that does not receive any remittance. This difference may be due to the difference in some key characteristic variables such as family size, the number of kids, education level, health consciousness, and so on.

Research Question 4: Does the change (if any) in expenditure behaviour of Nepalese households caused by the receipt of remittances promote sustainable economic development?

The spending behaviour of Nepalese households is the key variable of this study because a change in it may have an impact on economic development of the country. The expenditure behaviour of households is extremely important for a country as it is closely related to economic development. The theory suggests two broad views on this issue. The first theory emphasises that household/consumer spending on education, health, on-the-job training to improve skills and general knowledge of individuals helps to accelerate the economic development of the country. While the second view stresses that investment in tangible assets such as housing, machinery and equipment are essential factors for development. This view claims that technological advances not the consumer spending is main driver of an economic growth of a country.

When remittance money is spent on consumption, it is beneficial to economy through multiplier effect of consumption. If it is invested it increases employment and the productive capacity of the economy, mostly stimulating jobs in service sector such as travel, financial, and private schools and hospitals. This study finds that Nepalese households spend more on education and less on housing. There is a massive reallocation of Nepalese youth from agriculture into foreign labour. This may be one reason that Nepalese households are spending less on housing. Education and housing are two important investment goods. Hence, spending more on education and less on housing activities imply that Nepalese economy is

heading towards unbalanced growth. The Nepalese government should make policies and take necessary measures so that the economy will grow in all sectors simultaneously.

CHAPTER 9

SUMMARY AND CONCLUSIONS

9.1 Introduction

The primary aim of this study was to analyse the determinants of the receipt of remittance and to estimate the impact of the receipt of remittances in expenditure behaviour and child welfare in Nepalese households. Initially, this study has identified factors that differentiate between remittance receiving and not-receiving households. Further, it makes a comparison of expenditure behaviour on different bundles of goods. Finally, it estimates the impact of the receipt of remittances on child welfare regarding schooling and health. Using data from NLSS-III (2010/11), this study uses a two-step treatment effect model to estimate the impact of remittances in Nepalese households. The advantage of this type of two-stage modelling is that it is useful to calculate the independent effect of remittances on expenditure patterns. This chapter summarises the empirical findings and highlights the conclusions of the study.

The chapter commences with a discussion of the thesis summary in Section 9.2. Section 9.3 outlines the conclusions on the determinants of remittances in Nepalese households while Section 9.4 discusses the expenditure behaviour of households in Nepal. Section 9.5 highlights implication of the results, while Section 9.6 presents the knowledge contribution from the study. Section 9.7 outlines the relevant issues for future research in this field. Finally, an epilogue is provided in Section 9.8.

9.2 Thesis summary

9.2.1 Overview

Remittance is the money sent back from migrants working elsewhere in Nepal or outside. This study aims to address the changing expenditure behaviour of Nepalese households caused by the ever-increasing volume of remittance in recent years. When a remitter sends money, it is highly likely that the family members left behind and the remitters jointly decide how to spend that money. Remittance; an important financial resource of many households; can be spent on current consumption and can be saved and invested in physical or human capital. An allocation of expenditure between these two purposes is made by comparing the

present value of marginal consumption and the marginal social value of the investment. If the marginal social value of the investment is greater than the current value of marginal consumption, then households decide to invest in the health and education of children. The expenditure on a child's health and schooling, in a developing country like Nepal, mostly depends on household's resources. Parents take care about their children's wellbeing. Hence, it highly likely that households give priority to the investment in the welfare of children. For the financially constrained households, remittance inflows act as insurance that helps to send more female children at school.

Per capita expenditure of a household reflects the financial wellbeing of the household. The economic development of a country depends on the expenditure behaviour of individual and households along with private and public investment. Hence, household expenditure is an important driving force behind economic development. Households make expenditure on a wide range goods according to their needs, satisfaction, and ability. Remittance, being an income of households, tends to change the expenditure behaviour of households ultimately enhancing the rate of economic development. Adams (2005) has concluded that the receipt of remittances changes the spending behaviour of households on various consumption and investment goods.

The findings from the study will be substantial in this field because how people are spending now reflects what they want and the way the national economy is heading. It helps to make a better plan for future and to channelize the scarce resources in the interest of people. I hope that this study will play a major role in policy making, analysis, and research purposes as it contributes to broadening the views of the wider horizon.

9.3 Summary of findings

The summary of this study is discussed below.

9.3.1 Receipt of remittances

This study identifies some of the key determinants of the receipt of remittances in Nepalese households. These key determinants are broadly categorised to household variables, physical asset variables, regional variables and others.

Household variables: the variables such as education of head, the gender of the head, household size, and the number of children at home (less than 18 years) have a significant effect on the receipt of remittances.

Migration in Nepal is male-centric activity, so most of the migrants are male. In 2013/14 only 5.6% of total labour emigrants were females (DOFE, 2015). Once the male has gone out for migration, the females take the position and work as head on behalf of their male counterpart. Hence, female-headed households are more likely where remittances are being received. The result shows the changing behaviour of household structure in Nepal caused by migration.

Physical asset variables: asset index represents the economic status of a family. The higher the asset index the wealthier the households are. The positive and statistically significant coefficient implies that households with higher asset index are more likely to be in the remittance receiving group. In rural Nepal as the households receive remittances, they invest significant amount on durable household items such TV, mobile phones, bicycles, motorbikes and so on. Hence, the result reflects the current expenditure behaviour of Nepalese households.

Regional and others: the findings show that the incidence of remittances varies in Nepal. Households from lower socioeconomic backgrounds, with fewer household assets and from rural regions receive less amount of remittance. The study also finds that an urban household is less likely to receive remittances in Nepal, although the amount of remittances received per household is significantly higher than that of the rural region. In rural households, lack of knowledge, the low skill level of the migrants, and lack of accurate information about the job are some of the main causes that tend to depress the average remittances.

9.4 Expenditure behaviour of households

The summary of this study can be outlined as following.

Firstly, the result showed that remittances do not have a significant influence the budget share of food, consumer goods and durables, health and other bundles of goods. It clearly indicates that households receiving remittances allocate their share of the budget on these bundles of goods just like the other households that do not receive any remittance. The equality of budget share on consumer goods and durables between remittance receiving and non-receiving groups implies that households with remittances do not spend more on unproductive and status-oriented conspicuous consumption.

Most of the Nepalese migrants living in foreign countries (except India) are documented and work on a fixed term basis. After the termination of the contract period, the contract must be changed /renewed, or they must return at home. Hence, this study takes remittances as a

transitory income. Although, household income tends to be very low in Nepal, the study indicates that consumer spending of Nepalese households does not depend on the current disposable income. It rather depends on the expectation of future return of the migrants in the long term as explained by Friedman's permanent income hypothesis (Friedman, 1957b).

Secondly, households with remittances allocate less proportion of their budget share on housing and more on education. The low-income level of Nepalese households may be the main reason for the restriction of investment opportunities in housing. The allocation of a higher share on education could have a positive contribution to Nepalese society by increasing the human capital potential needed for its economic development. This remittance-inspired investment will result in a positive impact on development on long-term growth in Nepal.

Thirdly, the educational expenditure per child does not differ significantly between the two groups: remittance receiving and non-receiving households in Nepal. However, the variable "gender of child" plays a significant role only in those households that do not receive any remittance. It indicates the receipt of remittances increases the household expenditure on the education of girls, thus decreasing the gender gap on education. Also, Nepalese households (both remittances receiving and non-receiving) discriminate between boys and girls in whether to send them to private school or not. Households of both groups are more likely to send boys to private school in comparison to girls. This is common in a country like Nepal where boys are preferred over girls and boys are taken as assets and girls as liabilities.

Fourthly, it is highly likely that malnourishment increases with increase in the age of children. The children of remittance-receiving households are less likely to be malnourished in comparison to the other groups of children, although, there is no difference in the share of budget allocation in these two groups. This may have resulted from an increase in the knowledge acquired by the members of the migrants' household. Hence, the better health of the children of the remittance receiving households may have been caused by an increase in knowledge effect either of the sender or the household members left behind. Also, the household members may have more leisure time to look after their children because the remittances work as insurance for them.

9.5 Implication of the results

The past literatures (Adams and Cuecuecha, 2010b; Clément, 2011; Meka'a, 2015; Mwangi and Mwenda, 2015) showed diversified results on the impact of remittances on the expenditure behaviour of households and economic development of a country. The goal of this research work was estimate the impact of remittances on the expenditure behaviour of households and child welfare and to discuss the impact of remittances on the economic development of Nepal through the change in the expenditure behaviour of Nepalese households. This study has offered a complementary analysis on them and added some clear evidences on the existing literatures that the receipt of remittances does not change the budget share on food and consumer goods. Instead, there is an increase in budget share on education while a decrease in share of housing expenditure on the recipient households. The following paragraphs critically discuss these findings obtained in the previous sections to derive theoretical, methodological, empirical and policy implications of the research.

9.5.1 Theoretical implications

The study found that Nepalese households devote major portion (nearly 69%) of their expenditure budget on the consumption of food and consumer goods. Households do not increase the share of budget on food and consumer goods even if they receive remittances. Instead, households show same spending pattern on food, consumer and durable goods, health and other utility items until they reach a certain level of income. There are reasons to believe that households do not spend remittances on conspicuous consumption. It implies that expenditure behaviour of Nepalese households depends on overall estimation of long term future income not just by the remittance included current income. Most of the Nepalese migrants (except India) are documented and after the termination of the contract period, they must return or the contract must be changed/renewed. Hence, it is highly likely that the recipient households take remittances as a transitory income. The result provides additional support to Freidman's (1957a) permanent income hypothesis which states that current consumption is a function permanent income. The money spent on these bundles of goods has an indirect development impact on the economy through the multiplier effect.

Only a small fraction (5.6%) of total household expenditure budget is allocated on the education of its members. Households with remittances allocate more budget share on education of its members in comparison to the remittance non-receiving households. This will ultimately increase the human capital accumulation in the country enhancing the productivity

of the economy. The skill and knowledge of the people plays a major role for a sustainable economic development of country in future.

Another important implication is that there is a decrease in gender biasedness as households tend to send their daughters on school once they receive remittances. In recent years, the government has amended several discriminatory laws and provisions (such as property and political rights) to empower females and socially and economically backward groups. All these government activities along with the access of girls in education will increase participation of the females in different sectors in Nepal. This increase in the flow of human capital will help to increase the growth rate of Nepalese economy in coming years.

There is significantly less malnutrition among children with remittance receiving households although both groups of households are allocating equal proportion of budget share on health. This implies that household members may have devoted more time with children because they use remittance income as insurance against income shocks or caused by the increase in knowledge of household members of a migrant. It may also likely that migrants send more remittances if they have infants at home or due to change in role of household head. Female headships often pay close attention to the well-being of children, hence allocate higher budget share for the health and education of children. This result also shows the changing household structure in Nepalese society. Most of the migrants are male so there is an increase in female headed households in Nepal.

These results imply that Nepalese households have put more emphasis on the investment in human capital (such as education, health, and training) of their family members. It ultimately supports the theory of Schultz (1961) and Becker (1962) which states that human capital is more productive for a country in the long run. If this is the case the growth rate of Nepalese economy must accelerate in coming years.

Past studies (Vanwey, 2004; Bohra-Mishra, 2014) have claimed that the motivations to remittances are primarily guided by three different motives namely: altruistic, semi-altruistic or self-interested motives. The result of this study shows that some of the characteristics significantly differ between remittance receiving and non-receiving households. The rural household with more children at home and with economic shock at home increases the probability of receiving remittances. Theoretically, it implies that the receipt of remittance in Nepalese households is mostly guided by many interconnected motives related to semi-altruism and pure self-interest.

9.5.2 Methodological implications

In this study, the aim is to estimate the impact of an intervention (the receipt of remittances) on an outcome variable if the intervention is applied to some units of a group. In medical sciences, treatment effect model has been used to estimate such impact since 1970s. Although the econometric method (treatment effect) is not new in medical sciences, this study adopts this technique in social science taking the receipt of remittances as the treatment variable and expenditure share as the outcome variable in observational data (NLSS-III survey). The data was collected by CBS-Nepal in 2010/11 using the Living Standards Measurement Survey (LSMS) methodology adopting multi-stage stratified random sampling method. Hence, the treatment variable (the receipt of remittances) is randomly assigned and the data is free from sampling bias.

To obtain better results on treatment effect model there needs a large population where some of observations are exposed to an intervention and others not. NLSS-III survey is a nationally representative data that contains 5,988 households. This survey data covers the whole country; hence the obtained results can be generalised and is applicable for the whole country. In this data, 53.07% households have received remittances and the rest (43.93%) do not receive any remittances. This is a cross-sectional household survey data that contains detailed household and individual information on a wide range of topics, including income, consumption, housing, education, health, employment, education, financial assets, household enterprises, migration and remittances. Although, panel data would be more appropriate to study the impact of migration and remittance on expenditure behaviour of households across time this study uses cross-section data because NLSS-III survey does not follow the same households of the previous rounds.

There are two potential allocations of budget share on each bundle of goods: one if households received remittance and the other if they did not receive it. The fundamental problem of causal effect model is that it is impossible to see both potential outcomes at once. Each household has a potential outcome under each treatment level although a household is observed in only one treatment state; hence there exist missing data problem. This study uses inverse-probability-weighted regression adjustment (IPWRA) (StataCorp, 2015) to correct for the missing-data problem. One of the great advantages of this model is that IPW estimators do not make any assumptions about the functional form of the outcome model. Also, RA

estimators estimate the outcome variable without making any assumptions about the functional form of the probability of treatment variable. In this model, there was a comparison of the allocation of budget share between remittance receiving and non-receiving households at the same point of time. Although the econometric method (treatment effect) used in this research study was not new, the use of inverse probability weight makes it more robust. This weighting scheme of IPWRA estimators correct the missing data problem and aims to produce consistent estimates of the parameters in comparison to the other sample selection models (such as Heckman methods (1979)) and propensity score models. Binary treatment variable is estimated at the first stage and the outcome variable is estimated in the second stage. The probability of receiving remittances was obtained from estimating a binomial probit model with a set of observed covariates as explanatory variables.

9.5.3 Empirical implications

South Asia is one of the most densely populated regions of the world that contains about one fourth of the world's population of which nearly 15% are poor (per capita per day income less than $1.9). Poverty is the most common factor that cuts all the countries of this region. The poor of this region are adopting migration as a livelihood strategy. Hence, significant numbers of migrants are going out and obtained remittances are of highly important for the people of this region. Most of the migrants working in the Gulf are from this region and are mainly from India, Pakistan, Bangladesh, Sri Lanka and Nepal. Remittance sent by these migrant workers is one of the important sources of funds of South Asia countries as it is the second largest remittance recipient region. Remittances obtained by the households make significant contributions to their families' incomes as well as national economies. The obtained remittances are spent on daily needs or invested for their future incomes.

The direct impact of remittances is the increase of household budget that may be reflected by a change in their expenditure behaviour and increase in the welfare of the family members at home. The development impact of remittances on the receiving countries mostly depends upon the expenditure behaviour of households. A positive investment increases employment and economic development while conspicuous consumption on unproductive areas does not increase economic welfare of people. Most of empirical studies on Remittances show that remittances are a very important source of finance for capital projects in developing countries. Previous studies (Gennaioli et al., 2013; Pelinescu, 2015) have also shown that education is the critical determinant of development and there existed statistically significant

positive relationship between GDP per capita and education of employees as suggested by the economic theory.

The regression results obtained in Chapter 7 imply that the receipt of remittances has a significant impact on Nepalese households on housing and education. Remittance-receiving households spend more on education and less on housing in comparison to remittance non-receiving households. This is in line with Mahapatro et al. (2015), who have concluded that households receiving remittances spend less on food and more on education and health care in comparison to the non-recipient households in India.

The result also implies that the receipt of remittances helps to reduce the gender disparities sending more girls at school and there is less malnutrition in infants of remittance-receiving households compared with the remittance non-receiving households. This implies that females will be more benefitted from the inflow of remittances in the long run. This finding is supported by the study of Mansuri (2006b), who has shown that remittances help to avert childhood nutritional and health shocks for girls in rural Pakistan.

The economic theory postulates that allocation of more budget share on education may have a positive impact on economic development as it increases the productive capacity of labour. On the other hand, less budget share on housing means less investment on tangible assets which may slow the growth rate. The result also indicates the receipt of remittances poses an unbalanced development in the Nepalese economy. Nepal will get more benefit from remittance if the government channelize the inflow of remittance to productive capital investment in projects such as hydropower, cable cars, roads and communication sectors. This would create balanced growth of the economy and accelerate growth rate also.

Although, remittance-receiving Nepalese households are spending more on education and sending more girls to school, these households do not spend more on education per child. This finding may have come from various reasons such as the family members may have more leisure time to spend with children or there may be gain in knowledge and skills of the household members.

9.5.4 Policy implications

Although, Nepal has a long history of emigration, the main part of Nepalese emigration to the international market occurred from the start of internal conflict between Maoist and the government in 1996. In these years, Nepal has entered in the globalization of labour market.

At the same period, the average household expenditure of a Nepalese family has increased nearly eleven times. This is mostly due to the increase price of the commodity and increase in consumption capacity of Nepalese households in recent years. The remittance received from the overseas migrants has significant contribution to enhance the purchasing power of Nepalese households.

The average education of an adult migrant (>17 years) from urban area (9.9 years) is significantly high to that of a migrant from the rural area (7.5 years). Similarly, rural migrants are younger in comparison to the urban migrants. A report of CBS (2011) shows that most of international migrants come from rural region. Similarly, a study of the World Bank (2011) has also pointed that Nepalese working on Qatar under-remit in comparison to the similar workers from other countries. One of the reasons for it may be the exploitation of Nepalese migrants. Hence, it is clear that Nepalese households are still unable to get full benefit from of their family members.

The results of this study indicate some important policy implications. In Nepal, the rural households take remittances as insurance for health hazards and economic shocks. If Nepalese migrants plan to return home after the contract period, they expect a better livelihood in future. Hence, it is highly expected that remittance receiving households will be interested to invest in attractive investment programmes. For the developmental impact, Nepalese economy needs a reliable and long-term sustainability of remittance as a source of income. Based on the results of Chapters 6 and 7, the following policy implications are forwarded.

9.5.4.1 Protecting the migrants and their rights

- Enhancing the knowledge and skills of the potential migrants within the country.

Nepalese foreign employment business is facing strong challenges from other un-skilled and semi-skilled migrants sending countries such as Indonesia, Bangladesh, Pakistan, Sri Lanka, and Viet Nam. Hence, there needs a verification of skills that match the prospective jobs, providing credit facilities for deployment and providing financial assistance to migrant workers to obtain better remittance in future. Skills training opportunity such as IT training, method of saving communication cost, e-banking for the migrants would be very useful for the potential migrants.

- Facilitating the procedures needed for a migrant

There is a lack of effective government policy and service delivered in migration. Migration strategy should be a national priority because the decision of the government affects migration of individuals. To strengthen coordination among agencies working on migration issues there is urgent need of a state commission. It should also intend to improve the legal framework to promote legal emigration. There should be an effective policy to provide pre-departure loans for the migrants, and a bank account of the migrant in Nepal to deposit the savings, and transferred money.

The banks and insurance companies should provide loans because most of rural migrants will find it difficult to pay. They must provide loan to the family members if someone is sick or if they want to do some business. If a migrant dies at destination, or if he/she is unable to do due to some accident or illness, the family members should get incentives. The earned money, work experience, and the development ideas gained in the destination countries will be valuable assets for a migrant at the time of departure and it must be used in a fruitful way in the origin. The money can be invested as a capital in the field of agriculture, tourism, and for a small business.

9.5.4.2 Protecting the rights of migrants at home and destination

The Nepalese government must protect the rights of migrants by manpower companies in Nepal and job recruiters. There exists lack of leadership on matters of protection of labour migrants. Corruption and lack of co-ordination within government departments and lack of transparency in recruitment agencies are making the migration procedure complicated and lengthy. Nepalese middle men and recruitment agencies have failed to place Nepalese workers in good jobs in the Middle East and Malaysia. Although the government of Nepal has put a policy that the migration costs are to be covered by employers, the migrants are still paying very oppressive amounts that are mostly covered by borrowings and loans. In its report, the Amnesty International (2011) has also pointed that the government of Nepal must enforce the legislation to make the Nepalese recruitment agencies more accountable and to end the discriminatory practices such as false promises and exploitation conducted by them in Nepal and employers at destination. The report also points out that female migrants working in domestic work are vulnerable to abuse.

It would be better if the government sets up a website of overseas job vacancies in co-ordination with recruitment agencies for prospective emigrant workers to look for good jobs and to search for the right workers. This jobs portal could become an ideal place to find

information about potential destinations and in matching the skills of the workers with the jobs at the destination. The government must focus to prioritise the safe migration for hundreds of thousands of Nepalese migrants. This will encourage foreign business in prospective migrants and secure sustainable remittance income in coming years.

9.5.4.3 Facilitating the return and reintegration of Nepalese migrants with family and society

Nepal still needs to develop a road map on the formulation of the policy to implement the rights of the migrant workers and their families. The government should focus on providing loans and health insurance for the migrants through the banking sector once they obtain overseas work contracts and should involve the rural banks in such strategic program.

Social security for the migrants working abroad would be beneficial for both the country and the individual migrant. In this system, a migrant has to contribute a fixed amount of money for a specified period. The money can be paid either by international money order or into a specified bank account in the country of residence. The migrant will be entitlement to a pension if he/she has contributed for a minimum period once the migrant returns to the Nepal. This system should cover a larger group of migrants, including students, the self-employed, highly skilled professionals and others. Such a system can also be applied for a free access to medical services in Nepal. Such system must be regulated by both the domestic legal system and bilateral or multilateral agreements. Nepalese government should negotiate a bilateral agreement with other countries on health care so that Nepalese migrants would not lose their coverage once their come back to Nepal.

9.5.4.4 Regulation for the transfer of remittance money

Lack of information about the method of sending international remittances, poor banking infrastructure in rural Nepal, operating time and comparatively high charge of the banks are the main obstacles for the formal transfer of remittance money in Nepal. Nepalese migrants are still widely using unlicensed remittance services such as Hundi. The central bank of Nepal (NRB) is responsible for regulating and monitoring the remittance transfers. The NRB should promote possible incentives to encourage formal transfer of remittance as it reduces the risk of money laundering and other financial crimes, hence promotes balance of payment and credit ratings of the government.

9.5.4.5 Productive investment of the remittance money

Remittance is one of the most important financial flows for a developing country like Nepal as it comprises nearly a one-third share of the household budget of recipient families and more than 30% share of GDP. Remittances are private earnings; therefore, the government should promote possible incentives to encourage for the investment in different programmes to achieve sustainable economic development in the long run. The investment of the obtained remittances for development programs such as water projects (both drinking and irrigation), hydropower, road and communication projects is extremely necessary for a developing country. It significantly leads with the expansion of the modern sector employment in the country.

9.6 Knowledge contribution by the research

The existing knowledge concerning the inflow of remittance and its impact on the expenditure behaviour and economic development in Nepal has attributed on the one hand to the inadequate policy articulation and on the other hand to a set of idealised labour migration policies and the complex realities of implementation. Many researchers have focused only in small pockets of the country. However, this research has been focused nationwide and it deals with the issue of dividing the total household budget share on different component parts which were primarily ignored or overlooked by past researchers. Therefore, it has contributed in generating knowledge on the remittance-inspired change in expenditure behaviour of households and the economic development of Nepal.

Although remittance has an impact on consumption, saving and investment, relatively little research has been done to describe the impact of remittance on expenditure pattern of households in Nepal. Whether the remittance inspired change in expenditure behaviour of households leads to economic development is another important issue of debate amongst researchers. This study tries to fulfil the gap that exists in this field as it aims to address in depth the changing expenditure behaviour of Nepalese households caused by the increasing volume of remittances. It also tries to examine whether households make productive expenditure if they receive remittances.

The results obtained suggest that remittances play a major role in economic activity through a change in households' expenditure behaviour especially increasing educational expenditure on its members. The findings also show that Nepalese households spend more amounts on the

education of boys and the proportion of children deprived of schooling is higher in girls than boys. However, gender bias decreases once they receive remittances. Moreover, the result also shows that malnutrition of children decreases if households receive remittances. All these findings indicate that the receipt of remittances improves child welfare in Nepalese households. Schultz (1961) and Becker (1962) have pointed out that an improvement in the health and education is extremely necessary to accelerate the rate of economic development of a country. The findings support their development theory because how people are spending now reflects what they want and the way the national economy is heading. It helps to make a better plan for making an economically resilient society and channelizing the scarce resources in the interest of people.

The central question in this study is not whether households receive remittances; it is about how households spend them and how to spend them on productive investment. The findings of this study are significant in the sense that they support the view that households do not spend the remittance income on status oriented conspicuous consumption. Rather it supports the view that households allocate more budget share on the education of household members so that it would obtain higher benefits in future. Further, the increasing household investment in human capital accelerates economic development as it develops the productive capacity of the country. The savings from the remittance act as insurance for the households and is also important source of development finance for the country.

Most of Nepalese migrants are working in the Gulf and Malaysia. Several reasons such as the decrease in the price of oil and slowdown of these economies may cause the inflow of remittances into Nepal to become less stable and even decline in the coming future. Hence, the government of Nepal should make sound economic policies and establish development-oriented institutions to channelize the remittance income into productive investment to enhance their development impact. Also, the government should try to diversify the migration destinations to maintain robust remittances over the long run.

9.7 Future research

The three key objectives of this study were to analyse the determinants of the receipt of remittance by Nepalese households, to estimate the change in expenditure pattern of households and to examine the developmental impact of remittance through a change in expenditure behaviour. In general, it has achieved its objectives successfully. The issue of inter-relation between remittances, changes in expenditure behaviour and economic

development is very complex and is linked with social, economic, political and institutional factors. For a detailed study on the impact of remittances, complete information is essential both from the migrant at the destination and his/her household at the origin.

This study is based on NLSS-III survey data that was not designed for the remittance purposes. Hence, it lacks much relevant information about the migrant's skills, working condition, and income at the destination. The lack of migrant's information at the destination was a serious problem in this study. One of the findings of this research concluded that households with remittances spend less on housing. This study could not find a possible explanation of this outcome. Also, the impact of migrants' remittance on the expenditure of households at the origin in developing countries is an important area for further research. It is a sector where the interest of households, society and the government may conflict with each other.

Remittances being private earnings do not lead themselves sustainable economic nor human development in the long run. The long-term impact of remittances on economic development needs sound national economic policies and development interventions by institutions. Hein de Haas (2007) has pointed out that a country cannot attain sustainable development unless it has political and reforms. Hence, better social protection, improved investment opportunities, and creation of political trust are extremely necessary conditions for it. Furthermore, the ability and willingness of households to invest, the resources available to them, and socio-economic condition of households also make a difference in the developmental impact of the receipt of the remittances. The Nepalese government must consider this as an aspect of development. Households in developing countries do not automatically invest in economic development activities. Hence, detailed studies and better programmes of action and strategies are extremely necessary in managing the productive investment of inflows of remittances. To channelize these transfer incomes into the economic development of a country more studies are needed so that benefits can be maximised. Hence, more research is certainly to be done on the effects of remittance-inspired changes in household expenditure on the Nepalese economy at large.

Moreover, this study does not make a comparison between internal and international remittances in focusing on the expenditure behaviour of households and economic development. Such a comprehensive study would broaden the ideas in this field, hence is recommended for further research.

9.8 Epilogue

A thorough understanding of the changes in the spending behaviour of Nepalese households caused by the receipt of remittances should help policy makers to find the best ways to channel the scarce resources into productive investment for economic development. This study contributes to broadening the views of the wider horizon and provides conceptual and practical knowledge to all related in this field. Hence, I hope that this study will play a major role for the policy makers, analysts, and researchers.

References

ACHARYA, C. P. & LEON-GONZALEZ, R. 2013. The Impact of Remittance on Poverty and Inequality: A Micro-Simulation Study for Nepal. *Asian Journal of Empirical Research,* 3**,** 1061-1080.

ACHARYA, C. P. & LEON-GONZALEZ, R. 2014. How do Migration and Remittances Affect Human Capital Investment? The Effects of Relaxing Information and Liquidity Constraints. *The Journal of Development Studies,* 50**,** 444-460.

ACOSTA, P. 2006. Labor Supply, School Attendance, and Remittances from International Migration : The Case of El Salvador. Washington, DC: World Bank.

ACOSTA, P. 2011. School attendance, child labour, and remittances from international migration in El Salvador. *Journal of Development Studies,* 47**,** 913-936.

ACOSTA, P., CALDERON, C., FAJNZYLBER, P. & LOPEZ, H. 2008. What is the impact of international remittances on poverty and inequality in Latin America? *World Development,* 36**,** 89-114.

ADAMS JR, R. H. 2005. Remittances, household expenditure and investment in Guatemala. *World Bank policy research working paper*.

ADAMS JR, R. H. & CUECUECHA, A. 2013. The Impact of Remittances on Investment and Poverty in Ghana. *World Development,* 50**,** 24-40.

ADAMS JR, R. H., CUECUECHA, A. & PAGE, J. 2008a. The impact of remittances on poverty and inequality in Ghana. *World Bank Policy Research Working Paper Series*

ADAMS JR, R. H., CUECUECHA, A. & PAGE, J. 2008b. Remittances, consumption and investment in Ghana.

ADAMS, R. H. 2009. The determinants of international remittances in developing countries. *World Development,* 37**,** 93-103.

ADAMS, R. H. 2011. Evaluating the Economic Impact of International Remittances On Developing Countries Using Household Surveys: A Literature Review. *The Journal of Development Studies,* 47**,** 809-828.

ADAMS, R. H. & CUECUECHA, A. 2010a. The Economic Impact of International Remittances on Poverty and Household Consumption and Investment in Indonesia. Washington D. C: The World Bank.

ADAMS, R. H. & CUECUECHA, A. 2010b. Remittances, Household Expenditure and Investment in Guatemala. *World Development,* 38**,** 1626-1641.

ADHIKARI, C. B. 2009. *Productive Efficiency, Access to Land and Poverty: Evidence from Nepal.* PhD Thesis, University of Reading

AIROLA, J. 2007. The Use of Remittance Income in Mexico. *International Migration Review,* 41**,** 850-859.

ALCARAZ, C., CHIQUIAR, D. & SALCEDO, A. 2012. Remittances, schooling, and child labor in Mexico. *Journal of Development Economics,* 97**,** 156-165.

ALI, A., MUJAHID, N., RASHID, Y. & SHAHBAZ, M. 2014. Human Capital Outflow and Economic Misery: Fresh Evidence for Pakistan.

AMNESTY INTERNATIONAL. 2011. False Promises: Exploitation and forced labour of Nepalese migrant workers. Available: http://www.amnesty.org/en/library/info/ASA31/007/2011/en.

AMUEDO-DORANTES, C. & POZO, S. 2010. Accounting for Remittance and Migration Effects on Children's Schooling. *World Development,* 38**,** 1747-1759.

ANTMAN, F. M. 2012. Gender, educational attainment, and the impact of parental migration on children left behind. *Population Economics,* 25**,** 1187-1214.

ANTÓN, J. I. 2010. The Impact of Remittances on Nutritional Status of Children in Ecuador1. *International migration review,* 44**,** 269-299.

AYDAS, O. T., METIN-OZCAN, K. & NEYAPTI, B. 2005. Determinants of workers' remittances: the case of Turkey. *Emerging Markets Finance and Trade,* 41**,** 53-69.

BANGA, R. & SAHU, P. K. 2010. Impact of remittances on poverty in developing countries. *Working Papersid,* 2872.

BANSAK, C. & CHEZUM, B. 2009. How Do Remittances Affect Human Capital Formation of School-Age Boys and Girls? *American Economic Review,* 99**,** 145-148.

BARAJAS, A., CHAMI, R., FULLENKAMP, C., GAPEN, M. & MONTIEL, P. J. 2009. Do workers' remittances promote economic growth? *IMF Working Papers***,** 1-22.

BECKER, G. S. 1962. Investment in human capital: A theoretical analysis. *The journal of political economy***,** 9-49.

BERK, R. A. 1983. An introduction to sample selection bias in sociological data. *American Sociological Review***,** 386-398.

BERTOLI, S. & MARCHETTA, F. 2014. Migration, remittances and poverty in Ecuador. *The Journal of Development Studies,* 50**,** 1067-1089.

BETTIN, G., LUCCHETTI, R. & ZAZZARO, A. 2012. Endogeneity and sample selection in a model for remittances. *Journal of Development Economics,* 99**,** 370-384.

BHATTA, G. R. 2011. Remittance and Trade Deficit Nexus in Nepal: A VECM Approach. *NRB ECONOMIC REVIEW***,** 37.

BHATTARAI, P. 2005. Migration of Nepalese Youth for Foreign Employment: Problems and Propects. Available: http://www.youthaction.org.np/userfiles/file/Research%20Report%20on%20Labor%20Migration.pdf.

BINCI, M. & GIANNELLI, G. C. 2016. Internal versus International Migration: Impacts of Remittances on Child Labor and Schooling in Vietnam. *International Migration Review*.

BOHRA-MISHRA, P. 2014. Motivations to remit: evidence from Chitwan, Nepal. *Contemporary Social Science,* 9**,** 322-337.

BOHRA-MISHRA, P. & MASSEY, D. 2011. Individual Decisions to Migrate During Civil Conflict. *Demography,* 48**,** 401-424.

BOUOIYOUR, J. & MIFTAH, A. 2015. Migration, remittances and educational levels of household members left behind: Evidence from rural Morocco. *The European Journal of Comparative Economics,* 12**,** 21.

BOUOIYOUR, J. & MIFTAH, A. 2016. Education, male gender preference and migrants' remittances: Interactions in rural Morocco. *Economic Modelling,* 57**,** 324-331.

BOURGUIGNON, F., FOURNIER, M. & GURGAND, M. 2007. Selection Bias Corrections Based On The Multinomial Logit Model: Monte Carlo Comparisons. *Journal of Economic Surveys,* 21**,** 174-205.

CARLING, J. 2008. The determinants of migrant remittances. *Oxford Review of Economic Policy,* 24**,** 581-598.

CASTALDO, A. & REILLY, B. 2015. Do migrant remittances affect the consumption patterns of Albanian households? *South-Eastern Europe Journal of Economics,* 5.

CENTRAL BUREAU OF STATISTICS 2011a. Nepal Living Standard Survey - III. Kathmandu: Central Bureau of Statistics.

CENTRAL BUREAU OF STATISTICS 2011b. Nepal Living Standard Survey - III. *Statistical Report* Kathmandu: National Planning Commission Secretariat.

CENTRAL BUREAU OF STATISTICS 2015. *Nepal in Figures,* Kathmandu, Nepal, Central Bureau of Statistics,.

CHAMI, R., FULLENKAMP, C., COSIMANO, T., GAPEN, M., BARAJAS, A. & MONTIEL, P. 2008. Macroeconomic Consequences of Remittances. *IMF Occasional Paper 259.* Washington, DC IMF.

CHAUVET, L., GUBERT, F. & MESPLÉ-SOMPS, S. Are remittances more effective than aid to improve child health? An empirical assessment using inter and intra-country data. Annual Bank Conference on Development Economics. Cape Town, South Africa: June, 2008. 9-11.

CHAUVET, L., GUBERT, F. & MESPLÉ-SOMPS, S. Are Remittances More Effective than Aid for Improving Child Health? An Empirical Assessment Using Inter-and Intracountry Data. Annual World Bank Conference on Development Economics: Global 2009: People, Politics, and Globalization, 2010. 173-204.

CHOWDHURY, M. 2016. Financial Development, Remittances and Economic Growth: Evidence Using a Dynamic Panel Estimation. *Margin: The Journal of Applied Economic Research,* 10**,** 35-54.

CHUKWUONE, N., AMAECHINA, E., IYOKO, E., ENEBELI-UZOR, S. E. & OKPUKPARA, B. Analysis of impact of remittance on poverty and inequality in Nigeria. Sixth PEP Research Network General Meeting [[online]]. www. pep-net. org, 2008.

CLÉMENT, M. 2011. Remittances and household expenditure patterns in Tajikistan: A propensity score matching analysis. *Asian Development Review,* 28.

COORAY, A. 2012. The Impact of Migrant Remittances on Economic Growth: Evidence from South Asia. *Review of International Economics,* 20**,** 985-998.

DAHAL, P. 2014. The impact of remittances on economic growth in Nepal: An analysis of a significant basis of development. *Asia Pacific Journal of Public Administration,* 36**,** 261-282.

DE LONG, J. B. & SUMMERS, L. H. 1990. Equipment investment and economic growth. National Bureau of Economic Research.

DE, P. K. & RATHA, D. 2012. Impact of remittances on household income, asset and human capital: evidence from Sri Lanka. *Migration and Development,* 1**,** 163-179.

DÉMURGER, S. & WANG, X. 2016. Remittances and expenditure patterns of the left behinds in rural China. *China Economic Review,* 37**,** 177-190.

DEPARTMENT OF FOREIGN EMPLOYMENT 2013. Yearly Progress Report 2013. Kathmandu: Department of Foreign Employment.

DEY, S. 2015. Impact of remittances on poverty at origin: A study on rural households in India using covariate balancing propensity score matching. *Migration and Development,* 4**,** 185-199.

DUBIN, J. A. & MCFADDEN, D. L. 1984. An Econometric-Analysis of Residential Electric Appliance Holdings and Consumption. *Econometrica,* 52**,** 345-362.

EBEKE, C. H. 2012. The power of remittances on the international prevalence of child labor. *Structural Change and Economic Dynamics*.

EDWARDS, A. C. & URETA, M. 2003. International migration, remittances, and schooling: evidence from El Salvador. *Journal of Development Economics,* 72**,** 429-461.

ENDO, I. & AFRAM, G. G. 2011. *The Qatar-Nepal remittance corridor: enhancing the impact and integrity of remittance flows by reducing inefficiencies in the migration process,* World Bank Publications.

ERRICHIELLO, G. 2012. Foreign Workforce in the Arab Gulf States (1930–1950): Migration Patterns and Nationality Clause1. *International Migration Review,* 46**,** 389-413.

FARIDI, M. Z. & ARIF, M. A. 2012. Globalization and saving behavior of Pakistan: an empirical analysis. *Pakistan Journal of Social Sciences,* 32**,** 77-91.

FAYISSA, B. & NSIAH, C. 2010. The impact of remittances on economic growth and development in Africa. *The American Economist,* 55**,** 92-103.

FOKKEMA, T., CELA, E. & AMBROSETTI, E. 2013. Giving from the heart or from the ego? Motives behind remittances of the second generation in Europe. *International Migration Review,* 47**,** 539-572.

FRIEDMAN, M. 1957a. Front Matter "A Theory of the Consumption Function". *In:* FRIEDMAN, M. (ed.) *A Theory of the Consumption Function.* New Jersey: Princeton University Press.

FRIEDMAN, M. 1957b. *A Theory of the Consumption,* Princeton university press, Princeton.

GENNAIOLI, N., LA PORTA, R., LOPEZ-DE-SILANES, F. & SHLEIFER, A. 2013. Human capital and regional development. *The Quarterly Journal of Economics,* 128**,** 105-164.

GHIMIRE, A., UPRETI, B. R. & POKHAREL, S. 2010. Livelihood strategies of internally displaced people in Western Nepal: Some observations. *In:* UPRETI, B. R. & MÜLLER-BÖKER, U. (eds.) *Livelihood Insecurity and Social Conflict in Nepal.* Kathmandu: NCCR (North-South), RCO, South Asia.

GÖBEL, K. 2013. Remittances, expenditure patterns, and gender: parametric and semiparametric evidence from Ecuador. *IZA Journal of Migration,* 2**,** 1-19.

GORDON, B. D. 2002. Mobility and the Return to Education: Testing a Roy Model with Multiple Markets. *Econometrica,* 70**,** 2367-2420.

GOVERNMENT OF NEPAL 2013. Nepal Tourism Statistics 2012. Kathmandu: Ministry of Culture, Tourism & Civil Aviation.

GOVERNMENT OF NEPAL 2014. Economic Survey. Kathmandu: Ministry of Finance.

GUO, S. & FRASER, M. W. 2014. *Propensity Score Analysis: Statistical Methods and Applications,* SAGE Publications.

GURUNG, Y. B. 2008. Migration from Rural Nepal. A Social Exclusion Framework. Available: http://www.cmi.no/file/?638 [Accessed 11/11/2011].

GUZMAN, J. C., MORRISON, A. R. & SJÖBLOM, M. 2008. The impact of remittances and gender on household expenditure patterns: evidence from Ghana. *The international migration of women***,** 125-152.

HAAS, H. D. 2007. Remittances, Migration and Social Development: A Conceptual Review of Literature. Geneva: UNRISD.

HANUSHEK, E. A. 2013. Economic growth in developing countries: The role of human capital. *Economics of Education Review,* 37**,** 204-212.

HASSAN, G. M., CHOWDHURY, M. & BHUYAN, M. S. 2016. Growth Effects of Remittances in Bangladesh: Is there a U-shaped Relationship? *International Migration*.

HECKMAN, J. J. 1979. Sample Selection Bias as a Specification Error. *Econometrica,* 47**,** 153-161.

HILDEBRANDT, N. & MCKENZIE, D. J. 2005. The effects of migration on child health in Mexico. *Economía,* 6**,** 257-289.

HILL, R. C., GRIFFITHS, W. E. & LIM, G. C. 2012. *Principle of Econometrics,* Wiley.

HU, F. 2013. Does migration benefit the schooling of children left behind? Evidence from rural northwest China. *Demographic research,* 29**,** 33-70.

HUSSAIN, R. & ANJUM, G. A. 2014. Worker's Remittances and GDP Growth in Pakistan. *International Journal of Economics and Financial Issues,* 4**,** 376.

HUY, H. T. & NONNEMAN, W. 2016. Economic effects of labor migration on agricultural production of farm households in the Mekong River Delta region of Vietnam. *Asian and Pacific Migration Journal,* 25**,** 3-21.

IMBENS, G. W. & WOOLDRIDGE, J. M. 2009. Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature,* 47**,** 5-86.

INTERNATIONAL LABOUR ORGANISATION. 2016. *Labour Migration* [Online]. Beirut, Lebanon: ILO. [Accessed 02/12/2016 2016].

IOSIFIDES, T. 2011. *Qualitative Methods in Migration Studies* Farnham, Ashgate Publishing Limited.

JAWAID, S. T. & RAZA, S. A. 2014. Effects of Workers' Remittances and its Volatility on Economic Growth in South Asia. *International Migration*.

JENA, F. 2015. *The empirical analysis of the determinants of migration and remittances in Kenya and the impact on household expenditure patterns.* University of Sussex.

KARAGÖZ, K. 2009. WORKERS'REMITTANCES AND ECONOMIC GROWTH: EVIDENCE FROMTURKEY. *Journal of Yaşar University,* 4**,** 1891-1908.

KATCHOVA, A. 2013. *Instrumental Variables* [Online]. Econometrics Academy. Available: https://sites.google.com/site/econometricsacademy [Accessed 07/08/2013].

KC, B. K. 2003. Migration, poverty and development in Nepal. *Ad Hoc Expert Group Meeting on Migration and Development.* Bangkok: Economic and Social Commission for Asia and the Pacific.

KHAN, S., SAJID, M. R., GONDAL, M. A. & AHMAD, N. 2009. Impacts of Remittances on Living Standards of Emigrants' Families in Gujrat-Pakistan. *European Journal of Social Sciences,* 12**,** 205-215.

KOSKA, O. A., SAYGIN, P. Ö., ÇAĞATAY, S. & ARTAL-TUR, A. 2013. International migration, remittances, and the human capital formation of Egyptian children. *International Review of Economics & Finance,* 28**,** 38-50.

KOTHARI, U. 2002. Migration and Chronic Poverty. Manchester: University of Manchester.

LEE, L.-F. 1983. Generalized Econometric Models with Selectivity. *Econometrica,* 51**,** 507-512.

LIANOS, T. & PSEIRIDIS, A. 2013. On-The-Job Skills and Earnings of Returned Migrants. *International Migration,* 51**,** 78-91.

LIM, S. & SIMMONS, W. O. 2015. Do remittances promote economic growth in the Caribbean Community and Common Market? *Journal of Economics and Business,* 77**,** 42-59.

LOKSHIN, M., BONTCH-OSMOLOVSKI, M. & GLINSKAYA, E. 2010. Work-Related Migration and Poverty Reduction in Nepal. *Review of Development Economics,* 14**,** 323-332.

LOKSHIN, M., BONTCH-OSMOLOVSKI, M. & GLINSKAYAI, E. 2007. Work-related migration and poverty reduction in Nepal. *World Bank Policy Research Working Paper*.

LOKSHIN, M. & GLINSKAYA, E. 2009. The Effect of Male Migration on Employment Patterns of Women in Nepal. *World Bank Economic Review,* 23**,** 481-507.

LU, Y. 2013. Household Migration, Remittances and Their Impact on Health in Indonesia. *International Migration,* 51**,** e202-e215.

MAHAPATRO, S., BAILEY, A., JAMES, K. & HUTTER, I. 2015. Remittances and household expenditure patterns in India and selected states. *Migration and Development***,** 1-19.

MAHARJAN, A. 2013. International Migration, Remittances and Subsistence Farming: Evidence from Nepal. *International migration,* 51**,** e249-e263.

MAHARJAN, A., BAUER, S. & KNERR, B. 2013. International Migration, Remittances and Subsistence Farming: Evidence from Nepal. *International Migration,* 51**,** e249-e263.

MAIMBO, S. M., ADAMS, R., PASSAS, N. & AGGARWAL, R. 2005. *Migrant labor remittances in South Asia*, World Bank Publications.

MAITRA, P. & RAY, R. 2004. The Impact of Resource Inflows on Child Health: Evidence from Kwazulu-Natal, South Africa, 1993–98. *Journal of Development Studies,* 40**,** 78-114.

MALLA, P. 2009. Foreign Employment and Remittance in Nepal. *Economic Journal of Nepal,* 32**,** 46-60.

MANNAN, K. A. & FARHANA, K. M. 2014. Remittance Micro Determinants and Socioeconomic Impacts: A Household Unit Analysis of Gender Behaviour of Rural Household Head in Bangladesh. *International Journal of Management Sciences and Business Research*.

MANSURI, G. 2006a. Migration, School Attainment and Child Labor: Evidence from Rural Pakistan. Washington, DC: World Bank.

MANSURI, G. 2006b. Migration, Sex Bias, and Child Growth in Rural Pakistan. Washington, DC: World Bank.

MCKENZIE, D. & RAPOPORT, H. 2011. Can migration reduce educational attainment? Evidence from Mexico. *Journal of Population Economics,* 24**,** 1331-1358.

MCKENZIE, D. J. & SASIN, M. J. 2007. Migration, remittances, poverty, and human capital: conceptual and empirical challenges. *World Bank Policy Research Working Paper*.

MEKA'A, C. B. 2015. Remittances and Household Expenditures: Evidence from Cameroon. *Region Et Developpement***,** 201-230.

MILLIGAN, M. & BOHARA, A. 2007. The effect of remittances on child labor and child education in Nepal. *Himalayan Research Papers Archive*.

MINCER, J. 1984. Human capital and economic growth. *Economics of Education Review,* 3**,** 195-205.

MINISTRY OF FINANCE 2012. Economic Survey. Kathmandu, Nepal: Ministry of Finance.

MINISTRY OF HEALTH AND POPULATION 2011. Nepal Demographic and Health Survey. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.

MINISTRY OF LABOUR AND EMPLOYMENT 2016. Labour Migration for Employment A Status Report for Nepal: 2014/2015. Kathmandu, Nepal: Ministry of Labour and Employment.

MWANGI, B. N. & MWENDA, S. N. 2015. The effect of international remittances on economic growth in Kenya. *Microeconomics and Macroeconomics,* 3**,** 15-24.

NAUFAL, G. S. 2007. *Remittances: determinants, motivations and effects.* Texas A&M University.

NEPAL, A. K. 2016. The Impact of International Remittances on Child Outcomes and Household Expenditures in Nepal. *Journal of Development Studies,* 52**,** 838-853.

NEPAL INSTITUTE OF DEVELOPMENT STUDIES 2011. Nepal Migration Year Book 2010. Kathmandu, Nepal: NIDS and NCCR North-South.

NEPAL, R. 2013. *Remittances and livelihood strategies: A Case Study in Eastern Nepal* Kassel, Germany Kassel university press GmbH.

NEPAL RASTRA BANK 2008. Household Budget Survey Nepal. Research and Development, Kathmandu: Nepal Rastra Bank

NEPAL RASTRA BANK 2012. Impact Evaluation of Remittances: A Case Study of Dhanusha District. Kathmandu, Nepal: Nepal Rastra Bank,.

NIIMI, Y. & OZDEN, C. 2006. Migration and remittances: causes and linkages. *World Bank Policy Research Working Paper*.

OBENG-ODOOM, F. 2010. Urban real estate in Ghana: A study of housing-related remittances from Australia. *Housing Studies,* 25**,** 357-373.

OSILI, U. O. 2007. Remittances and savings from international migration: Theory and evidence using a matched sample. *Journal of Development Economics,* 83**,** 446-465.

PANT, B. 2006. Remittance Inflows to Nepal: Economic Impact and Policy Options. *Economic Review,* 18**,** 20-26.

PANT, B. 2008. Mobilizing Remittances for Productive Use: A Policy-oriented Approach. [Accessed 13/07/2013].

PANT, B. 2011. Harnessing remittances for productive use in Nepal. *Nepal Rastra Bank Economic Review,* 23**,** 1-20.

PARIDA, J. K. & MADHESWARAN, S. 2011. Determinants of migration and remittance in India: Empirical evidence.

PARINDURI, R. A. & THANGAVELU, S. M. 2008. Remittance and Migrant Households' Consumption and Saving Patterns: Evidence from Indonesia. *Nottingham Univ. Business School Malaysia Campus Research Paper*.

PELINESCU, E. 2015. The impact of human capital on economic growth. *Procedia Economics and Finance,* 22**,** 184-190.

PIRACHA, M. & SARAOGI, A. 2012. The determinants of remittances: Evidence from Moldova. *Oxford Development Studies,* 40**,** 467-491.

RAZA, S. A. 2015. Foreign direct investment, workers' remittances and private saving in Pakistan: an ARDL bound testing approach. *Journal of Business Economics and Management,* 16**,** 1216-1234.

REGMI, G. & TISDELL, C. 2002. Remitting behaviour of Nepalese rural-to-urban migrants: Implications for theory and policy. *Journal of Development Studies,* 38**,** 76-94.

RIVERA, J. J. M. & GONZÁLEZ, J. A. 2009. Effects of Remittances on Household Expenditure Patterns of Rural Mexico. *Unpublished paper. Prediction of household expenditure on the basis of,* 358.

ROSENBAUM, P. R. & RUBIN, D. B. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika,* 70**,** 41-55.

RUIZ-ARRANZ, M. & GIULIANO, P. 2005. *Remittances, financial development, and growth*, International Monetary Fund.

RUSSEL, S. S. 1992. Migrant Remittance and Development. *International Migration,* 30**,** 267-288.

SALAS, V. B. 2014. International Remittances and Human Capital Formation. *World Development,* 59**,** 224–237.

SAPKOTA, C. 2013. Remittances in Nepal: Boon or Bane? *The Journal of Development Studies,* 49**,** 1316-1331.

SCHIOPU, I. C. & SIEGFRIED, N. 2006. Determinants of Workers' Remittances: Evidence from the European Neighbouring Region. ECB Working Paper No. 688.

SCHULTZ, T. W. 1961. Investment in human capital. *The American economic review***,** 1-17.

SCHULTZ, T. W. 1982. *Investing in People,* California, University of California Press.

SEDDON, D., ADHIKARI, J. & GURUNG, G. 2002. Foreign labor migration and the remittance economy of Nepal. *Critical Asian Studies,* 34**,** 19-40.

SHARMA, M. P. 2013. International Contract-Based Migration, Remittances, and Household Well-Being in the Western Province of Sri Lanka. *International Migration,* 51**,** e216-e248.

SHERPA, D. 2010. *Labour migration and remittances in Nepal,* Kathmandu, Nepal International Centre for Integrated Mountain Development

SIJAPATI, B. & LIMBU, A. 2012. Governing Labour Migration in Nepal. Kathmandu: Centre for the Study of Labour and Mobility.

SINGH, M. L. 1997. Emigration from Nepal: some major issues. *Nepal population and development journal***,** 37-47.

SMITH, A. 1776. *An Inquiry into the Nature And Causes of the Wealth of Nations Book 2 – Of the Nature, Accumulation, and Employment of Stock,* London, W. Strahan and T. Cadell.

SOVACOOL, B. K., DHAKAL, S., GIPPNER, O. & BAMBAWALE, M. J. 2011. Halting hydro: A review of the socio-technical barriers to hydroelectric power plants in Nepal. *Energy,* 36**,** 3468-3476.

STARK, O. 1991. *The Migration of Labor,* Oxford, Basil Blackwell.

STATACORP 2015. *Stata: Release 14,* College Station, Texas, StataCorp LP.

TABUGA, A. D. 2007. International Remittances and Household Expenditures: The Philippine Case. Philippine Institute for Development Studies.

TERRELONGE, S. C. 2014. For Health, Strength, and Daily Food: The Dual Impact of Remittances and Public Health Expenditure on Household Health Spending and Child Health Outcomes. *Journal of Development Studies,* 50**,** 1397-1410.

THAPA, S. 2008. Migration, remittances and household labour allocation: an empirical analysis from panel data. *CIFREM, Faculty of Economics, University of Trento, Italy*.

TULADHAR, R., SAPKOTA, C. & ADHIKARI, N. 2014. Effects of migration and remittance income on Nepal's agriculture yield.

UNCTAD 2012. The Least Developed Countries Report 2012. New York and Geneva: United Nations.

UNDP 2015. HUMAN DEVELOPMENT REPORT *Work for Human Development.* New York: United Nations Development Programme.

UNITED NATIONS 2008. *Principles and Recommendations for Population and Housing Censuses Rev 2,* New York, United Nations,.

UZAGALIEVA, A. & MENEZES, A. 2009. The poverty effect of remittance flows: evidence from Georgia. *Post-communist economies,* 21**,** 453-474.

VALERO-GIL, J. N. 2009. Remittances and the household's expenditures on health. *Journal of Business Strategies,* 26**,** 119.

VAN DALEN, H. P., GROENEWOLD, G. & FOKKEMA, T. 2005. The effect of remittances on emigration intentions in Egypt, Morocco, and Turkey. *Population Studies,* 59**,** 375-392.

VANWEY, L. K. 2004. Altruistic and contractual remittances between male and female migrants and households in rural Thailand. *Demography,* 41**,** 739-756.

VOGEL, A. & KORINEK, K. 2012. Passing by the Girls? Remittance Allocation for Educational Expenditures and Social Inequality in Nepal's Households 2003–2004. *International Migration Review,* 46**,** 61-100.

WAGLE, U. R. 2012. Socioeconomic Implications of the Increasing Foreign Remittance to Nepal: Evidence from the Nepal Living Standard Survey. *International Migration,* 50**,** 186-207.

WILLIAMS, N. & PRADHAN, M. 2008. POLITICAL CONFLICT AND MIGRATION: How has Violence and Political Instability Affected Migration Patterns in Nepal? *Himalayan Research Papers Archive*.

WORLD BANK. 2013a. *Country at a glance* [Online]. New York,: World Bank, . Available: http://www.worldbank.org/en/country/nepal [Accessed].

WORLD BANK 2013b. South Asia. Washington DC,: World Bank.

WORLD BANK. 2015. *World Development Indicators* [Online]. Washington D C: World Bank. [Accessed].

WORLD BANK 2016a. *Migration and Remittances Factbook 2016*, Washington, DC, World Bank

WORLD BANK 2016b. Personal remittances, received (current US$). Washington DC: World Bank.

YANG, D. & CHOI, H. 2007. Are remittances insurance? Evidence from rainfall shocks in the Philippines. *The World Bank Economic Review*, 21**,** 219-248.

Appendix

Appendix1: Expenditure Categories in Nepal Living Standard Survey-III, 2010/11

Category (i)	Description	Examples
Food	Purchased food Non-purchased food In-kind gifts	Rice, bread, eggs, milk, meat, potatoes, cooking oil, fruits and vegetables. Food from: own-production, purchase, in-kind gifts
Housing	Housing value	Annual use value of housing (calculated from rental payments or imputed values)
Consumer goods and durables	Consumer goods Household durables	Clothing, shoes, Annual use value of computer, vehicles, stove, refrigerator, furniture, television, sewing machine
Education	Educational expenses	Admission and tuition fees, books and stationeries, uniforms, travel to school
Health	Health expenses	Doctor fees, medicine, x-rays, tests, and hospital fee
Others	Household services Transport, communications Legal, personal services	Water, gas, electricity, telephone, bus and taxi fees, faxes, postage, internet charges, repair and maintenance costs, expenditure on religious and rituals

Appendix 2: List of the data files in NLSS-III (2010/11)

Section	Description	Data file	Number of variables
1	Household Roster	XH01_S01	16
2	Housing	XH01_S01	44
3	Access to Facilities	XH03_S03	
4	Migration	XH04_S04	
5	Food consumption	XH05_S05	
6A	Frequent non-food expenditures	XH06_S06A	
6B	Infrequent non-food expenditures	XH07_S06B	
6C	Inventory of durable goods	XH08_S06C	
6D	Own-account production of goods	XH09_S06D	
7	Education	XH10_S07	
8	Health	XH11_S08	
9A	Maternity history	XH12_S09A	
9B	Pre and post-natal care	XH13_S09B	
9C	Family planning	XH14_S09C	
9D	Household decisions	XH15_S09D	
10A	Time Use	XH16_S10A	
10B	Jobs	XH17_S10B	
11	Unemployment / Under-employment and past job	XH18_S11	
12	Wage Jobs	XH19_S12	
13A1	Landholding - land owned	XH20_S13A1	
13A2	Land sharecropped/rented/mortgaged-in	XH21_S13A2	
13B	Production and uses	XH22_S13B	
13C1	Expenditures on seeds and young plants	XH23_S13C1	
13C2	Expenditures on fertilisers and insecticides	XH24_S13C2	
13C3	Hiring labour	XH25_S13C3	
13D1	Agriculture Earnings	XH26_S13D1	
13D2	Agriculture Expenditures	XH27_S13D2	

Section	Description	Data file	Number of variables
13E1	Livestock	XH28_S13E1	
13E2	Income from livestock	XH29_S13E2	
13E3	Livestock's expenditures	XH30_S13E3	
13F	Ownership of farming assets	XH31_S13F	
14	Non-agriculture enterprises/activities	XH32_S14	
15A	Borrowing	XH33_S15A	
15B	Lending	XH34_S15B	
15C	Other assets	XH35_S15C	
15D	Household decisions	XH36_S15D	
16	Absentees information	XH37_S16	
17A	Remittances sent	XH38_S17A	
17B	Remittances received	XH39_S17B	
18A	Transfers, social assistance	XH40_S18A	
18B	Social assistance	XH41_S18B	
18C	Other Income	XH42_S18C	
19	Adequacy of consumption	XH43_S19	
20	Anthropometrics	XH44_S20	
21	Panel Household tracking	XH45_S21	
21X	Panel Household members tracking	XH46_S21X	

Source: NLSS-III (2010/11)

Appendix 3: Recognized Destination for foreign employment

S.N.	**Country**	**S.N.**	**Country**	**S.N.**	**Country**
1	Afghanistan	2	Albania	3	Algeria
4	Argentina	5	Armenia	6	Australia
7	Austria	8	Azerbaijan	9	Bahrain

S.N.	Country	S.N.	Country	S.N.	Country
10	Bangladesh	11	Belarus	12	Belgium
13	Bolivia	14	Bosnia-Herzegovina	15	Brazil
16	Brunei Darussalam	17	Bulgaria	18	Canada
19	Chile	20	China	21	Columbia
22	Cambodia	23	Costa Rica	24	Croatia
25	Cuba	26	Cyprus	27	Czech Republic
28	Denmark	29	Egypt	30	Estonia
31	Fiji	32	Finland	33	France
34	Germany	35	Great Britain (UK)	36	Greece
37	Guano	38	Holy See	39	Hong Kong
40	Hungary	41	Iceland	42	Indonesia
43	Iran	44	Iraq* (not Allowed)	45	Ireland
46	Israel	47	Italy	48	Japan
49	Jordan	50	Kazakhstan	51	Kenya
52	Kosovo	53	Kuwait	54	Laos PDR
55	Latvia	56	Lebanon	57	Libya
58	Luxemburg	59	Macau	60	Malaysia
61	Maldives	62	Malta	63	Macedonia
64	Mexico	65	Moldova	66	Mongolia
67	Mauritius	68	Morocco	69	Mozambique
70	Myanmar	71	Netherland	72	New Zealand
73	Nicaragua	74	Nigeria	75	Norway
76	Oman	77	Pakistan	78	Panama
79	Peru	80	Poland	81	Portugal
82	Qatar	83	Republic of Korea	84	Republic of Slovak
85	Rumania	86	Russia	87	Saipan
88	Saudi Arabia	89	Singapore	90	Slovenia
91	South Africa	92	Spain	93	Sri Lanka
94	Sweden	95	Switzerland	96	Seychelles
97	Tanzania	98	Thailand	99	The Philippines
100	Tunisia	101	Turkey	102	Uganda
103	Ukraine	104	United Arab Emirates	105	United States of America
106	Venezuela	107	Vietnam	108	Zambia

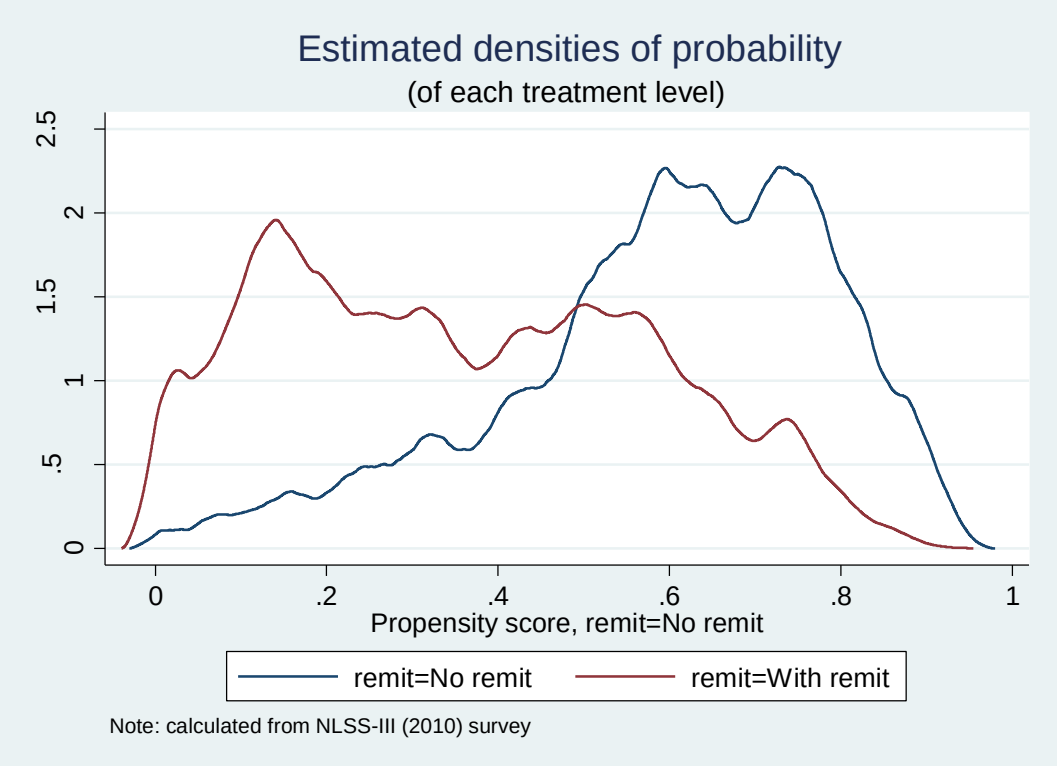
Source: Department of Foreign Employment, Nepal (2014)

Appendix 4: classification of caste/ethnicity listed on NLSS-III

Number	Groups	Caste/Ethnic Groups
1	Dalit	Kami (8), Damain/dholi (12), Sarki (15), Chamar/harijan/ram (17), Musahar (22), Dusadh/Paswan/Pasi (23), Tatma (39), Khatwe (40), Dhobi (41), Bantar (54), Dom (75), Gaine (79), Halkhor (87), Other Dalit (102)
2	Muslim	Muslim (7) and Churaute (83)
3	Terai/Madeshi	Yadav (9), Teli (16), Koiri (18), Kurmi (19), Sonar (25), Kewat (26), Baniya (28), Mallah (30), Kalwar (31), Hajam/thakur (33), Kanu (34), Sudhi (37), Lohar (38), Nuniya (43), Kumhar (44), Haluwai (47), Badhae (50), Barae (55), Kahar (56), Lodh (58), Rahbhar (59), Bing/binda (63), Bhediyar/gaderi (64)
4	Hill Janajati	Magar (3), Tamang (5), Rai (10), Gurung (11), Limbu (13), Sharpa (24), Gharti/Bhujal (29), Kumal (32), Sunuwar (36), Majhi (42), Danuwar (45), Chepang/praja (46), Thami (60), Bhote (62), Yakkha (66), Darai (67), Mali (72), Chhantal (74), Brahmu/Baramu (78), Lepcha (86), Raji (90), Raute (98)
5	Terai Janajati	Tharu (4), Dhanuk (21), Rajbansi (35), Santhal/satar (52), Dhagar/Jhagar (53), Gangai (57), Dhimal (61), Tajpuriya (68),
6	Bramhan/Chhetri	Chhetri (1), Bramhan(Hill) (2), Thakuri (14), Sanyasi (20), Bramhan (Terai) (27), Rajput (48) and Kayastha (49)
7	Newar/Thakali	Newar (6) and Thakali (69)
8	Others	Marwadi (51), Bengali (73), Other castes (103)

Note: values in parenthesis are the numbers associated with caste/ethnicity in NLSS-III survey data

Appendix 5: the density plots of the probabilities of each treatment level



Appendix 6: The description of the variables in the study

Name	Description
lnExp	Logarithm of total expenditure
ageHH	Age of household head (in years)
sexHH	Gender of household head; male = 1 and female = 0
fsize	Household size
eduHH	Education of household head
Nchild	Number of children below age 6 years
Nchild6_18	Number of children between 6 to 18 years
Nadult	Number of adults above 18 years
Ethnicity	ethnicity of the household head; 1= Dalits (base group), 2 = Muslims, 3 = Terai/Madeshi, 4 = Hill Janajati, 5 = Terai Janajati, 6 = Brahman/Chhetri, 7 = Newar/Thakali, and 8 = Others
urban	dummy variable; 1 if the house is located in the urban region and 0 otherwise
ezone	a categorical variable; (1 = Terai, 2 = Hill, and 3 = Mountain)
Land	land owned by households (in hectares)
htype	a categorical variable with values ranging from 0 to 2. 0 is assigned to a temporary house, 1 for the semi-permanent house, and 2 for a permanent house.
loan	dummy variable with values 0 = no outstanding loan and 1 = households have an outstanding loan.
A_index	Asset index ranging between 0 and 1
conflict	degree of political unrest during Maoist movement in Nepal. Its value ranges from 1 (least) to 5 (highest)
mnetwork	Migration rate by the district. Its value ranges from 1 (least) to 5 (highest)
poor	It is a dummy variable with value 1 if per capita total expenditure is below first quartile (q_1) then poor = 1 else poor = 0
fevent	Household event (birth, marriage or death of someone) yes = 1, no = 0
cgender	Gender of child; boy = 1 and girl = 0.
cage	Age of child
tuition	It is a dummy variable. Its value would be 1 if a child took some private tuition else 0.
nutrition	Nutritional conditional of the child. If a child is malnourished, its value is 1 else 0.

gparent	The presence of some senior member at home with age above 60 years.
Nmigrated	Number of family members that are currently migrated
ε_i	Error term in the model